22nd Annual Report by the Diablo Canyon Independent Safety Committee (DCISC), July 1, 2011 – June 30, 2012
Preface | Executive Summary
Volume 1 TOC | Volume 2 TOC | PG&E Response | Contact | DCISC Home Page

Diablo Canyon Independent Safety Committee
Twenty-second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations
July 1, 2011 – June 30, 2012

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22nd Annual Report, Preface

This report covers the activities of the Diablo Canyon Independent Safety Committee (DCISC) for the period July 1, 2011 through June 30, 2012. This is the twenty-second annual report of the DCISC. The report is presented in two volumes.

Volume I includes a report summary and Conclusions and Recommendations (Executive Summary), a brief introduction and history regarding the DCISC, Committee activities, and documents received by the DCISC during the reporting period (Section 1.0), DCISC public meetings (Section 2.0), a review and evaluation of Nuclear Regulatory Commission (NRC) assessments and issues (Section 3.0), Committee Member and Consultant investigation topical summaries (Section 4.0), DCPP performance indicators monitored by the DCISC (Section 5.0), open items being followed by the Committee (Section 6.0), follow-up of Pacific Gas and Electric (PG&E) actions on previous DCISC recommendations (Section 7.0), input to the Committee by members of the public (Section 8.0), and PG&E's response (Section 9.0) to recommendations in this report. The conclusions and recommendations also appear in boldface type throughout the main body of the report with a discussion of the subject involved.

Volume II contains a list of documents received by the DCISC (Exhibit A), public meeting notices and agendas and minutes (Exhibit B), a DCPP operations summary for the reporting period and organization charts (Exhibit C), full investigation reports by Committee Members and Consultants (Exhibit D), a record of plant tours by the DCISC (Exhibit E), the DCISC Open Items List (Exhibit F), communications and correspondence with members of the public (Exhibit G), DCISC recommendations and PG&E responses for the previous period (Exhibit H), the DCISC informational brochure (Exhibit I), and a glossary of terms (Exhibit J).

The DCISC invites questions and comments on this report.

22nd Annual Report, Executive Summary, Conclusions and Recommendations

History and Introduction

The Diablo Canyon Independent Safety Committee (DCISC) was established as part of the June 24, 1988 settlement agreement which arose from the rate proceedings for the Diablo Canyon Power Plant (DCPP). The DCISC was formed in late 1989 with the appointments of Committee Members and began formal review activities and meetings on January 1, 1990. The original settlement agreement (D.88-12-083) was terminated by the California Public Utilities Commission (CPUC) in its decision to open the state electricity markets to competition on January 1, 1998; however, under the provisions of the Commission's Decisions 97-05-088, issued on May 21, 1997, and 04-05-055, issued on May 27, 2004, the DCISC will continue to function and fulfill its responsibilities as established under the terms of the 1988 settlement agreement.

On May 27, 2004, the CPUC issued Decision 04-05-055. In its decision, the CPUC changed the nomination procedures by eliminating from the process the participation of PG&E and the Dean of Engineering at the University of California at Berkeley; modified the requirements for membership on the DCISC to add "knowledge and background in nuclear safety issues" to the "experience in the field of nuclear power facilities" and modified the DCISC's mandate to require it to undertake public outreach in the community. The Decision concluded the DCISC should retain the discretion to determine how best to accomplish its mandate and that the DCISC shall otherwise continue to exist and to operate and continued funding through cost-of-service rates. To implement this directive the DCISC has continued to expand its public outreach as described in Section 8.0 Public Input and Outreach and continues to consider additional outreach activities.

On January 25, 2007, the CPUC issued Decision 07-01-028. The CPUC had previously adopted new practices and expectations for the DCISC without concurrently restating the Committee's charter to reflect the changes. In its decision, the CPUC granted the DCISC application for authority to restate its charter including the incorporation into the Restated Charter of several terms, conditions, changes and clarifications necessitated by, and previously authorized by, the CPUC which govern the composition, responsibilities and operations of the Committee. In its decision, the CPUC found the Restated Charter to be in the public's interest as it reflects the latest authority and obligations of the DCISC. The Committee's application was unopposed.

The original settlement agreement provided for a three-member Independent Safety Committee for the purpose of "reviewing and assessing the safety of operations of DCPP". The members serve three-year staggered terms and remain on the DCISC until a new appointment or their reappointment is made. To fill an expired term or a vacancy the CPUC issues a public notice soliciting interested persons. Under the revised process in accordance with the restated charter, candidates are selected by the CPUC from the applications plus the incumbent, if willing to serve. The candidates must be "persons with knowledge, background and experience in the field of

nuclear power facilities and nuclear safety issues." From the list of candidates, the new or returning member is appointed by the Governor of California, the Attorney General of California or the Chairperson of the California Energy Commission (CEC), whichever made the original appointment.

The Committee Members during this period were as follows:

- On October 10, 2007, Robert J. Budnitz, Ph.D., was appointed by California Attorney General Edmund G. Brown Jr. to a term on the Committee expiring June 30, 2010. On April 15, 2010, the Attorney General announced the reappointment of Dr. Budnitz to a second three-year term on the Committee commencing July 1, 2010 through June 30, 2013.
- On June 3, 2009, Peter Lam Ph.D. was appointed by Chair Karen Douglas, J.D. of the California Energy Commission (CEC) to a three-year term on the Committee commencing July 1, 2009 through June 30, 2012. On July 12, 2012, CEC Chair Robert B. Weisenmiller, Ph.D., announced his reappointment of Dr. Lam to a second three-year term on the Committee commencing July 1, 2012 through June 30, 2015. Dr. Lam served as DCISC Chair for this report period, July 1, 2011 – June 30, 2012.
- On July 9, 2008, California Governor Arnold Schwarzenegger announced the appointment of Per F. Peterson, Ph.D., PE, to a three year term on the Committee through June 30, 2011. On March 22, 2012, Governor Edmund G. Brown Jr. announced Professor Peterson's reappointment for a term on the Committee commencing July 1, 2011 through June 30, 2014. Prof. Peterson previously served as a Committee member from September 2, 2004, through October 9, 2007. Dr. Peterson served as DCISC Vice-Chair for this report period, July 1, 2011 – June 30, 2012.

Overview of Activities during the Current Period

The Committee regularly performs the following activities:

- Three sets of two-day public meetings each year in the vicinity of the plant
- Three tours of the Diablo Canyon Nuclear Power Plant (DCPP) each year with members of the public
- Numerous fact-finding visits by individual Committee Members and Consultants to assess issues, review plant programs and activities, and interview PG&E personnel
- Visits by the DCISC Members and legal counsel to offices of the CPUC and appointing officials (the Governor of California, California Attorney General and California Energy Commission) to update them on DCISC Activities
- Use of several regular part-time technical consultants to perform assessments and reviews
- Use of legal counsel to advise the Committee on its activities
- Use of expert consultants, as needed

The DCISC issues a report for each reporting year, which runs from July 1 to June 30. The report is approved by the Committee Members at the fall public meeting following the end of the reporting

period. The first six-month interim report and subsequent twenty annual reports covered the periods January 1, 1990 – June 30, 2010.

This twenty-second annual report covers the period July 1, 2011 – June 30, 2012.

Three public meetings were held in the vicinity of the plant in Avila Beach and San Luis Obispo, California during this reporting period. The following significant items were reviewed:

- DCPP performance and operational events
- Refueling outage overviews, plans and results
- Review of DCPP performance indicators
- Human error performance improvement program
- Nuclear Safety Oversight Committee (NSOC) activities
- Steam Generator replacements
- Radiation exposure during refueling outages
- On-Site Spent Fuel Storage Plans (Independent Spent Fuel Storage Installation [ISFSI])
- Plant security review for effects on plant safety
- Problem Identification and Resolution Program (Corrective Action Program)
- Operating Experience Program
- Online Maintenance
- Radiological Release Reports
- Transformer malfunctions and oil leaks
- Reactivity Management Program
- Engineering, Operations and Maintenance Organizations
- Probabilistic Risk Assessment (PRA) Activities
- Emergency Preparedness (EP)
- Management Review Committee
- Fire Protection
- Public Outreach
- Equipment Reliability
- Response to Winter Ocean Storms
- Troubleshooting
- Error Prevention tools and Human Performance and Safety Training
- Component Mispositioning
- Single Point Vulnerabilities

- Employee Concerns and Differing Professional Opinion Program
- Containment Fan Cooler Reverse Rotation
- INPO (Institute of Nuclear Power Operations) Evaluations
- Natural Phenomena (earthquakes and tsunamis)
- DCPP Business Plan Support of Safety
- Quality Verification Organization, Performance Reports and Audits
- DCPP responses to the Fukushima accident
- Regular discussions with NRC Resident Inspectors

Many other items were reviewed in eleven fact-finding visits, inspections and tours at DCPP by individual Committee Members and consultants. DCISC Members visited representatives from the Attorney General's Office and California Energy Commission to provide updates on DCISC Activities, to discuss agency concerns and comments, and to provide copies of the Committee's Annual Report.

Public input and questions were received at the public meetings, and by telephone, letter and E-mail. Members of the public spoke at two of the three DCISC public meetings. The DCISC has responded to all of their questions, concerns and requests during this period.

Overall Conclusion

The DCISC concludes that PG&E operated DCPP safely during the period July 1, 2011 – June 30, 2012.

Specific Conclusions

Based on its activities, the DCISC has the following specific conclusions from the major review topics examined during the current reporting period (references to sections of this report are shown in parentheses). Conclusions are based on, but may vary from, information contained in Committee Fact-finding Reports in Exhibit D in Volume 2 of this report.

1. The DCISC received regular reports on the Nuclear Regulatory Commission (NRC) Performance Indicators, DCPP License Event Reports (LERs) sent to NRC, and NRC Inspection Reports and Enforcement Actions (violations) at each of its public meetings as well as copies of these documents throughout the reporting period. The DCISC investigated selected reports at its fact-finding meetings.

   The Committee notes that, although the NRC concluded that, "Overall, Diablo Canyon Power Plant, Units 1 and 2, operated in a manner that preserved public health and safety…," it identified 14 Non-cited Violations, one Severity Level III violation, but removed its Substantive Crosscutting Issue – a positive step for DCPP. The number of violations has decreased, and DCPP has initiated strong actions to improve its regulatory performance.

The NRC closed its Substantive Crosscutting Issue on Problem Evaluation, a positive step.

The DCISC plans to continue its review of DCPP NRC regulatory performance during the next reporting period. (Section 3.5)

2. DCPP appeared to have an effective plant Operations function with an improved equipment clearance program which corrected procedural and personnel weaknesses, good performance in component mispositionings, few "no solo" operators (who cannot work alone on shift due to health limitations), effective reactivity management, and strong Operational Decision Making. (4.1.3)
3. DCPP Maintenance has improved with an enhanced Troubleshooting Program, more effective Foreign Material Exclusion, good use of Safety Monitor to gauge the risk of station activities affecting components, and use of human performance tools. Maintenance challenges remain in procedure verification, maintenance rework, procedure quality, and electrical safety practices, which are all being addressed. The DCISC will continue to monitor these areas. (4.2.3)
4. DCPP's Engineering Program continued to be strong with substantial improvements in engineering evaluations (and NRC's removal of its Substantive Cross-cutting Issue), an effective new engineer hiring program, an improved relationship between engineers' union and plant management, and good progress in the Licensing Basis Verification Project. (4.3.3)
5. DCPP continues to emphasize human error reporting, evaluation, and corrective action when warranted. Human Performance continues to improve at DCPP. (4.4.3)
6. DCPP's nuclear safety culture appeared to be continuing in a satisfactory manner utilizing employee surveys, Employee Engagement Plans, implementation of a Nuclear Safety Culture Health Program measured by a Nuclear Safety Culture Monitoring Panel, and a reactor trip Root Cause Evaluation of nuclear safety culture causes, which resulted in corrective actions to help improve safety culture. (4.5.3)
7. DCPP's Performance Improvement Program continues to be strengthened with the Performance Improvement Action Plan, a multi-faceted plan to integrate the results of several assessments and reviews of the program. (4.6.3)
8. DCPP has had a satisfactory Emergency Preparedness Program in the past and has been improving it by clarifying roles and responsibilities of the Unified Dose Assessment Center (UDAC) to better incorporate San Luis Obispo County personnel and input, performing challenging drills and exercises, upgrading the Meteorological Information and Dose Assessment System (MIDAS), and continuing its strong coordination and involvement with San Luis Obispo County stakeholders. (4.7.3)
9. DCPP's Probabalistic Risk Assessment (PRA) Group is returning to full strength but still relies somewhat on outside contractors. The Group has successfully implemented Safety Monitor for risk-informed planning and analysis of outages. Its main effort now is the updating of the original DCPP Internal Events Probabilistic Risk Analysis (PRA), the Seismic PRA, and the Fire PRA. The DCISC will continue to closely monitor PRA activities at DCPP. (4.8.3)
10. DCPP has developed a satisfactory plan for addressing areas needing improvements

identified in the Institute for Nuclear Power Operations August 2011 evaluation. (4.9.3)

11. DCPP radioactivity releases this period, as in previous periods, were very small fractions of Technical Specification and regulatory limits. The DCPP Radiation Protection (RP) Group performed successfully in Outage 1R16 in working to keep the plant Collective Radiation Exposure of 118.8 Person-Rem below the plant goal of 126 Person-Rem. The replacement of the Reactor Vessel Closure Head and Integrated Assembly contributed 36.2 Person-Rem to the total exposure, compared to a planned exposure of 32.6 Person-Rem for the project. This total exposure, however, places DCPP in the industry fourth quartile, a position RP is working to improve. Performance in Outage 2R16 was significantly improved with total radiation dose of 29.7 person-Rem due primarily to reduced in-containment major equipment work. RP is taking a forward-looking approach to the next sets of outages to keep lowering the exposures. The DCISC will continue to monitor DCPP's progress in radiation protection. (4.10.3)
12. DCPP Quality Verification (QV) has been aggressive in identifying quality problems and adverse trends and following up on corrective actions. The department's reviews of station performance were detailed and thorough. QV's follow-up and communication of the status of station corrective actions appeared to be appropriate. The Site Status Report has been an effective tool for communicating the major quality issues to management in a concise manner. (4.11.3)
13. With the exception of a small leak in a fuel assembly (not identified in a previous cycle) DCPP's Unit 2 fuel has been performing defect-free since Cycle 14. DCPP's failed fuel procedure has been satisfactorily enhanced to better detect failed fuel. Unit 1 had been defect-free since Cycle 4. DCPP continues to study the feasibility of going to 24-month fuel cycles from the current 19-21-month cycles. The DCISC will follow this issue. (4.12.3)
14. DCPP has an aggressive Equipment Reliability Program, producing good results. DCPP maintained effective measures and took action to correct problem areas. DCPP's performance with respect to Critical Equipment Event Clock Resets had varied during the period from mid-2009 to mid-2011. In the first half of 2011 the number of such events was higher than desired, with system leaks being associated with many of them. In response, the station evaluated the events, determined causes, and implemented corrective actions on an ongoing basis to minimize the future occurrence of similar problems. (4.13.3)
15. DCPP's organizational effectiveness continues to be strong with effective implementation of the NRC Fatigue Management Rule and station Observation and Coaching Program. (4.14.3)
16. As in previous reporting periods, DCPP has dealt effectively with most equipment and system problems and is focused on improving system health. DCPP's Plant Health Committee has been improved to focus more on system/component health and meets more frequently, and overall system health has improved. The System Engineer/Component Program continues to be effective. (4.15.3)
17. Because of the San Onofre Generating Station (SONGS) Steam Generator (SG) tube failures of relatively new SGs, the DCISC reviewed the health of DCPP's relatively new SGs. DCPP's SG tubes had shown excellent inspection and test results in Outages 2R15 and 1R16 and are

considered to be in excellent health. DCPP's plant and SGs were designed and fabricated by a different manufacturer than SONGS. Although in excellent health, the DCISC will monitor SG inspection results during future outages. (4.16.3)

18. DCPP's Outage 1R17 preparation and performance were good with an effective Outage Safety Plan, orderly and effective control of work by the Outage Coordination Center, appropriate use of personal protective equipment, and meeting outage safety goals. (4.17.3)
19. DCPP appears to have an effective program for maintaining its safety/security interface. The DCISC will follow up on this topic again during the next reporting period. (4.18.3)
20. DCPP effectively identified, evaluated, and corrected the loose nuts found on three Independent Spent Fuel Storage Installation (ISFSI) cask seismic hold-down studs. Evaluation showed that the casks would be stable even with the nuts being loose. (4.19.3)
21. DCPP is in a unique seismic and tsunami area with the potential for large earthquakes, and its design basis takes this into account. Because of this and recent discoveries of additional faults nearby, PG&E has underway a significant research effort to map the ocean floor around DCPP for earthquake faults. The DCISC notes that little progress appears to have been made during the period late-2010 – mid-2012 regarding protecting personnel in office spaces from moving objects that could cause personnel injury and/or impede response to an emergency in the event of an earthquake but notes that DCPP has initiated an augmented effort to address this issue. Performance appears satisfactory in the area of DCPP's Seismically Induced Systems Interaction Housekeeping Program. The DCISC considers this conclusion safety significant and has developed a recommendation for corrective action (see Recommendation R12-1 below.) (4.20.3)
22. Conversion to an NRC fire-regulation regime under National Fire Protection Association Standard NFPA 805 is a very extensive and complex activity. Based on this review, DCPP appears to be adequately implementing this program. In fact, DCPP is one of the leading plants nationwide in this conversion work. The DCISC will undertake a further review of this area when the plant has identified the important proposed plant modifications. (4.21.3)
23. DCPP's training and development program appeared satisfactory based on observation of a licensed operator training class, observation of a Training Committee meeting, and the root cause analysis and corrective actions for failures of some operators to pass the NRC license exam. (4.22.3)
24. During this DCISC reporting period, the DCPP License Renewal Project remained on hold for completion in 2015. The DCISC will resume its review upon the restart of Licensing Renewal activities. (4.23.3)
25. The review by the State of California of a potential change to the current once through cooling system for DCPP (jointly with the San Onofre Generating Station) is progressing with a request for a technical review proposal submitted to six bidders and a project award date of mid-March 2012. The schedule calls for completion of the study in 2014 or 2015. Because a conversion to closed cooling would have a number of important impacts on plant safety, the DCISC will continue to follow this issue. (4.24.3)
26. The DCPP Fukushima Project organization, plans and accomplishments to-date for

responding to regulatory orders and industry guidance are extensive and impressive. The DCISC will follow up periodically to assess DCPP's progress. (4.25.3)

Concerns:

Concerns are items which, while not necessarily warranting recommendations, the DCISC believes need continuing Committee review and improvement or attention by PG&E. Concerns are monitored more actively and at a higher-level by the Committee than other items. The DCISC concerns are as follows:

1. Although the studies examining the possible installation of a Once Through Cooling capability for DCPP's main condensers are still in progress, the DCISC expresses a significant initial concern regarding the potential impact that such a modification would have on nuclear plant safety and reliability. (4.24)
2. DCPP has shown little or no progress in securing its tall furniture for earthquake loads, forming potential personnel hazards throughout the plant. (4.20)
3. Though DCPP is performing well in implementing Fukushima initiatives, the significant number of changes will be challenging to learn, implement, and operate effectively. (4.25)

Recommendations

DCISC recommendations are listed below along with references to sections where recommendations originate. Recommendations are based on, but may vary from, information contained in Committee Fact-finding Reports in Exhibit D, Volume II of this report.

Recommendation R12-1

DCPP should assign a manager with the authority and inclination to develop the DCPP site office and workspace seismic safety policy and devote the resources needed to implement necessary changes to avoid harm to personnel from a seismic event.

Basis for Recommendation:

The DCISC has observed numerous examples of tall office and workspace furniture, which, unanchored or incorrectly anchored, creates a threat to personnel safety during earthquakes. Inattention to personnel seismic safety appears to be pervasive around the plant, including the existence of clear hazards in the Control Room Shift Manager's office and briefing room. PG&E has a corporate policy for resolving this type of hazard. Because some existing anchors are improperly installed (for example using screws into dry wall in the I&C Maintenance Building), all existing anchors must be considered to be suspect and verified to be appropriately installed. DCPP has stated that they will develop a plant policy in accordance with the corporate policy, but there has been little progress over the past several years. DCPP has now initiated a Notification in the Corrective Action Program, which, if tracked appropriately, should spur on action. The DCISC believes it necessary to initiate this new second recommendation to emphasize its concern.

The DCISC had a similar recommendation in the previous reporting period as follows:

Recommendation R11-4:

DCPP needs to develop and implement a schedule for taking the necessary actions to brace furniture appropriately throughout the station, and to better educate plant staff about seismic hazards and seismic safety. (4.20.3)

Basis for Recommendation:

Not much progress in seismically securing heavy furniture appears to have been made during 2011. Some aspects of the design and testing room for the Auxiliary Building Control Board Replacement Project, Room 206 in Building 102, need to be more in keeping with seismic standards. Specifically, several tall shelving units containing boxes were not braced to the wall and other tall stands/bookcases were freestanding and away from the walls of the room. One desk had a large number of heavy boxes stored at a high elevation above the desk. The file cabinets in the Shift Manager's office, which had been noted not to have been braced during the May 2010 Fact-finding Visit, were still in the same condition. While these file cabinets may not be tall enough to formally require seismic bracing, they are very heavy and are located a few feet from a large table, so if they were to fall over during an earthquake they would pin operators against the table and potentially cause serious injuries.

DCPP Response:

PG&E agrees with the DCISC that the safety of Diablo Canyon Plant staff, including from seismic threats, is of paramount importance.

It should be noted that PG&E maintains high levels of seismic awareness and control of materials within the power plant itself via the Seismically Induced System Interaction Program. The concerns raised by the Committee revolve around similar concerns in the context of office environments.

PG&E's standard to address this concern is Utility Procedure: RE-2002P-01, "Bracing Cabinets and Storage Racks Procedure." Diablo Canyon is committed to comply with this standard.

The examples noted by the Committee in a project work area also do not meet the Diablo Canyon standards for general area housekeeping. This deviation has been entered into, and will be addressed by, the Corrective Action Program.

With regard to the more general concern of preventing office furniture from tipping during a seismic event, Diablo Canyon believes that this concern has been addressed by an alternative to bracing. The file cabinets that were observed in the Control Room briefing area (as well as the remodeled floors in the Administration Building) were procured with counterweights installed in the bases of the units. The weights are sufficient to assure a low center of gravity that they will not tip. They comply with the requirements of the above-mentioned procedure without additional bracing.

One of the five station initiatives identified in the DCPP 2012 – 2015 Operating Plan, the Site Modernization Initiative, assures the station remains focused on a number of areas including the concerns identified in this recommendation. It provides a schedule for assuring that all Diablo Canyon-related facilities are upgraded to meet current standards.

The DCISC accepted this response with continued monitoring; however, little has been accomplished, hence this latest recommendation. It is noteworthy that DCPP has initiated a Corrective Action Program Notification to identify the problem, correct it, and track its progress.

Finally, the DCISC appreciates PG&E's cooperation in arranging and providing information for DCISC fact-finding meetings and tours at DCPP and for the high quality and professional presentations at DCISC public meetings.

22nd Annual Report, Volume 1 Table of Contents

1.0 Introduction

1.1 Formation of the Independent Safety Committee

1.2 Appointment of Committee Members

1.3 DCISC public meetings and Plant Tours

1.4 Committee Member Site Inspection Tours and Fact-finding meetings

1.4.1 Inspections and Visits by Robert J. Budnitz

1.4.2 Inspections and Visits by Peter Lam

1.4.3 Inspections and Visits by Per F. Peterson

1.4.4 Annual Tours of DCPP by DCISC Members and Members of the Public During the Period July 1, 2011 – June 30, 2012

1.5 Visits by DCISC Members to California State Agencies

1.6 Documents Provided to the DCISC

1.7 Documentation of DCISC Activities

2.0 Public Meetings

2.1 Public Meetings

3.0 NRC Assessments and Issues

3.1 Summary of Licensee Event Reports

3.1.1 Discussion and Required LERs

3.1.2 Special Report LERs

3.1.3 Voluntary LERs

3.1.4 Reactor Trips Reported in LERs

3.1.5 Other Reports to NRC

3.1.5 LER Trends

3.1.6 DCISC Evaluation and Conclusions

3.2 NRC Inspection Reports and Enforcement Actions

3.2.1 Discussion

3.2.2 DCISC Review of Trends of Non-Cited Violations and NRC-Identified Issues

3.2.3 DCISC Evaluation and Conclusions

3.3 NRC Performance Evaluations

3.4 DCISC Meeting with NRC Resident Inspector

3.5 DCISC Evaluation and Conclusions

4.0 Summary of Major DCISC Review Topics

4.1 Conduct of Operations

4.1.1 Overview and Previous Activities

4.1.2 Current Period Activities

4.1.3 Conclusions and Recommendations

4.2 Conduct of Maintenance

4.2.1 Overview and Previous Activities

4.2.2 Current Period Activities

4.2.3 Conclusions and Recommendations

4.3 Engineering Program

4.3.1 Overview and Previous Activities

4.3.2 Current Period Activities

4.3.3 Conclusions and Recommendations

4.4 Human Performance

4.4.1 Overview and Previous Activities

4.4.2 Current Period Activities

4.4.3 Conclusions and Recommendations

4.5 Nuclear Safety Culture and Safety Conscious Work Environment

4.5.1 Overview and Previous Activities

4.5.2 Current Period Activities

4.5.3 Conclusions and Recommendations

4.6 Performance Improvement Programs

4.6.1 Overview and Previous Activities

4.6.2 Current Period Activities

4.6.3 Conclusions and Recommendations

4.7 Emergency Preparedness

4.7.1 Overview and Previous Activities

4.7.2 Current Period Activities

4.7.3 Conclusions and Recommendations

4.8 Risk Assessment and Management

4.8.1 Overview and Previous Activities

4.8.2 Current Period Activities

4.8.3 Conclusions and Recommendations

4.9 Nuclear Safety Oversight and Review

4.9.1 Overview and Previous Activities

4.9.2 Current Period Activities

4.9.3 Conclusions and Recommendations

4.10 Radiation Protection

4.10.1 Overview and Previous Activities

4.10.2 Current Period Activities

4.10.3 Conclusions and Recommendations

4.11 Quality Programs

4.11.1 Overview and Previous Activities

4.11.2 Current Period Activities

4.11.3 Conclusions and Recommendations

4.12 Nuclear Fuel Performance/Fuel Cycles/Storage

4.12.1 Overview and Previous Activities

4.12.2 Current Period Activities

4.12.3 Conclusions and Recommendations

4.13 Equipment Reliability

4.13.1 Overview and Previous Activities

4.13.2 Current Period Activities

4.13.3 Conclusions and Recommendations

4.14 Organizational Effectiveness and Development

4.14.1 Overview and Previous Activities

4.14.2 Current Period Activities

4.14.3 Conclusions and Recommendations

4.15 System and Equipment Performance/Problems

4.15.1 Overview and Previous Activities

4.15.2 Current Period Activities

4.15.3 Conclusions and Recommendations

4.16 Steam Generator Performance

4.16.1 Overview and Previous Activities

4.16.2 Current Period Activities

4.16.3 Conclusions and Recommendations

4.17 Outage Management

4.17.1 Overview and Previous Activities

4.17.2 Current Period Activities

4.17.3 Conclusions and Recommendations

4.18 Security

4.18.1 Overview and Previous Activities

4.18.2 Current Period Activities

4.18.3 Conclusions and Recommendations

4.19 Independent Spent Fuel Storage Installation

4.19.1 Overview and Previous Activities

4.19.2 Current Period Activities

4.19.3 Conclusions and Recommendations

4.20 Earthquakes and Tsunamis

4.20.1 Overview and Previous Activities

4.20.2 Current Period Activities

4.20.3 Conclusions and Recommendations

4.21 Fire Protection

4.21.1 Overview and Previous Activities

4.21.2 Current Period Activities

4.21.3 Conclusions and Recommendations

4.22 Learning and Development Programs

4.22.1 Overview and Previous Activities

4.22.2 Current Period Activities

4.22.3 Conclusions and Recommendations

4.23 License Renewal

4.23.1 Overview and Previous Activities

4.23.2 Current Period Activities

4.23.3 Conclusions and Recommendations

4.24 Closed Loop Cooling

4.24.1 Overview and Previous Activities

4.24.2 Current Period Activities

4.24.3 Conclusions and Recommendations

4.25 Beyond Design Basis Accidents/Fukushima Lessons

4.25.1 Overview and Previous Activities

4.25.2 Current Period Activities

4.25.3 Conclusions and Recommendations

5.0 DCPP Performance Indicators

6.0 DCISC Open Items List

7.0 PG&E Actions on Previous DCISC Reporting Period Recommendations

8.0 Public Outreach

8.1 Telephone Calls and E-mails Received by DCISC

8.2 DCISC Internet – World Wide Web Activity

8.3 Comments Received at DCISC public meetings

8.4 DCISC Public Tours of DCPP

8.5 DCISC Evaluation

9.0 PG&E Response to DCISC Recommendations

22nd Annual Report, Volume 2, Table of Contents – Exhibits

A. Documents Received By the DCISC

B. DCISC Public Meeting Notices, Agendas and Reports

B.1 Notice of October 11–12, 2011 Public Meetings

B.2 Agenda for October 11–12, 2011 Public Meetings

B.3 Minutes of October 11–12, 2011 Public Meetings

B.4 Notice of February 8–9, 2012 Public Meetings

B.5 Agenda for February 8–9, 2012 Public Meetings

B.6 Minutes of February 8–9, 2012 Public Meetings

B.7 Notice of June 19–20, 2012 Public Meetings

B.8 Agenda for June 19–20, 2012 Public Meetings

B.9 Minutes of June 19–20, 2012 Public Meetings

B.10 DCISC Service Mailing List

C. Diablo Canyon Operations

1.0 PG&E/DCPP Organization

2.0 Summary of Diablo Canyon Operations

2.0.1 Operating Capacity Factor

2.0.2 Refueling Outages

2.0.3 Collective Radiation Dose Equivalent Exposure

2.0.4 Unplanned ReactorTrips

2.0.5 Unplanned Safety System Actuations

2.0.6 Chemistry Effectiveness Indicator

2.0.7 Fuel Reliability

D. DCISC Reports on Fact-finding Meetings

D.1 Report on Fact Finding Meeting at DCPP on July 12–13, 2011

1.0 Summary

2.0 Introduction

3.1 Outage Clearance Performance

3.2 NRC Senior Resident Inspector Concerns

3.3 NRC Fatigue Management Implementation

3.4 Annual Radiological Release Reports

3.5 Single Point Vulnerabilities

3.6 Unit 2 Reactor Manual Trip

3.7 Time Critical Operator Actions

3.8 Component Cooling Water System Review

3.9 DCISC Member Meet with DCPP Officer

3.10 Component Mispositioning

4.0 Conclusions

5.0 Recommendations

6.0 References

D.2 Report on Fact Finding Meeting at DCPP on August 16–17, 2011

1.0 Summary

2.0 Introduction

3.1 Tsunami and Seismic Update

3.2 Plant Health Committee

3.3 Santa Barbara County Emergency Planning

3.4 NFPA 805 Implementation Progress

3.5 Licensed Operator Continuing Training

3.6 Equipment Reliability

3.7 Training Oversight Committee

3.8 2010 Annual Radiological Release and Environmental Monitoring Reports

3.9 Second Quarter 2011 Quality Verification Site Status Report

3.10 Premier Survey

3.11 Bob Budnitz Meeting with Ken Peters, Vice-President of Engineering

3.12 Operator "No Solo" Status

3.13 Reactivity Management

4.0 Conclusions

5.0 Recommendations

6.0 References

D.3 Report on Fact Finding Meeting at DCPP on September 7–8, 2011

1.0 Summary

2.0 Introduction

3.1 Operations Use of Probabilistic Risk Assessment/Safety Monitor

3.2 Critical Equipment Clock Resets

3.3 Summary of Benchmarking Activities

3.4 Auxiliary Feedwater System Review

3.5 EDG System Review

3.6 Containment Inspections

3.7 Large Transformer Update

3.8 DCISC Member Meet with DCPP Officer

3.9 Problem Evaluation Action Plan and Engineering Staffing

3.10 Status of Engineering Organization

3.11 Update on Fukushima Actions

3.12 Meeting with NRC Senior Resident Inspector

3.13 Quality Verification Assessment of Primary Equipment and Support Load Combinations Regarding Seismicity

3.14 Status of Performance Improvement Action Plan

4.0 Conclusions

5.0 Recommendations

6.0 References

D.4 Report on Fact-finding Meeting at DCPP November 15 –1 6, 2011

1.0 Summary

2.0 Introduction

3.1 Meeting with NRC Senior Resident Inspector

3.2 Maintenance Services

3.3 Self-Assessment Program

3.4 Licensing Basis Verification Project

3.5 Stranded Plant Procedure

3.6 Auxiliary Feedwater Pumps

3.7 Nuclear Fuel

3.8 DCISC Member Meeting with Site Vice-President

4.0 Conclusions

5.0 Recommendations

6.0 References

D.5 Report on Fact Finding Meeting at DCPP on December 13–15, 2011

1.0 Summary

2.0 Introduction

3.1 Machine Vibration Monitoring

3.2 Three Losses of 230kV during Outage 2R16

3.3 Compressed Air System

3.4 Update on the DCPP Responses and Actions on the Fukushima Accident

3.5 Engineering Rigor Action Plan Status

3.6 Observation and Coaching Program

3.7 Trouble-Shooting Program

3.8 EPA Closed Cooling Update

3.9 DCPP Progress in Addressing INPO Evaluation Items

3.10 Experience with the New Reactor Vessel Head Assembly

3.11 Safety–Security Interface Process

3.12 DCISC Member Meeting with Station Director

4.0 Conclusions

5.0 Recommendations

6.0 References

D.6 Report on Fact Finding Meeting at DCPP on January 10 – 11, 2012

1.0 Summary

2.0 Introduction

3.1 Status of Backlogs/Trends for Revisions to Operations, Maintenance, and Engineering Procedures

3.2 Nuclear Safety Culture

3.3 Quality Verification's Assessment of Station Operation and Most Recent Quality Performance Assessment Report

3.4 Meeting with NRC Resident Inspector

3.5 Foreign Material Exclusion Issues/Trends

3.6 Operation of the Turbine Driven Auxiliary Feedwater Pump during Station Blackout Conditions

3.7 Results of Operator Licensing Examinations in 2011

3.8 2012 Operating Plan and 2011 Performance

3.9 On-line Maintenance and Risk Management

3.10 DCISC Member Meeting with Director of Site Services

4.0 Conclusions

5.0 Recommendations

6.0 References

D.7 Report on Fact Finding Meeting at DCPP on March 13 – 14, 2012

1.0 Summary

2.0 Introduction

3.1 Trends of NRC Non-Cited Violations and Allegations

3.2 Unified Dose Assessment Center Process Interface Weakness

3.3 Outage 1R17 Safety Plan

3.4 Vital DC Power Crosstie

3.5 Meet with NRC Resident Inspector

3.6 Operational Decision-Making

3.7 Eagle 21 Replacement Project

3.8 Containment Fan Cooler Units Anti-Rotation Modification Performance

3.9 Control Room Ventilation System

3.10 Human Performance Line Ownership Action Plan

3.11 Emergency Response Organization Drill

3.12 DCISC Member Meeting with Station Director

4.0 Conclusions

5.0 Recommendations

6.0 References

D.8 Report on Fact Finding Meeting at DCPP on April 3 – 4, 2012

1.0 Summary

2.0 Introduction

3.1 Emergency Preparedness Support to External Organizations

3.2 NRC P.1(c) Substantive Cross-cutting Issue

3.3 Non-outage Human Error Rate

3.4 NFPA 805 Update

3.5 Probabilistic Risk Assessment Group Update

3.6 Loose ISFSI Hold-down Bolts

3.7 Operations "Block and Tackle" Update

3.8 Observe Plant Health Committee

3.9 Performance Improvement Station Initiative

3.10 Meet New Chief Nuclear Officer, Ed Halpin

3.11 Differing Professional Opinion Program

3.12 DCISC Member Meet with Site VP

4.0 Conclusions

5.0 Recommendations

6.0 References

D.9 Report on Fact Finding Meeting at DCPP on May 22–23 2012

1.0 Summary

2.0 Introduction

3.1 MIDAS Update

3.2 Electrical Clearance Apparent Cause Evaluation

3.3 Health of DCPP Steam Generators

3.4 Outage 1R17 Plant Tour

3.5 Outage Coordination Center Meeting

3.6 High Pressure Injection System Review

3.7 Office & Workspace Seismic Safety Update

3.8 Fukushima Update

3.9 DCISC Open Items List

3.10 Component Misposition Prevention Team

3.11 DCISC Member Meet with Site VP

4.0 Conclusions

5.0 Recommendations

6.0 References

E. Record of DCISC Tours of DCPP

F. DCISC Open Items List

G. DCISC Public Contacts

G.1 DCISC Telephone/Correspondence Log (PDF)

G.2 DCISC Correspondence (PDF)

G.3 Comments Received at Public Meetings

H. Past DCISC Recommendations and PG&E Responses

I. DCISC Informational Brochure (PDF)

J. Glossary of Terms

22nd Annual Report, Pacific Gas and Electric's Response to the Diablo Canyon Independent Safety Committee Twenty-second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations - July 1, 2011, to June 30, 2012

January 8, 2013

PG&E Letter ISC-13-001

Dr. Peter Lam
c/o The Diablo Canyon Independent Safety Committee
857 Cass Street, Suite D
Monterey, CA 93940

Response to the Diablo Canyon Independent Safety Committee Twenty-second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations – July 1, 2011, to June 30, 2012

Dear Dr. Lam:

Pacific Gas and Electric Company's (PG&E) response to the Diablo Canyon Independent Safety Committee's (DCISC) Twenty-second Annual Report on the Safety of Diablo Canyon Operations for the period of July 1, 2011, to June 30, 2012, is provided in the enclosure to this letter.

We are pleased that the DCISC has once again concluded that PG&E operated the Diablo Canyon Power Plant (DCPP) safely during the report period. As you are aware, operating the plant conservatively to protect public health and safety is our highest priority, and we will continue to ensure that we fulfill this commitment.

As discussed in the enclosure, we have reviewed and are taking actions to address your recommendation. We welcome the Committee's recommendations, and believe that addressing them will further contribute to the continued safe operation of DCPP.

Sincerely,
Edward D. Halpin

pwb/4097
Enclosure

cc/enc:

Robert Budnitz

David C. Linnen

Per F. Peterson

Ferman Wardell

Robert R. Wellington

Recommendations:

R12-1

DCPP should assign a manager with the authority and inclination to develop the DCPP site office and workspace seismic safety policy and devote the resources needed to implement necessary changes to avoid harm to personnel from a seismic event.

PG&E agrees with the DCISC that the safety of Diablo Canyon Plant staff, including from seismic threats, is a critical aspect of the continued safe operation of the facility.

As noted in the Basis for this Recommendation, the specific issues identified by the Committee have been entered into the station's Corrective Action Program (SAPN 50484562) which will track them to completion.

Additional leadership attention is being applied to assure that actions are taken to address the broader issue of seismic safety concerns not covered by the station's Seismically Induced System Interaction Program. The Station's senior leadership team will oversee these issues related to site facilities. Progress will be tracked via the Corrective Action Program and action plans.

22nd Annual Report by the Diablo Canyon Independent Safety Committee (DCISC), July 1, 2011 – June 30, 2012
Preface | Executive Summary
Volume 1 TOC | Volume 2 TOC | PG&E Response | Contact | DCISC Home Page

For more information about DCISC contact:

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Send E-mail to: dcsafety@dcisc.org

1.0 Introduction, DCISC 21st Annual Report - July 1, 2010 thru June 30, 2011

1.1 Formation of the Independent Safety Committee

1.2 Appointment of Committee Members

1.3 DCISC public meetings and Plant Tours

1.4 Committee Member Site Inspection Tours and Fact-finding meetings

1.5 Visits by DCISC Members to California State Agencies

1.6 Documents Provided to the DCISC

1.7 Documentation of DCISC Activities

22nd Annual Report, Volume 1, Section 2.0, Public Meetings

The DCISC held three two-day public meetings in the vicinity of the plant and three public tours of Diablo Canyon Power Plant (DCPP) as part of its public outreach program.

2.1 Public Meetings

During the current reporting period July 1, 2011 - June 30, 2012 the Diablo Canyon Independent Safety Committee (DCISC) heard presentations from PG&E on DCPP activities and from Committee Members and Consultants on Committee activities and provided the opportunity for public input at the following DCISC public meetings:

October 5–6, 2011, Embassy Suites, San Luis Obispo, CA

February 8–9, 2012, Avila Lighthouse Suites. Avila Beach, CA

June 19–20, 2012, Avila Lighthouse Suites, Avila Beach, CA

Minutes of the meetings are located in this report as described below. Copies of the Committee's Annual Reports are located in the Library Reference Department at the California Polytechnic Institute in San Luis Obispo, California. Each meeting is streamed live on the internet on www.slospan.org and shown at various later times on one of the local public access television channels.

2.1.1 October 5–6, 2011 Public Meetings

A Notice of Meeting (see Volume 2, Exhibit B.1) was published in the local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee's service list (see Volume 2, Exhibit B.10). The meeting agenda is shown in Volume 2, Exhibit B.2, and minutes of the meeting are included in Volume 2, Exhibit B.3.

A public tour of DCPP was conducted during the October 5, 2011 Public Meeting. Members of the public were given the opportunity to see much of the plant and hold discussions with DCISC Members and Consultants as well as with PG&E personnel. The public tour is described in Volume 1, Section 8.

2.1.2 February 8–9, 2012 Public Meetings

A Notice of Meeting (see Volume 2, Exhibit B.4) was published in the local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee's service list (see Volume 2, Exhibit B.10). The meeting agenda is shown in Volume 2, Exhibit B.5, and minutes of the meeting are included in Volume 2, Exhibit B.6.

A public tour of DCPP was conducted during the February 8, 2012 Public Meeting. Members of the public were given the opportunity to see much of the plant and hold discussions with DSICS Members and Consultants as well as with PG&E personnel. The public tour is described in Volume 1, Section 8.

2.1.3 June 19–10, 2012 Public Meetings

A Notice of Meeting (see Volume 2, Exhibit B.7) was published in the local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee's service list (see Volume 2, Exhibit B.10). The meeting agenda is shown in Volume 2, Exhibit B.8, and minutes of the meeting are included in Volume 2, Exhibit B.9.

A public tour of DCPP was conducted during the June 20, 2012 Public Meeting. Members of the public were given the opportunity to see much of the plant and hold discussions with DSICS Members and Consultants as well as with PG&E personnel. The public tour is described in Volume 1, Section 8.

22nd Annual Report, Volume 1, Section 3.0, Nuclear Regulatory Commission (NRC) Assessments and Issues

This section of the DCISC Annual Report describes the DCISC review of PG&E's interface with the US Nuclear Regulatory Commission (NRC). The NRC is the Federal regulatory entity charged with assuring the safety and security of domestic nuclear power plants; by agreement with the State, NRC also performs these functions for the State of California. As regulator, the NRC employs two full-time Resident Inspectors at the plant (and other specialist inspectors at its US headquarters and regional locations), performs and reports on its inspections at DCPP on matters of nuclear safety and security, investigates significant plant events, maintains a set of plant performance indicators, and performs an annual assessment of DCPP regulatory performance which it reports at a Public Meeting in the plant vicinity. The NRC also must approve significant changes, additions and deletions to plant designs, procedures and Technical Specifications.

PG&E is required to submit routine, periodic reports to the NRC on selected activities and submit special reports when triggered by off-normal plant incidents, events or occurrences.

The DCISC monitors the aforementioned activities and resulting documents in the following ways: (1) receipt and review of correspondence and reports between PG&E and the NRC, (2) on-site review (at Fact-finding meetings at the plant) of selected NRC inspections, investigations and reports, (3) meetings with the NRC Resident Inspectors, and (4) presentations by PG&E at DCISC public meetings on NRC matters.

3.1 Summary of License Event Reports

3.1.1 Discussion and Required LERs

License Event Reports (LERs) are reports required of the nuclear power plant licensee by Nuclear Regulatory Commission (NRC) regulations when an off-normal event occurs. These events include operations or conditions outside of or in violation of station Technical Specifications (TS), procedures or NRC regulations. Events are to be promptly reported by telephone and by written report within 60 days of the event or initial knowledge of the event. Voluntary LERs are submitted for events which NRC should know about or are significant but are not specifically required by NRC. Each of these reports is reviewed in DCISC public meetings and is mailed to each DCISC Member and Consultant.

The LER is the responsibility of the Licensee, in this case PG&E. Therefore, it is the Licensee who makes the determination of the level of risk or significance to safety of the event. The NRC has a Significance Determination Process which sets forth its rules for making these determinations; however, events may be complex or may not easily fit the rules. The NRC may concur or it can question or challenge the Licensee's determination. Discussions or meetings may be required to

reach understandings between the parties.

Six LERs and seven revised LERs were reported during this time period as follows:

1. LER 1-2011-004-00 was issued June 30, 2011 to report emergency Diesel generator automatic actuation upon a 230kV startup power isolation due to maintenance activities on a relay panel.
2. LER 1-2011-005-00 was issued July 22, 2011 to report emergency Diesel generator automatic actuations upon a 230kV startup power isolation due to electrical maintenance testing activities.
3. LER 102911-002-01 (revision) was issued January 27, 2012 to report the cause and corrective actions of making a mode transition with an inoperable turbine-driven auxiliary feedwater pump.
4. LER 1-2011-002-01 and LER 1-2011-002-02 (revisions) were issued October 24, 2011 and December 16, 2011, respectively, to report additional corrective actions being taken regarding the loss of auxiliary building ventilation system and to clarify that only Unit 2 experienced a loss of the system.
5. LER 1-2011-004-01 (revision) was issued November 8, 2011 to report cause and corrective actions taken regarding the emergency Diesel generator automatic actuation upon a 230kV startup power isolation due to maintenance activities on a relay panel.
6. LER 2011-005-01 (revision) was issued on November 8, 2011 to report cause and corrective actions taken regarding the emergency Diesel generator automatic actuations upon 230kV startup power isolation due to electrical maintenance testing activities.
7. LER 1-2011-006-00 and LER 1-2011-006-01 (revision) were issued October 28, 2011 and January 27, 2012, respectively, to report the erroneous removal of a blank flange from the control room ventilation system during the maintenance of the ventilation system inlet dampers.
8. LER 1-2011-007-00 and LER 1-2011-007-01 (revision) were issued November 14, 2011 and January 30, 2012, respectively, to report an inadequately performed 2005 control room ventilation system test.
9. LER 2-2011-008-00 was issued January 3, 2012 to report discovery of a control room ventilation system design flaw.
10. LER 1-2012-002-00 was issued May 7, 2012 to report failure to initiate a plant shutdown.

3.1.2. Special Report LERs

There were no special LERs submitted by DCPP during the reporting period.

3.1.3 Voluntary LERs

There was one voluntary LER submitted by DCPP during this period. LER 1-2012-001-00 was voluntarily issued March 9, 2012 to report three loose anchor stud nuts on the spent fuel storage

casks due to inadequate cleanliness prior to final tensioning. There were no safety concerns with the loose stud nuts.

3.1.4 Reactor Trips Reported in LERs

During the reporting period, there were no reactor trips to be reported.

In the past five DCISC reporting periods the following numbers of trips have occurred:

	Number of Trips	
Reporting Period	Automatic	Manual
2007/2008	0	1
2008/2009	1	1
2009/2010	0	0
2010/2011	0	1
2011/2012	0	0

The number of reactor trips continues to be commendably low.

3.1.5 Other Reports to NRC

There were no other significant reports made to NRC.

3.1.6 LER Trends

The following table depicts the LER history for DCPP for the last five DCISC reporting periods:

Time Period	Number of LERs Submitted	
7/1/07 – 6/30/08	3	(plus 0 voluntary LERs)
7/1/08 – 6/30/09	5	(plus 0 voluntary LERs)
7/1/09 – 6/30/10	7	(plus 0 voluntary LERs)
7/1/10 – 6/30/11	10	(plus 0 voluntary LERs)
7/1/11 – 6/30/12	6	(plus one voluntary LERs)

During the current reporting period, the reported events were reported within the requirement of within 60 days of event discovery. All of the seven LERs were self-identified by PG&E.

The DCISC notes that the number of LERs had been increasing substantially over the previous three periods but has decreased in this current period. The DCISC will continue to monitor both the number and significance of DCPP LERs.

3.1.7 DCISC Evaluation and Conclusions

The DCISC recognizes that events will occur in any large complex system. The goal is to

identify them and understand them, and take action to minimize the consequences and likelihood of any significant increase in risk. The design basis for nuclear power plants involves defense-in-depth. This recognizes that in real systems, unanticipated events will occur, so protective systems are designed to provide protection even if systems do not always perform as anticipated. For this reason, it is important to investigate events and to share information about them with other plants.

Each of the six Licensee Event Reports was investigated by DCPP to determine the plant conditions before and during the event, background and detailed event description, root cause and contributory causes, immediate and preventive corrective action, and previous LERs on identical or similar problems. No LER was significant enough to seriously affect operational safety. No significant cause code trends were observed. LER investigation reports were submitted to all DCISC Members and Consultants for review; DCPP reported on each LER at DCISC public meetings. The DCISC investigated selected LERs at its fact-finding meetings at the plant.

DCPP LER investigations appeared adequate and corrective actions appeared to be appropriate for all LER events. There appears to be little or no recurrence of reportable events. The DCISC will continue to monitor LERs, their causes, and DCPP's actions to correct and prevent them in future fact-finding and public meetings.

The number of DCPP License Event Reports (LERs) had increased significantly during the 2008–2009 and 2009–2010 reporting periods in which there were five and seven LERs, respectively, and the 2010-2011 period with ten LERs. The DCISC considered this to be cause for concern, but now sees a reduction in the number to six. Though a reduction, it is still higher than desired. The DCISC will continue to monitor DCPP LERs.

3.2 NRC Inspection Reports and Enforcement Actions

3.2.1 Discussion

The NRC performs inspections at each nuclear power plant. The purpose is to determine how well the plant personnel are implementing and following NRC regulations, plant Technical Specifications, and other requirements, procedures, or commitments. Generally, better regulatory performance results in fewer inspections. NRC meets with the nuclear plant operator twice per year to review plant safety performance under the NRC Reactor Oversight Process (see Section 3.4 below). These meetings are usually public.

Inspections are performed by the plant Resident NRC Inspectors, inspectors from the NRC Region Office, experts from other NRC organizations, and NRC consultants. The bulk of inspections are routine, announced visits focusing on one or more specific areas of operation such asAs Low As reasonably Achievable (ALARA) radiation dose minimization program, maintenance, chemistry, security, operator examinations, or corrective actions. Special inspections are often made for investigation into previous events affecting plant safety and into special programs, such as NRC Generic Letter 89-10, Testing ofMotor-Operated Valves.

Each inspection usually concludes with an exit meeting with licensee personnel, followed by a written inspection report. Inspections can result in the following categories of findings:

- "Unresolved Items" are items for which information is not yet available or awaiting licensee response or action.
- Individual "strengths" are used to point out good practices and weaknesses for the licensee's attention for improvement and/or to prevent future problems.
- "Deviations" are variances from NRC regulations and/or licensee procedures or other requirements or commitments which are not as severe as outright violations.
- "Concerns", typically including more than one individual weakness in a single area, are to alert the licensee to situations which could become violations if not corrected.
- "Non-cited Violations" are violations for which NRC credits the licensee for identifying the violation and/or for prompt, effective corrective action completed before or taken during the inspection. These are usually non-recurring, non-safety-significant items.
- "Violations" of NRC regulations, plant Technical Specifications, and other commitments, procedures, etc. require a formal response and corrective action. Violations carry four severity levels as described in Section 3.3, NRC Enforcement Actions.

Fewer violations generally mean better performance. Some in the industry think having a significant number of non-cited violations indicates an effective, aggressive regulatory program, meaning the licensee quickly finds and corrects its own problems/violations rather than the NRC finding them.

NRC considers items not in compliance with its regulations or with the licensee's commitments or procedures to be violations. Corrective action is required for all violations. NRC identifies four severity levels for violations.

Level I is the most severe, representing the most significant regulatory concern which usually involves actual or high potential impact on the safety of the public. Level IV violations are more than minor concern and should be corrected so as to prevent a more serious concern. Civil penalties (monetary fines) are usually imposed for Level I and II violations, are considered for Level III, and usually not imposed for Level IV violations. Most low-level violations are reported as Non-cited Violations provided the licensee places the violation into its corrective action program and provided the violation is not willful or repetitive. NRC has increased its scrutiny of corrective action programs. The categorization of violations in this report follows NRC's actual classification in each notice of a violation.

NRC issued the following inspection reports:

1. NRC Resident Integrated Inspection (IR 2011-003, 8/10/11) with the following six Non-cited Violations (NCVs):

    a. Green NCV: Inadequate fire hazard evaluations

    b. Green NCV: Failure to follow procedures for testing HEPA ventilation units

    c. Green NCV: Less than adequate evaluation of new security modifications

   d. Green Finding: Inadequate review of Severe Accident Management Guidelines
   e. Green Finding: Unplanned loss of preferred offsite power due to less than adequate work planning
   f. Green Finding: Unplanned loss of preferred offsite power due to the failure to follow work instructions

2. NRC Examination Report (IR 2011-301, 9/20/11) with no findings
3. NRC Resident Inspector Integrated Inspection Report (IR 2011-004, 11/18/11) with the following five NCVs:

   a. Green NCV: Failure to maintain a fire barrier
   b. Green NCV: Failure to perform surveillances on fire barriers
   c. Green NCV: Failure to maintain the control room habitability system in the design configuration (originally identified by DCPP but not reported within the required eight hours.)
   d. Green NCV: Failure to follow a procedural requirement for reactivity manipulation
   e. Green NCV: Failure to ensure emergency response organization qualifications

4. NRC Resident Inspector Integrated Inspection Report (IR 2011-005, 2/14/12) with no findings or NCVs
5. Annual Assessment Letter (IR 2012-001, 3/5/12)
6. Problem Identification and Resolution Inspection Report (IR 2012-007, 5/4/12)
7. Resident Inspection Integrated Inspection Report (IR 2012-002, 5/4/12) with the following four violations:

   a. Green NCV: Less than adequate evaluations of a degraded/nonconforming control room habitability train
   b. Green NCV: Failure to perform an operability determination for new seismic information
   c. Green NCV: Inadequate operability determination
   d. Notice of Violation (Severity Level III): Incomplete and inaccurate information provided to the NRC in response to Generic Letter 2003-01, "Control Room Habitability"

Regarding the Level III violation, the NRC report stated that:

> "The violation occurred on April 22, 2005, when Pacific Gas and Electric reported to the NRC that control room habitability testing required by Generic Letter 2003-01, 'Control Room Habitability,' had confirmed that the main control room envelope did not have any unfiltered in-leakage when performed in the most limiting configuration for operator dose (Pacific Gas and Electric Letter DCL-05-042, April 22, 2005, "Control Room Envelope In-Leakage Test Results Relative to Generic Letter 2003-01, Control Room Habitability," ADAMS ML051260225). During this inspection, inspectors identified that

three of the four tests performed in January 2005 had measured unfiltered control room in-leakage that were greater than both the values assumed in the design basis and the values reported to the NRC in response to Generic Letter 2003-01, and that the testing had not been performed in the most limiting configuration for operator dose. On December 2, 2011, Pacific Gas and Electric issued a letter (ML113390057) to report that incorrect information had been reported in their 2005 response to Generic Letter 2003-01. The letter also provided the correct 2005 test results. The letter stated that a leakage path was identified and corrected after the first three tests, and the fourth test (negative in-leakage) was representative of the control room envelope. The licensee determined that human error (a mindset that a pressurized control room should have zero in-leakage) affected the interpretation of test results and led to the non-conservative determination of zero in-leakage in 2005. During the period of the violation, both units spent time in operating and shutdown modes. The licensee made an 8-hour notification on September 12, 2011, when the error was identified and the control room was declared inoperable, and submitted a licensee event report and supplement on November 14, 2011 and January 30, 2012, respectively.

The safety significance of this failure to provide complete and accurate information was very low because the licensee was able to verify that emergency core cooling system leakage outside containment was maintained sufficiently low so that control room operator dose would not have exceeded 5 rem. This violation impacted the NRC's ability to perform its regulatory function because the NRC relies on its licensees to provide complete and accurate information. The staff has concluded that the NRC would have taken a different regulatory position or undertaken substantial further inquiry had the correct test results been reported. Therefore, this violation has been categorized in accordance with the NRC Enforcement Policy at Severity Level III. DCPP maintains a tracking spreadsheet for all NRC violations, NOVs and NCVs, to ensure the issue identified by the NRC is adequately addressed. An AR-NCV (Action Request for Non-cited Violation) is initiated for each potential NCV at the exit NRC inspection interview, and appropriate Corrective Action Program (CAP) documents are initiated and their status is reviewed and verified periodically, typically biweekly, through the resolution period. PG&E believed that the NRC's implementation of its Reactor Oversight Process (ROP) has increased the numbers of NCVs, which do not require a formal response, and reduced the numbers of NOVs, which are reserved under the new Reactor Oversight Process for risk-significant issues.

DCPP responded as follows:

The cause of PG&E incorrectly stating to the NRC that test results confirmed that no unfiltered control room in-leakage existed was the "mental mindset" among the DCPP staff involved in the testing which precluded the ability of the organization to challenge the conclusion of "no unfiltered in-leakage." A contributing cause was the use of a less than adequate independent technical review process for verifying statements requiring verification.

The cause of PG&E incorrectly stating to the NRC that tracer gas in-leakage testing was performed in the CRVS alignment that results in the greatest consequence to the control room operator was an unclear licensing basis for the CRVS between the FSAR and the Technical Specifications (TS).

In response to a Severity Level IV violation of 10 CFR 50.9 in 2010, PG&E took corrective steps to assure the completeness and accuracy of information provided to the NRC to address a performance deficiency. These included:

- Establishing a requirement in XI1.ID1, "Regulatory Correspondence Processing," to verify any statements requiring verification in NRC submittals.
- Implementing a 10 CFR 50.9 awareness plan and proceduralized expectation of complete and accurate information to be provided to the NRC in written and verbal communications in XI1.ID4, "NRC Interface and Inspection Support," and XI1.ID1.
- Issuing procedure XI3.ID12, "Current Licensing Basis Determination," to specify the actions to accurately identify and validate the current licensing basis.

In addition, PG&E took corrective steps to assure the proper identification and use of licensing basis information to address performance deficiencies experienced in 2008 through 2010. These included:

- Providing improved licensing-basis search tools, and
- Training technical staff to search, identify, and validate the current DCPP licensing basis.

October 24, 2011 – PG&E submitted License Amendment Request 11-06 via letter DCL-11-072 to revise, in part, the control room dose analysis of record. This revised control room operator dose analysis assumed in-leakage that bounds the 2005 maximum recorded in-leakage and reduced allowable emergency core cooling system leakage. The analysis confirmed that operator dose following a loss-of-coolant accident would remain within allowable values.

November 8,2011 - PG&E re-performed the Control Room Envelope (CRE) in-leakage test which confirmed that the CRE was not leak tight.

December 2, 2011 - PG&E submitted letter DCL-11-127 to communicate the actual inleakage test results from each of the four CRVS alignments and the 2011 re-test results. This letter states that the November 2011 testing was performed with one CRVS train in Mode 4 and the other train in Mode 3, which was the most limiting for operator dose consequences that could be obtained under existing plant configuration controls. This was recommunicated on January 30,2012, in PG&E Letter DCL-12-011. These plant configuration controls ensure the operator dose will continue to meet GDC 19 limits following an accident.

In addition to meeting the requirements of GDC 19, the above changes have correctly communicated the actual 2005 CRE in-leakage test data and addressed the PG&E staff misconceptions regarding the actual CRE performance with respect to the concerns raised by G L 2003-01.

For responses to generic communications (Bulletins, GLs and 50.54(f) requests), PG&E will revise procedure X11.ID1 to specify that licensing will identify the technical concerns requiring response from the line organizations and require the line organizations to provide source references with their responses.

PG&E will revise procedure X11.ID1 to require "statements requiring verification" in response to generic communications (Bulletins, GLs and 50.54(f) requests), to be verified by a knowledgeable individual independent from the line organization addressing the concern.

PG&E will correct the FSAR CRVS system description to describe the limiting design basis operation and eliminate discrepancies and areas lacking clarity between the TS and the FSAR.

PG&E is continuing actions to improve the accuracy and completeness of the current licensing basis via the Licensing Basis Verification Project. PG&E will complete the CRVS Licensing Basis Verification and revise the FSAR to accurately and completely reflect the current licensing basis.

PG&E has initiated a project to permanently modify the CRVS to eliminate the design vulnerabilities that were discovered during the 2011 CRVS testing.

By implementing the above changes PG&E will avoid further 10 CFR 50.9 violations.

The DCISC believes this response is satisfactory; however, it will look into the issue further during the next reporting period.

3.2.2 DCISC Review of Trends of Violations and NRC-Identified Issues

Non-Cited Violations (NCVs) are usually items of very low safety significance (called “Green”). All NCVs are entered into the DCPP Correction Action Program (CAP), and a Notification is issued. Notifications are reports used to identify and document plant problems in the CAP. The NCVs are reviewed for their safety significance, and cross-cutting issues. DCPP will perform an Apparent Cause Evaluation (ACE) for the NCVs as determined by plant director-level management.

The DCISC met with DCPP Regulatory Services regarding NRC Non-Cited Violation (NCV) and NRC Allegation trends (Volume II, Exhibit D.7, Section 3.1).

NRC Non-Cited Violations (NCVs)

NCVs are violations of NRC regulations, which have very low safety significance, and, as such, are

not "cited" as violations by NRC. The trend of violations for this and the last four DCISC reporting periods was as follows:

During the period July 1, 2011 –June 30, 2012, NRC cited no Level I, II, or IV violations and identified 14 non-cited violations and one Severity III violation. The identification breakdown for these is as follows:

The history of violations for this and the last four DCISC reporting periods is as follows:

DCISC Reporting Period	Number of Inspections	Violation Severity Level			Violations Total
		III	IV	Non-Cited	
7/1/07 – 6/30/08	8	–	–	7	7
7/1/08 – 6/30/09	12	–	–	18	18
7/1/09 – 6/30/10	9	–	5	14	19
7/1/10 – 6/30/11	8	–	4	36	40
7/1/11 – 6/30/12	6	1	–	14	15

NRC violations are included in the CAP Trending Program and are not trended separately. An Event Trend Record (ETR) is issued for each NCV associated with an AT-NCV AR (A-type Non-Cited Violation Action Request). Periodic evaluation of the ETRs is undertaken to identify adverse trends.

The DCISC reported the following conclusions and recommendations in its 21st Annual Report (2010 – 2011):

Conclusions:

> The DCISC received regular reports on the NRC Performance Indicators, DCPP License Event Reports (LERs) sent to NRC, and NRC Inspection Reports and Enforcement Actions (violations) at each of its Public Meetings as well as copies of these documents throughout the reporting period.
>
> The Committee notes that, although the Nuclear Regulatory Commission (NRC) concluded that, "Overall, Diablo Canyon Power Plant, Units 1 and 2, operated in a manner that preserved public health and safety…," it identified 36 Non-cited Violations, four Severity Level IV violations, and continued a substantive crosscutting issue. The increase in number of these violations and the crosscutting issue (in problem identification and resolution) are concerns to the DCISC. The DCISC plans to augment its review of DCPP NRC regulatory performance during the next reporting period.

Recommendation R11-1:

> Due to the substantial increase in the numbers of NRC Non-cited Violations and Severity Level IV Violations over the last two reporting periods and because the NRC Substantive Crosscutting Issue in Problem Identification and Resolution still exists, the DCISC recommends that DCPP re-examine its earlier Root Cause Analysis for effectiveness and

consider an independent review of its corrective actions by Quality Verification, the Nuclear Safety Oversight Committee, or the Institute of Nuclear Power Operations in an assist visit.

Basis for Recommendation:

Licensee Event Reports, Violations, and the Substantive Crosscutting Issue in PI&R are related issues because they all deal with the identification and resolution of plant events. If there is a common cause or similar causes for these negative trends, DCPP should identify and resolve them. The DCISC notes that the DCPP Corrective Action Program has undergone many reviews and assessments in the last several years apparently without an effective, sustainable resolution.

The DCISC had a similar recommendation in the previous reporting period as follows:

Recommendation R10-1:

Due to the increases in the numbers of Licensee Event Reports and Severity Level IV Violations and because of the newly re-identified NRC Substantive Crosscutting Issue in Problem Identification and Resolution, the DCISC recommends that DCPP perform a comprehensive analysis to determine the cause of these negative regulatory trends.

DCPP responded as follows:

"PG&E has performed multiple analyses, as documented in the Corrective Action Program, for these events. A common cause analysis was performed to examine the number of traditional enforcement violations (as documented on SAP Notification 50331845). This common cause analysis was approved by the Corrective Action Review Board on October 5, 2010.

The substantive cross-cutting issue in problem evaluation was analyzed in the Corrective Action Program via a root cause analysis (as documented in SAP Order 60024480). This root cause analysis was approved by the Corrective Action Review Board on June 7, 2010.

Both these Corrective Action Program documents were the subject of an inspection by Nuclear Regulatory Commission inspectors in December 2010. The NRC inspectors concluded that the corrective actions appear to be appropriate and on target, but lacked sufficient run-time to demonstrate their effectiveness at the time of the inspection."

The conclusions in the December 2010 inspection report are encouraging, but the DCISC notes that the substantive cross-cutting issue still existed.

DCPP reported that the number of NCVs has been significantly reduced as follows:

Year	NCVs
2010	31

2011	9

This reduction was attributed to the following actions:

1. Augmented training on the DCPP licensing basis and the acceptance criteria for changes affecting the licensing bases.
2. Weekly senior leadership review of NRC issues.
3. Site-wide preparation with expert outside assistance for a significant NRC inspection of implementation of the licensing bases.
4. Development of Procedure XI1.ID4, "NRC Interface and Inspection Support."
5. Safety culture assessments and resulting action plans to improve safety culture.
6. Development of a Regulatory Excellence Plan to improve perceived regulatory weaknesses.
7. Performance of an Apparent Cause Evaluation (ACE) for the negative NCV trend with numerous procedure changes to enforce conservative decision-making.
8. The Licensing Basis Verification Project, reviewed by DCISC in November 2011 (Reference 6.3), helped focus DCPP staff on design and licensing bases.

These actions have resulted in significantly lower NCVs. DCPP's NCVs have dropped below the average for NRC Region IV plants in 2011. The DCISC reviewed the NRC Interface and Inspection Support Procedure and concluded that it appeared comprehensive and effective, offering valuable guidance for a solid regulatory performance program.

DCPP has taken effective actions to significantly reduce the number of NRC Non-cited Violations (NCVs) from 2010 and earlier to 2011.

3.2.3 DCISC Evaluation and Conclusions

The numbers of NRC inspections in this period and the previous four periods had been fairly consistent at about 8 or 9 and has dropped to six during this period. This relatively low number is a result of good regulatory performance as measured primarily by NRC Performance Indicators (see Section 3.5 below).

The DCISC heard presentations by DCPP on each non-cited violation, finding and LER at its public meetings and has reviewed each cited violation and DCPP's corrective actions, where applicable. DCPP corrective actions appeared adequate. There were no individual items of significance to warrant DCISC recommendations or actions. The one Level III violation on the control room ventilation system warranted further review by the DCISC. The report on this review is summarized in Annual Report Section 4.15.2 and detailed in Annual Report Volume II, Exhibit D.7, Section 3.9.

All of DCPP's 14 NCVs were classified by the NRC as having very low safety significance (Green); however, the DCISC notes that DCPP received one Severity Level III violation. These Non-cited violations were determined by NRC to be of low safety significance. The DCISC reviewed the Level III violation and was satisfied with DCPP's corrective actions.

NRC Substantive Cross-cutting Issue on Problem Evaluation

The issue of problem evaluation dates back to 2009 and earlier. In its 2009 End-of-Cycle Letter of March 2010, NRC identified a substantive crosscutting aspect for the lack of thoroughness in engineering evaluations in the P.1.c cross-cutting area. Selected excerpts of the NRC's perspective in the above-mentioned letter are as follows:

> "The staff first identified this item in the 2008 annual assessment letter, dated March 4, 2009. This theme continued through the 2009 mid-cycle assessment as discussed in our September 1, 2009 letter."
>
> "While you have implemented a range of substantial corrective actions to address the crosscutting theme, these actions have yet to prove effective in mitigating the continuing trend."
>
> "The NRC has concluded that you should assess why past corrective actions have not been effective in mitigating the trend and make adjustments as appropriate to ensure that you achieve results in correcting the trend."

In response to the NRC's concerns DCPP developed an extensive action plan, through which the DCISC has tracked progress, and which has included periodic reviews of the NRC's examination of this issue. In the NRC's Annual Assessment Letter to Pacific Gas and Electric Company (PG&E) for 2011, dated March 5, 2012, the NRC closed the P.1.c substantive cross-cutting issue as discussed in their assessment below:

> In its assessment letter dated March 3, 2010, (ML 100620897), the NRC opened a substantive cross-cutting issue (SCCI) in the problem identification and resolution area associated with the aspect of thoroughness of problem evaluation (P.1.c). In July and December 2011, the NRC performed inspections of your root cause analysis and corrective actions for this SCCI. The inspectors determined that you had made significant changes to programs, processes, and procedures which, if continued, will likely result in improvement in the quality of evaluation products. The inspectors noted an overall positive performance trend in your implementation of the revised processes such that evaluations were more complete, thorough, and accurate.
>
> Inspections indicated that your staff had identified appropriate root causes and took appropriate corrective action. Since the performance has shown sustained improvement over the last year and only two findings with P.1.c cross-cutting aspects were identified in the last half of 2011, and you have demonstrated appropriate corrective actions, the NRC will close this SCCI.

This was a positive step. The DCISC noted an improvement in the thoroughness and completeness in DCPP's evaluation of station problems. In particular, during 2011 the DCISC examined two DCPP Root Cause Evaluations (RCE) of significant station issues that occurred in 2011: the March 26, 2011

manual reactor trip necessitated by a Unit 2 steam leak causing the automatic trip of one of the Main Feed Pumps and the failure of a significant number of DCPP candidates on the August 22, 2011 NRC licensed operator written examination. The DCISC Fact-finding Teams found both evaluations to be extremely thorough and concluded that the corrective actions were appropriate.

Continuation and completion of DCPP's Licensing Basis Verification Project (LBVP) is aimed at improving the information available to DCPP personnel in the examination of station issues. The purpose of the LBVP is to perform an objective evaluation to determine if the DCPP licensing basis has been adequately maintained and to correct any identified deficiencies. The term "licensing basis" refers to any commitments made to the NRC on which their approval of the license to operate is based. Expected completion of this project is in 2015.

DCPP training has been upgraded with respect to the identification and examinations involving the determination of whether a problem constitutes an unreviewed safety question under the Code of Federal Regulations (CFR) 10CFR50.59. DCPP "challenge boards" have been formed to examine such reviews and the qualification process for Root Cause Analysts has been upgraded, as has the functioning of the Corrective Action Review Board. This has led to a more complete institutionalization of the standards under which various processes are implemented to minimize the occurrence and recurrence of station problems.

The Fact-finding Team examined the most current station Performance Data available at the time of the visit, which was the January 2012 Plant Performance Indicator Report (PPIR) containing year-end data for 2011. Ratings were Green, White, Yellow, and Red, with Green being strong performance and Red being unsatisfactory. The P.1.c. aspect of Problem Identification was still rated as Red, due to the fact that NRC Cross-cutting issue had not yet been dropped, as was the performance indicator for Evaluation Work Product Quality. Other indicators related to the station's ability to evaluate problems were as follows:

Reportability Program Health

- Yellow (Current Month) due to failure to review reportability of potential loss of Reactor Coolant Pump seal cooling

Licensing Basis Impact Evaluation

- Green (6 month rolling average)

License Amendment Request Program Health

- Green (6 month rolling average)

Cause Analysis Program Health Implementation Cornerstone

- Green (Current Month)

DCPP has made substantial progress in the area of Problem Evaluation, as reflected in the NRC's dropping of its Substantive Cross-cutting Issue in the area of Problem Evaluation/Extent (P.1.c). Station Performance Indicators related to technical evaluations are generally healthy. The DCISC should continue to review station progress in the Licensing Basis Verification Project and to

review the area of Problem Evaluation based on future station performance.

3.3 NRC Performance Evaluations

The Nuclear Regulatory Commission (NRC) inspection, assessment, and enforcement programs for commercial nuclear power plants takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC-licensed plants.

The NRC Revised Reactor Oversight Process (RROP) monitors licensee performance in three broad areas (called strategic performance areas):

1. Reactor Safety (avoiding accidents and reducing the consequences of accidents if they occur)
2. Radiation Safety (protecting plant employees and the public during routine operations)
3. Safeguards (protecting the plant against sabotage or other security threats).

The process focuses on licensee performance within each of "Seven Cornerstones" of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
• Initiating Events	• Occupational	• Physical Protection
• Mitigating Systems	• Public	
• Barrier Integrity		
• Emergency Preparedness		

To monitor these Seven Cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations:

1. Inspections
2. Performance Indicators

Inspection findings are evaluated according to their potential significance for safety, using the significance determination process, and assigned colors of GREEN, WHITE, YELLOW, or RED.

- GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance.
- WHITE findings indicate issues that are of low to moderate safety significance.
- YELLOW findings are issues that are of substantial safety significance.
- RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance Indicator data are compared to established criteria for measuring licensee

performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, or RED.

- GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections.
- WHITE corresponds to performance that may result in increased NRC oversight at the Resident Inspector or Regional level.
- YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight at the NRC Region level.
- RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety. NRC response at the Agency level could include Public Meeting, utility-developed performance improvement plan, and/or special inspection team.

The assessment process integrates performance indicators and inspections so the agency can reach objective conclusions regarding overall plant performance. The NRC uses an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

The NRC Performance Indicators (PIs) for DCPP through the second quarter are depicted in Table 3.1 at the back of Section 3.0.

The NRC inspection program uses a risk-informed approach to select areas of the plant to inspect within each cornerstone. The selection is based on potential risk, past operational experience, and regulatory requirements.

Each calendar quarter, NRC inspectors and the regional office review plant performance indicators and inspection findings. Each year, NRC regional and headquarters offices make a final review, to include a more detailed assessment of plant performance over the 12-month period, preparation of a performance report, and preparation of a six-month inspection plan. The report is sent to each plant and discussed in a public meeting.

NRC End-of-Cycle Report for 2011

NRC generated one performance review and assessment letter for DCPP as follows:

Annual Assessment Letter (March 5, 2012)

NRC reported that for the period January 1 through December 31, 2011

> The NRC determined that overall, Diablo Canyon Power Plant Units 1 and 2 operated in a manner that preserved public health and safety and met all cornerstone objectives. The NRC determined the performance at Diablo Canyon Power Plant Units 1 and 2 during the most recent quarter was within the Licensee Response Column of the NRC's Reactor Oversight Process (ROP) Action Matrix because all inspection findings had very low (i.e., green) safety significance, and all PIs indicated that your performance was within the nominal, expected range (i.e., green). Therefore, the NRC plans to conduct ROP baseline inspections at your facility.

The DCISC understands this to mean acceptable regulatory performance and no increased inspections above baseline, except for the substantive cross-cutting issue in the problem identification and resolution area. The DCISC has similar concerns regarding the DCPP Corrective Action Program, specifically in the problem evaluation area. The DCISC will continue to follow this area closely.

The DCISC concurs with the NRC assessment that, overall, DCPP "… operated in a manner that preserved public health and safety…," and will continue monitoring DCPP performance in the corrective action and problem evaluation areas.

3.4 DCISC Meetings with NRC Resident Inspector

The DCISC held four meetings with the NRC Resident Inspector.

June 12, 2011 Volume II, Exhibit D.1, Section 3.2)

> The DCISC met with Dr. Michael Peck, NRC Senior Resident Inspector at DCPP. Discussion focused primarily on potential implications of the earthquake and tsunami at the Fukushima Daiichi Plant earlier this year, seismic issues, fire protection, the 230kv system, reactor coolant pump seal leakage, loss of offsite power, and how these are addressed in the Final Safety Analysis Report.

November 15, 2011 (Volume II, Exhibit D.4, Section 3.1)

> The DCISC met with Dr. Michael Peck, NRC Senior Resident Inspector, and Laura Micewski, Resident Inspector, for an update on the following NRC activities and issues: Independent Safety Review and Quality Verification functions, DCPP's 230 kV Power System design basis issue, plant fire barrier design and conditions, and Control Room ventilation system issues.

January 10, 2012 (Volume II, Exhibit D.6, Section 3.4)

> The DCISC met with Dr. Michael Peck, NRC Senior Resident Inspector, and Laura Micewski, Resident Inspector, for an update on NRC activities and issues with respect to DCPP and the industry. Discussion focused primarily on substantive cross-cutting issues, safety culture, the safety culture work environment, licensed operator training, and whether Dr. Peck might be available to speak at a future DCISC Public Meeting on NRC Resident and Senior Resident Inspector activities at Diablo Canyon. (Dr. Peck did speak at the DCISC June 19, 2012 Public Meeting – see Volume II, Exhibit B.9.)

March 13, 2012 (Volume II, Exhibit D.7, Section 3.5)

The DCISC met with Laura Micewski, NRC Resident Inspector for a general update on the following items:

- The 230kV capability issue was still with NRC's Nuclear Reactor Regulation (NRR) for review.
- The NRC review of the DCPP seismic design basis was on-going.
- NRC was lifting its DCPP Substantive Cross-cutting Issue in the area of Problem Identification and Resolution.
- Ms. Micewski has been identifying fire barriers with questionable integrity.

The NRC is focusing its attention and resources at issues it deems important to plant safety. The DCISC will continue to follow the actions and results of the NRC efforts.

3.5 DCISC Conclusions and Recommendations

Conclusions: The DCISC received regular reports on the NRC Performance Indicators, DCPP License Event Reports (LERs) sent to NRC, and NRC Inspection Reports and Enforcement Actions (violations) at each of its Public Meetings as well as copies of these documents throughout the reporting period. The DCISC investigated selected reports at its fact-finding meetings.

The Committee notes that, although the Nuclear Regulatory Commission (NRC) concluded that, "Overall, Diablo Canyon Power Plant, Units 1 and 2, operated in a manner that preserved public health and safety…," it identified 14 Non-cited Violations, one Severity Level III violation, but removed its Substantive Crosscutting Issue – a positive step for DCPP. The number of violations has decreased, and DCPP has initiated strong actions to improve its regulatory performance.

The NRC closed its Substantive Crosscutting Issue on Problem Evaluation, a positive step.

The DCISC plans to continue its review of DCPP NRC regulatory performance during the next reporting period.

Recommendations:

None

Table 3.1 – NRC Performance Indicators for Diablo Canyon Power Plant – June 2012

NRC Performance Indicators Diablo Canyon | **Updated Through:** June 2012

PI Owner: Tom Baldwin x6060 | **Data Owner:** Michael Richardson and Steven Zawalick

	Cornerstone	Sub-Report	Indicator	Code	Top Quart	NRC White	Unit 1		Unit 2		PPIR Goal	Org
Unit-Specific Performance Indicators	Initiating Events	SP-05	Unplanned Scrams per 7000 critical hours (automatic and manual scrams)	[illegible]	0	>3	0	0	0		0.54	Ops
		SP-07	Unplanned Power Changes per 7000 critical hours	MSI01	0	>6	0.9	1E-4	8.8	-4.7	0.77	Ops
		SP-06	Unplanned Scrams with Complications (12 Qtrs)	IE04	0	>1	0	1E-4	0	3.0	0.4	Ops
	Mitigating Systems		Mitigating System Performance Index (12 Qtrs)	EDG	MSI06	>1E-6	-4.1E-07	2E-4	-4.7E-07	-4.7	<3.0E-07	Maint
				HPSI	MSI07	>1E-6	-3.1E-08	2E-4	3.0E-08		<3.0E-07	Maint
				AFW	MSI08	>1E-6	-1.9E-07	2E-4	1.7E-07	-2.1	<3.0E-07	Maint
				RHR	MSI09	>1E-6	-4.2E-08	4E-4	-3.1E-08	-3.4	<3.0E-07	Maint
				CVS	MSI10	>1E-6	6.4E-08	3	-3.4E-08		<3.0E-07	Maint
		SP-12	Safety System Functional Failures (4 Qtrs)	SSFF	MSI05	0	>5	3	1		0	Maint
	Barrier Integrity	SP-13	Reactor Coolant System (RCS) Specific Activity - % of TS	RC01	0	>50%	8.01%	1.01	0.03%	0.0	0.06% U1 0.20% U2	C&EO U1 U2C17 U2
		SP-14	RCS Leak Rate - % of TS	RC02	<6.8%	>50%	9.76%	1.13	0.47%	0.0	0.94%	Maint
Unit Common Performance Indicators	Emergency Preparedness	SP-15	Emergency Response Organization (ERO) drill/exercise performance (expressed as a % of opportunities to perform classifications, notifications, & PARs that were successful) (8 Qtrs)	EP01	>80.0%	90%	96.2%	6.2	N/A		96.4%	EP
		SP-16	ERO Drill Participation (expressed as a percentage of "key" ERO members that have participated in a drill, exercise, or actual event in the previous 8 Qtrs)	EP02	100%	80%	94.1%	4.1			95.0%	EP
		SP-17	Alert & Notification (expressed as a percentage of the total number of ANS sirens tested during the previous quarter) (4 Qtrs)	EP03	>99.9%	94%	100.0%				99.7%	EP
	Radiation Safety	SP-18	Occupational exposure control effectiveness (the number of non-compliances with 10CFR20 requirements for (1) high (greater than 1000mRem/hr) and (2) very high radiation areas, and uncontrolled personnel exposure exceeding 10% of the stay-time or 2% of the non-stay-time limits. (4 Qtrs)	OR01	0	>2	2	0.0			N/A	RP
		SP-19	Offsite release performance (Number of effluent events that are reportable per 10CFR20, 10CFR50 Appendix I, ODCM, or TS. (4 Qtrs)	PR01	0	>1	0	0			0	C&EO
	Security	SP-20	Protected Area Security Equipment performance index (CCTV)	PP01	<0.010	>0.08	0.006				0.018	Sec

Legend

Favorable Trend	Green	Better than Station Goal	
Un-favorable Trend	Yellow	Worse than Station Goal	
Neutral Trend (little or no change)	Red	Worse than NRC "green"	

Notes

See next page for yellow and red analysis and actions. SAPN 50497846 created on 7/11/2012 to address Unit 2 IE03 (Unplanned Power Change). SAPN 50497849 created on 7/11/2012 to address Unit 1 IE03 (Unplanned Power Change). SAPN 50497970 created on 7/11/2012 to address EP02 ERO drill participation.

Table 3.2 – NRC Cross Cutting Analysis for Diablo Canyon Power Plant - June 2012

NRC Cross Cutting Analysis | **Updated through: June 2012**

PI Owner: Tom Baldwin | Data Owner: Mike McCoy

NRC Cross-Cutting Aspect Summary for DCPP

3Q 2011 through 2Q 2012 (Rolling 4 Quarters)

Areas	Components	Aspects	3Q11	4Q11	1Q12	2Q12	Sum
Human Performance	Decision Making	Systematic Process H.1(a)	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
		Conservative Assumptions H.1(b)	1 1 0 2	0 0 0 0	0 0 0 0	0 0 0 0	4
		Communication H.1(c)	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
	Resources	Long-Term Plant Safety H.2(a)	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
		Training / Qualification H.2(b)	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
		Documentation H.2(c)	0 0 0 0	0 0 0 1			1
		Facilities / Equipment H.2(d)	0 0 0 0				0
	Work Control	Planning H.3(a)	1 0 0 0				1
		Coordination H.3(b)	0 0 0 0				0
	Work Practices	Human Error Prevention H.4(a)	0 0 0 2				2
		Procedural Compliance H.4(b)	2 0 0 0				2
		Oversight H.4(c)	0 0 0 1				1
Problem Identification and Resolution	Corrective Action Program	Low Threshold P.1(a)	0 0 0 0				0
		Trending P.1(b)	0 0 0 0				0
		Evaluation / Extent P.1(c)	1 1 1 0				3
		Corrective Action P.1(d)	1 0 0 0				1
	Operating Experience	Timeliness P.2(a)	0 0 0 0				0
		Institutionalized P.2(b)	0 0 0 0				0
	Self and Independent Assessment	Frequent / Comprehensive P.3(a)	0 0 1 0				1
		Performance Trending P.3(b)	0 0 0 0				0
		Communication P.3(c)	0 0 0 0				0
		Alternative Process P.3(d)	0 0 0 0				0
Safety Conscious Work Environment	Environment to Raise Concerns	Behaviors S.1(a)	0 0 0 0				0
		Alternative Process S.1(b)	0 0 0 0				0
	Perceptions of Retaliation	Training S.2(a)	0 0 0 0				0
		Investigation S.2(b)	0 0 0 0				0
		Potential Chilling Effects S.2(c)	0 0 0 0				0

Summary Cross-Cutting Aspect Health	
Green	18
White	7
Yellow	1
Red	1

Summary of Findings	ALL	w/ CCA	NRC/SCI
3Q11	9	6	6
4Q11	3	2	2
1Q12	4	3	3
2Q12	9	6	6
Sum	25	16	17

Legend

	For HU/PIR	For SCWE
Green	No CC Issues	No CC Issues
White	1-2 CC Issues	N/A
Yellow	3 CC Issues	N/A
Red	>3 CC Issues	>0 CC Issues

SCCI open with NRC

A — Cross-Cutting Aspect

n-3 n-2 n-1 n — Findings per Quarter

N — Total Findings, rolling yr

22nd Annual Report, Volume 1, Section 4.0, Summary of Major DCISC Review Topics

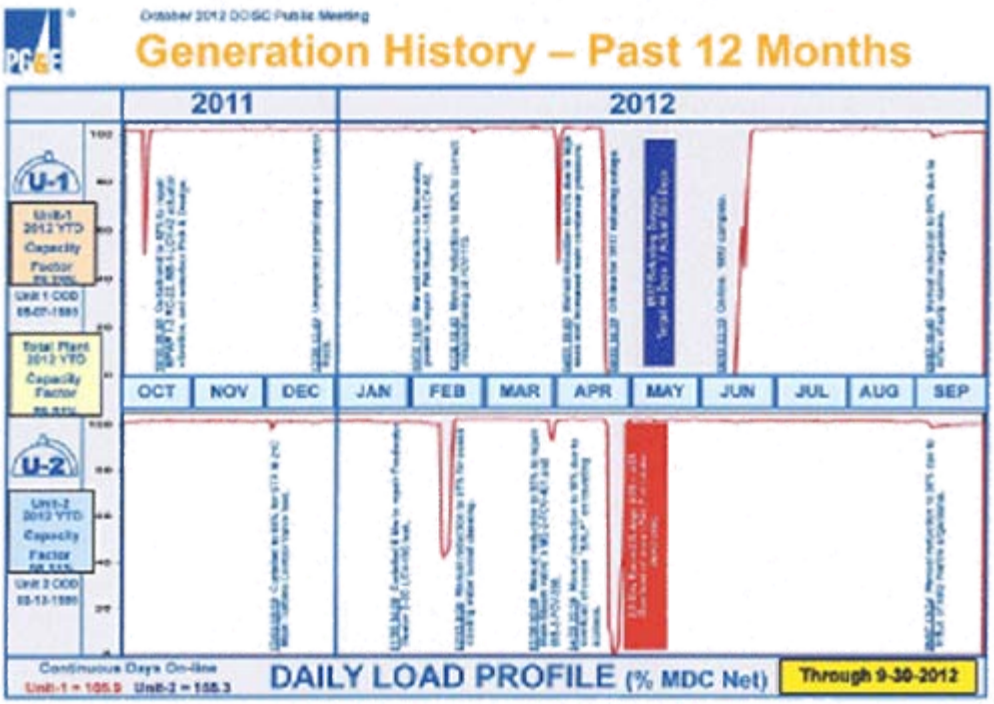
The DCISC reviews a broad spectrum of topics and issues at DCPP. Detailed reports of these topics are contained in Volume 2, Exhibit B – DCISC Public Meeting Notices, Agendas and Reports and Volume 2, Exhibit D – DCISC reports on Fact-finding meetings. This section contains summaries of these reports along with conclusions and any recommendations.

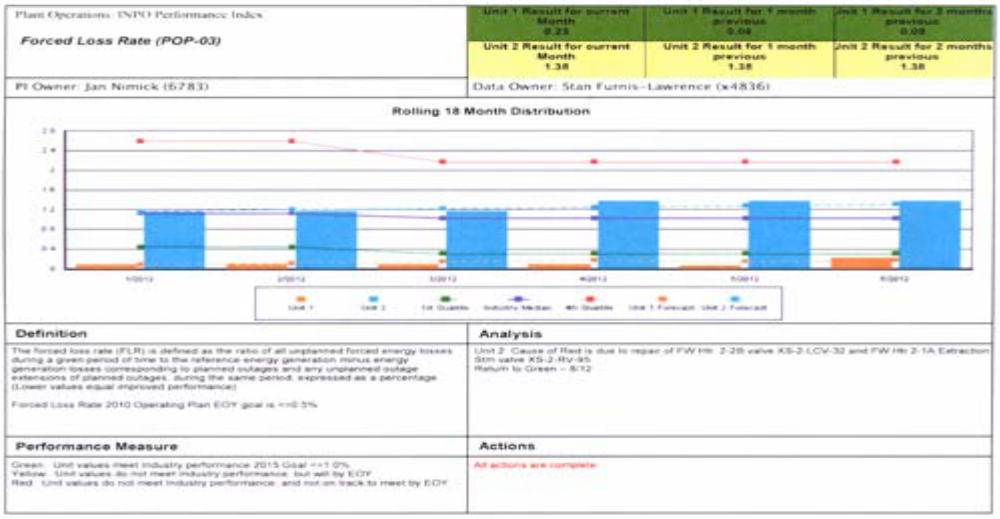
22nd Annual Report by the Diablo Canyon Independent Safety Committee (DCISC), July 1, 2011 – June 30, 2012
Preface | Executive Summary
Volume 1 TOC | Volume 2 TOC | PG&E Response | Contact | DCISC Home Page

22nd Annual Report, Volume 1, Exhibit 5.0, Performance Indicators

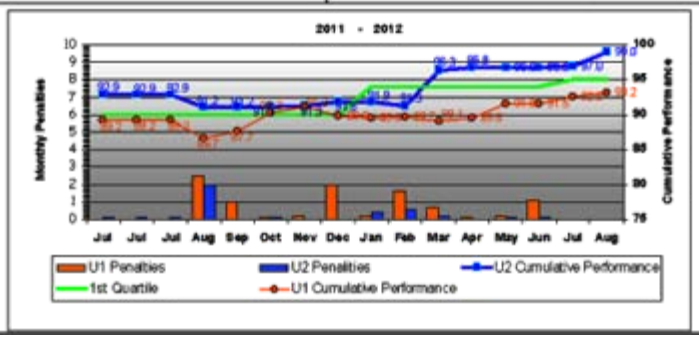
The DCISC monitors selected performance indicators (PIs) to help measure the safety performance of the Diablo Canyon Power Plant. These PIs are updated for each DCISC public meeting and presented with more detailed supporting information by PG&E and/or are reviewed in DCISC fact-finding meetings. The PIs in the enclosed charts represent those presented at the DCISC October 10, 2012 Public Meetings.

The DCISC monitors the following DCPP performance indicators, among others, regularly, including at its three public meetings each year.

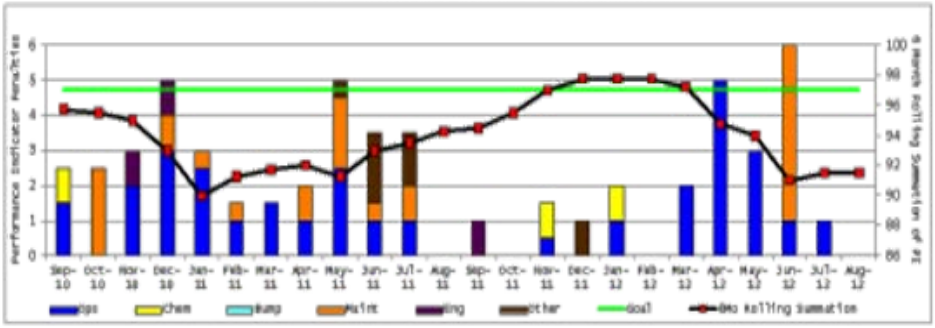




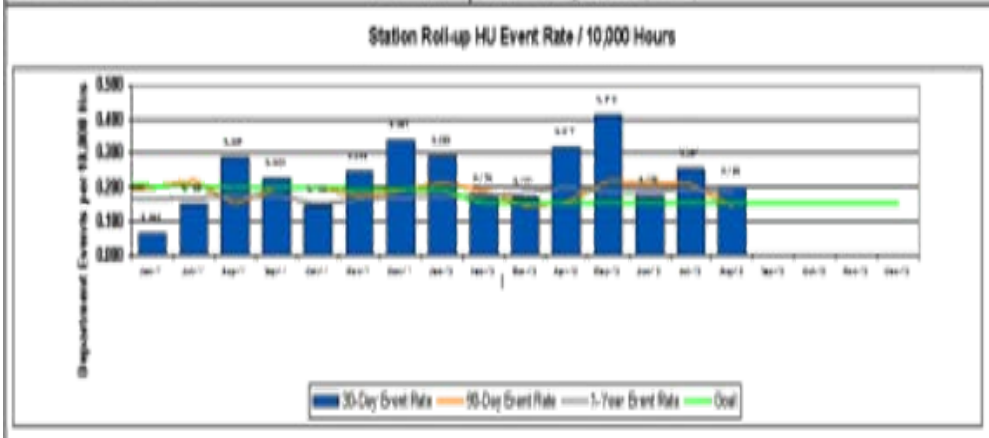
Operations ***Reactivity Management Program (OPS-01)***	**Unit 1 Aug Data 93.2**	**Unit 1 Jul Data 92.6**	**Unit 1Jun Data 91.5**
	Unit 2 Aug Data 99.0	**Unit 2 Jul Data 97.0**	**Unit 2 Jun Data 96.8**
PI Owner: Paula Gerfen	Data Owner: Ricky Blackshear (x3080)		



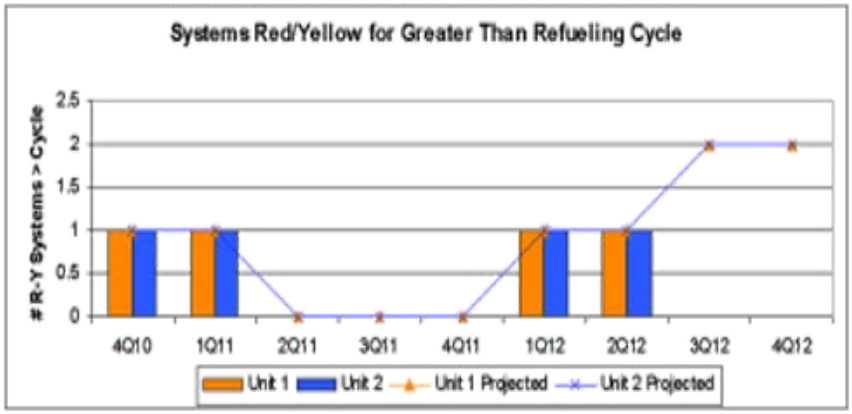
Plant Misposition Component Performance (Ops-22)	**Data for 6-Mo Rolling Summation Current Month 91.50**	**Data for 6-Mo Rolling Summation Previous Month 91.50**	**Data for 6-Mo Rolling Summation 2 Months Previous 91.00**
PI Owner: Jan Nimick	Data Owner: Joe Haynes		



Department-Level Event Rate / 10,000 Hours ***DCPP Human Performance Error Rate (HP-1)***	**12-month average for current month 0.186**	**12-month average for 1 month previous 0.194**	**12-month average for 2 months previous 0.191**
PI Owner: Mark Frauenheim	Data Owner: John Hart (x4138)		



Age of Red/Yellow Systems	Unit 1 for 2Q12 1	Unit 1 for 1Q12 1	Unit 1 for 4Q11 0
	Unit 2 for 2Q12 1	Unit 2 for 1Q12 1	Unit 2 for 4Q11 0
PI Owner: Ryan West	Data Owner: Ryan West		



Engineering Program Health – August, 2012

PI Owner: Pat Nugent — **Data Coordinator: Kenneth Bych**

Overall Health	Owner	Update	Personnel Cornerstone	Infrastructure Cornerstone	Implementation Cornerstone	Equipment Cornerstone
1. Air Operated Valves	Shreffler – SFS1	9/7/12	White	Green	Green	White
2. Appendix J	Holtz - GWH3	9/7//12	White	Green	Green	White
3. Appendix R	Hampshire - DJH1	9/7/12	Green	Yellow	Yellow	White
4. BA Corrosion Control	Hill - JEH2	9/7/12	Green	Green	Green	White
5. Buried Pipe	Goyette – LFG1	9/7/12	White	Green	Green	Green
6. Cable Aging Mgmt	Zakaria – IMZ1	9/7/12	Green	White	Green	Green
7. Flow Acc. Corrosion	Goyette - LFG1	9/7/12	Green	Green	Green	Green
8. Heat Exchangers	Kang – JHK4	9/7/12	Green	Green	Green	White
9. In-Service Inspection	Gonzalez - DAG1	9/7/12	Green	Green	White	Green
10. In-Service Testing	Sorensen - CCSn	9/7/12	Green	White	Green	White
11. Large Motors	Waters SSW8	9/7/12	White	White	Green	White
12. Maintenance Rule	Tripp – BIT1	9/7/12	White	Green	Green	Green
13. Margin Management	Goyette – LFG1	9/7/12	Green	Green	Red	Green
14. Motor Operated Valves	Williamson - MVW1	9/7/12	Green	White	White	Green
15. Perf. Mon. Equip.	Prentice -RNPZ	9/7/12	Yellow	Green	White	White
16. Preventive Maint. (PM)	Valine – ADV1	9/7/12	Green	White	Yellow	Green
17. RCS Mat'ls Mgmt	Arhar - JHA1	9/7/12	Green	Green	Green	Green
18. Snubbers	Kewalramani –	9/7/12	Green	Green	Green	Green
19. Steam Generator Mgt	Arhar – JHA1	9/7/12	Green	Green	Green	Green

NOTE: Overall Health based on many parameters in each cornerstone. Following is a **guideline**, but scoring can result in red performance with action plans in progress.

Green	Satisfactory performance with only minor open items.
White	Satisfactory performance due to multiple minor open items with corrective actions identified and in progress.
Yellow	Unsatisfactory performance due to notable (more than minor) deficiencies with corrective actions being determined and/or in progress.
Red	Unsatisfactory performance due to significant (or multiple notable) deficiencies with corrective actions being determined and/or in progress.

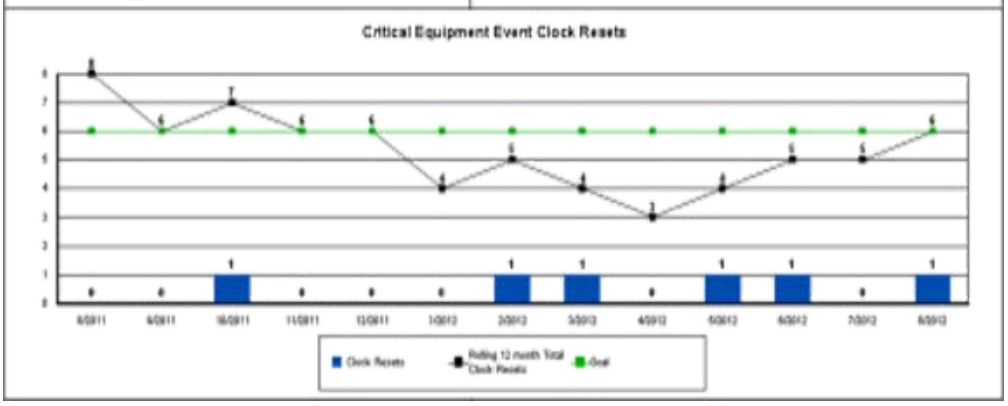
Notable changes this month:

- Margin Management implementation cornerstone turned red from mid-cycle assessment in August. Action plan being developed in response. Overall program health color is not driven unhealthy by the change numerically, however it is being reviewed by owner and Manager. ECD = 9/30/12.
- Extent of condition SAPN 50510599 was written to evaluate other potentially misclassified programs and obtain Engineering Manager concurrence.

1. Large Motors is scheduled to present to PHC in September- Goryance.
2. Appendix R and PME programs were presented to PHC in August.

Refer to Explanations Pages for specific recovery actions for all unhealthy programs.

Plant Operations Measure *Critical Equipment Event Clock Resets (POP-16)*	Clock Reset Rolling 12 Month for current Month 6	Clock Reset Rolling 12 Month for 1 month previous 5	Clock Reset Rolling 12 Month for 2 months previous 5
PI Owner: Pat Nugent (x4701)	Data Owner: Mark Baker (x3841)		



Equipment Reliability Index – August, 2012

	DCPP-1	DCPP-2
Equipment Reliability Index	90	89
Period End Date	08/31/2012	08/31/2012

Indicators	Max ERI Points		
Electrical Generation	22	17	16
Forced Loss Rate	10	10	6
Unplanned Pwr Changes per 7000 Hrs Critical	10	7	8
Post Refueling Outage Performance	2	0	2
Challenge to Operators	16	12	14
Unplanned LCO Entries	4	4	4
Operator Work Arounds	2	2	2
High Critical Component Failures	10	6	8
System Health	14	14	14
Safety System Unavailability - MSPI	8	8	8
System Health Improvement Effectiveness	6	6	6
Maintenance	19	19	17
Corrective Critical Work Backlog (Non-Outage)	4	4	4
Deficient Critical Work Backlog (Non-Outage)	3	3	3
Deferral of PMs	6	6	4
Maintenance Feedback	2	2	2
Timely Completion of Critical PMs	4	4	4
Work Management	12	12	12
Work Week Scope Survival	6	6	6
Work Week Schedule Completion	6	6	6
Long Term Planning	13	12	12
Long Term Plan Implementation Effectiveness	7	7	7
Age of Red & Yellow Systems	6	5	5
Monitoring & Trending	2	2	2
Chemistry Effectiveness	2	2	2
AP-913 Process & Program Management	2	2	2
PM Program Bases	2	2	2

ERI Score Summary:
DCPP ERI scores in August, 2012, improved in Unit 1: from 85 pts. to 90 pts., and Unit 2 declined from 91 to 89 pts. Both Units remain Green.

The Unit 1 High Critical Component Failures sub-indicator is Yellow, with 3 critical equipment failures in a 3-month period. FW PP 1-1 high vibration occurred post-1R17, causing the Unit 1 Post Refueling Outage Indicator to decline to Red. The Unit 2 High Critical Failures sub-indicator is White, with 2 critical equipment failures in a 3-month period. The Unit 2 Forced Loss Rate sub-indicator is Yellow, with a computed FLR of 1.37% due to repair of FW Htr. 2-2B valve 2SI-2-LCV-32 and FW Htr. 2-1A valve 2SI-2-RV-95. These unhealthy ERI sub-indicators have been evaluated per SAPN 50496571, ETR-001, completed 08/27/2012.

The Unit 1 Deferral of PMs sub-indicator improved to Green in August.

System Health Improvement Effectiveness: Tactical List actions associated System 31A (EDG Load Study, and LAR for EDG Frequency) may be rescheduled out of 3Q 2012, which would result in a Red sub-indicator, 0 pts., both Units.

ERI Sub-Indicator Score Recovery / Actions:

1. Forced Loss Rate: U2 return to Green est. 3Q 2012.
2. Post Refueling Outage Performance: U1 return to Green est. 3Q 2012
3. High Critical Equipment Failures: U1 return to Green est. 3Q 2012, U2 return to Green est. 4Q 2012.
4. Deferral of Critical PMs: U2 will decline in 3Q 2012 due to 2R17 PM deferrals (budget reductions).

Projected 3Q 2012 ERI Score:
Based on the anticipated sub-indicator point decline in System Health Improvement Effectiveness, and expected score recovery as summarized above: U1: 90 and U2: 85.

Title: Corrective Action Program Index - Station

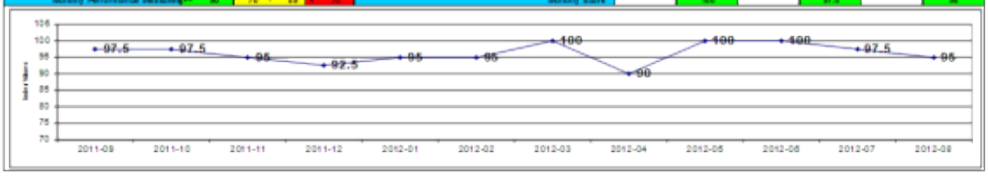
	Data for Current Month	Data for 1 Month Previous	Data for 2 Months Previous
	95	97.5	100

PI Owner: Mark Frauenheim
Data Owner: Terry Garrity

	RP	CHEM	ENG	LRN	MAINT	OPS	OUT	PROJ	SITE	SEC
	95	100	97.5	90	95	95	95	100	95	100

Station - Corrective Action Program Index

CAP Input	Weight	Performance Measures: Green = 1	Yellow = 0.5	Red = 0	Definition	Actual Value (June-12)	PM x Weight	Actual Value (July-12)	PM x Weight	Actual Value (August-12)	PM x Weight
CA Initiation Rate ▼	10	> 7800	7800 - 6000	< 6000	Total Sig level 1,2,3 notifications Created (last 12 months Unit)	8409	10	8074	10	8040	10
Open CA > 12 Months ▼	20	< 30	30 - 40	> 40	SCA+DCAPR > 12 Months (includes LTCA Tasks) Unit	24.5	20	21	20	25.5	20
# RCE	5		6		# RCE Completed in Past 12 Months Unit	2.5		2.5		3	
# ACE	5		75		# ACE and Common Cause Completed in Past 12 Months Unit	41.5		38		48.5	
Backlog ▼	20	< 200	200 - 240	> 240	Open SCA+DCAPR (includes LTCA Tasks) Unit	74	20	82.5	20	73.5	20
# Repeat Events ▼	5		1		Repeat of Root Cause Event in Last 3 Years Unit	0.5		0.5		0.5	
CAPR > 12 Months ▼	5		3		CAPR# Open Greater Than 12 Months (includes LTCA) Unit	2		2		2	
# P&R Crisis Cutting ▼	5		> 2.5		# P&R Crisis Cutting Aspects > 2 mts (last 4 Quarters)	1		1		1	
Effectiveness Review Failures ▼	10	< 2	2 - 3	> 3	# of Unsat Effectiveness Reviews (last 12 months Unit)	0	10	0	10	0	10
RCE Quality ▼	5		90		% RCE Passed CARB 1st Time (last 12 months)	100.0%		100.0%		100.0%	
RCE Cycle Time	5	< 41	41 - 50	> 50	Avg Age Completion Time of RCE in Previous Month	0	5	0	5	44	2.5
# Adverse Trend CRs	5		26		# CRs Written in the Past 12 Months for Adverse Trends Unit	26.5		26.5		26.5	
CAPR > 120 Days ▼	5		4		CAPR# Open Greater Than 120 Days Unit	3.5		3.5		3.5	
ACE Quality	20	< 2	2 - 3	> 3	ACE Failed Bias in Previous Month	1	20	0	20	0	20
ACE Cycle Time	5	< 31	31 - 45	> 45	Avg Age Completion Time of ACE in Previous Month	28	5	22	2.5	24	2.5
CA Age (> 90 Days)	10	< 101	101 - 179	> 179	Avg Age Open SCA (Up ACE, RCE or LTCAs)	96	10	98	10	99	10
Sig. 1-2-3 WOE (24 Days)	NA				# Open Sig. 1-2-3 WOE (no EQR)	270		271		281	
Monthly Performance Measures		> 90	75 - 89	< 75	Monthly Score		100		97.5		95



22nd Annual Report, Volume 1, Exhibit 6.0, DCISC Open Items List

The DCISC Open Items List is a database used to track items for follow-up and monitoring. The List is updated and reviewed at each public meeting. The Open Items List included in Exhibit F in Volume II was used at the DCISC June 21 & 22, 2011 Public Meetings.

22nd Annual Report, Volume 1, Exhibit 7.0, PG&E Actions on Previous DCISC Report Recommendations

The DCISC has made 217 recommendations in its previous 21 Annual Reports. The recommendations, PG&E responses and DCISC dispositions from the previous DCISC reporting period are included in Exhibit H in Volume II, along with references to the location for the basis for each recommendation.

PG&E's responses to the four DCISC recommendations in the 2010-2011 Annual Report were included in Section 9.0 of that report. At its February 15 –1 6, 2011, the DCISC found the responses acceptable (with monitoring in some cases).

The PG&E responses to the four recommendations made in the current report are contained in Section 9.0. PG&E's response will be reviewed during the first public meeting in 2013 and reported on in the meeting minutes and in the next annual report.

The DCISC concludes that the actions taken by PG&E relative to past DCISC recommendations have been satisfactory and have helped to maintain or improve safety and reliability.

22nd Annual Report, Volume 1, Exhibit 8.0, Public Input

The DCISC has welcomed and encouraged input from the public since its inception in 1990. As part of its Public Outreach Program, the Committee has established a number of channels of communication opportunities in an effort to foster public outreach. These are mainly in the form of three public meetings and plant tours per year in the local community. The Committee's public meetings are webcast in real time, available for subsequent viewing on the web through archived, streaming video, linked to each meeting agenda, and cablecast for subsequent broadcasts on the San Luis Obispo Public Education and Government television channel. The Committee also maintains a toll-free telephone line, a newer and expanded website and e-mail and mailing addresses. The DCISC also issues public notices, press releases and advertisements. Input from the public has been received from many of these channels as described in this section of the report.

8.1 Telephone Calls and E-mails Received by the DCISC

8.2 DCISC Internet – Worldwide Web Page Activity

8.3 Comments Received at DCISC public meetings

8.4 DCISC Public Tours of DCPP

8.5 DCISC Evaluation

July 2010 DCISC
List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
07/12/10	2010-011	DCP 1000000332, Allow Bypass of P-12 Interloc
07/14/10	2010-012	Physical Security Plan, Rev 3, Change 1

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
07/02/10	DCL-10-069	Licensee Event Report 1-2010-002-0; "Potential Loss of Safety-Related Pumps due to Degraded Voltage During Postulated Accidents"
07/02/10	DCL-10-072	Supplement to Response to NRC Request for Additional Information Regarding License Amendment Request 09-06, "Critical Damping Value for Structural Dynamic Qualification of the Control Rod Drive Mechanism Pressure Housings"
07/06/10	DCL-10-068	Support for NRC Review of CS Innovations Advanced Logic System and Lockheed Martin Deterministic Star Safety System Topical Reports
07/07/10	DCL-10-073	Response to NRC Request for Additional Information for the Diablo Canyon License Renewal Application
07/09/10	DCL-10-075	Emergency Plan Implementing Procedure Update
07/15/10	DCL-10-076	Response to NRC Letter dated June 29.2010. Request for Additional Information (Set 6) for the Diablo Canyon License Renewal Application
07/16/10	DCL-10-078	Response to NRC Regulatory Issue Summary 2010-08, Preparation and Scheduling of Operator Licensing Examinations
07/19/10	DCL-10-080	10 CFR 50.46 Annual Report of Emergency Core Cooling System Evaluation Model Changes for 2009
07/19/10	DCL-10-077	Response to NRC Letter dated June 21, 2010, Request for Additional Information (Set 5) for the Diablo Canyon License Renewal Application
07/22/10	DCL-10-083	Response to NRC Environmental Audit Reference Request for the Applicant's Environmental Report - Operating License Renewal Stage
07/22/10	DCL-10-085	Commitment Regarding License Amendment Request 09-02, "Revision to Technical Specification 3.4.15, 'RCS Leakage Detection Instrumentation,' Operability Requirements and Actions for RCS Leakage Detection Instrumentation"
07/28/10	DCL-10-091	Response to NRC Letter dated June 18, 2010, Request for Additional Information (High Energy Piping) for the Diablo Canyon License Renewal Application
07/28/10	DCL-10-092	Response to NRC Letter dated July 6, 2010, Request for Additional Information (Set 7) for the Diablo Canyon License Renewal Application

July 2010 DCISC
List of Documents Transmitted Electronically

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
06/21/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Aging Management Programs-Set 5
06/29/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Aging Management Programs-Set 6
07/06/10	Request For Additional Information Related To The Environmental Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC Nos. ME2825 and ME2826)
07/06/10	Response to letter requesting NRC staff halt its review of the DCPP Plant, Units 1 and 2 (DCPP) License Renewal Application Until State-Requested Seismic Studies Have Been Completed.
07/06/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897)-Fire Protection-Set 7
07/07/10	Response To The Pacific Gas And Electric Company Request For Diablo Canyon Power Plant Technical Specification Interpretation Of 230 Kilovolt System Operability (TAC NOS. ME3346 and ME3347)
07/08/10	Summary Of Telephone Conference Call Held On June 24,2010, Between The U.S. NRC and PG&E Concerning Draft RAI Related To The DCPP, Units 1 And2, License Renewal Application-Aging Management Programs
07/13/10	Diablo Canyon Power Plant, Units 1 And 2 - NRC Security Inspection Report 05000275/2010403 AND 05000323/2010403 – Security Related-Cover Letter Only
07/14/10	Request for Information Related to the Review of the DCPP LRA - (Set 8) Aging Management Programs-Set 8
07/15/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC Nos. ME2896 and ME2897) -Scoping And Screening And Aging Management Review-Set 10
07/16/10	Audit Report Regarding The Diablo Canyon Nuclear Power Plant License Renewal Application Scoping And Screening Methodology (TAC NOS. ME2896 AND ME2897)
07/19/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2. License Renewal Application (TAC NOS. ME2896 and ME2897)-Aging Management Programs-Set 9
07/20/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Scoping And Screening-Set 13
07/20/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Reactor Vessel Internals – Set 11
07/20/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Aging Management Programs And Aging Management Review – Set 12

C. NRC Incoming Correspondence (Continued)

07/22/10	Summary of Telephone Conference Call Held on July 8,2010, Between the U.S. Nuclear Regulatory Commission And Pacific Gas And Electric Company Concerning Draft Request FOR Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application Scoping and Screening and Aging Management Review
07/22/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 AND ME2897)-Aging Management Review and Aging Management Programs
07/22/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2S96 AND ME2S97) -Aging Management Review and Time Limited Aging Analyses
07/23/10	Diablo Canyon Power Plant, Unit No.1 -Approval of Request for Relief NDE-RCS-SE-1R16 From Examination Requirements of ASME Code, Section XI, Appendix VIII, Supplement 10, Root Mean Square Error (TAC NO. ME3942)

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

Date	Title
05/24/10	NRC RIS 2010-05: Applicability of 10CFR21 Requirements to Applicants for Standard Design Certifications
05/25/10	NRC Regulatory Issue Summary 2010-04 Monitoring The Status Of Regulated Activities During A Pandemic
05/28/10	NRC Information Notice 2010-10: Implementation Of A Digital Control System Under 10 CFR 50.59
06/01/10	NRC Regulatory Issue Summary 2010-06, Inservice Inspection and Testing Requirements of Dynamic Restraints (Snubbers)
06/08/10	NRC Regulatory Issue Summary 2010-07, Regulatory Requirements for Application of Weld Overlays and Other Mitigation Techniques in Piping Systems Approved for Leak-Before-Break
06/16/10	NRC Information Notice 2010-11: Potential For Steam Voiding Causing Residual Heat Removal System Inoperability
06/18/10	NRC Information Notice 2010-12: Containment Liner Corrosion
06/28/10	NRC Regulatory Issue Summary 2010-08: Preparation and Scheduling of Operator Licensing Examinations

July 2010 DCISC
List of Documents Transmitted Electronically

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		None for month of July
PSRC Minutes		
04/21/10	2010-012	DCP 1000000307, Cask Transporter Upgrade (ISFSI); OM7.ID1, Rev. 34 – Problem Identification and Resolution; Inservice Testing Program Plan, Rev. 3, Third The-Year Interval
06/30/10	2010-021	DCP 1000000332, Allow Bypass of P-12 Interlock; AD7.DC6, On-Line Maintenance Risk Management; LER 1-2010-002-01, Potential Loss of Safety-Related Pumps Due to Degraded voltage During Postulated Accidents
07/14/10	2010-022	Revision to the Physical Security Plan; LAR 09-05, Plant Cyber Security Plan and Revision to the Facility Operating Licenses
07/28/10	2010-023	Calc. 9000006525 (N-100); DCPP/ISFSI FSAR; DCP 1000000119; DCP 1000000118; LER 1-2010-001-01; LER 2-2010-002-00; LER 1-2010-003-00

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc No.	Title
RCAs		None for month of July
ACE	60026400	CDBI-Inadequate POA-SLUR/FLUR
ACE	60026401	Weapons Maint Not IAW SP307
ACE	60026402	TS 3.7.7 Violation - CDBI
ACE	60026482	Inadequate LBIE for SODAR Removal
ACE	60026485	Caustic Spill at U1 Polisher Buttress
ACE	60026723	Site Trending Coord Not Filled
ACE	60026805	Determine if Coating Used is Authorized
ACE	60026820	2010PIR: Missed OP Determination-230kV
ACE	60027023	Deficient LER Submitted for PSRC Review
ACE	60027142	LER 50.73(a)(2)(i)(B): Past TS Exceeded
Eff. Eval		None for month of July

July 2010 DCISC
List of Documents Transmitted Electronically

G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc Type	Title
	QPAR	None for month of July
5/13/10	Audit	Interquest Northwest
06/10/10	Audit	Pinnacle
07/15/10	Audit	2010 Quality Assurance Program Audit
07/27/10	Audit	Radiation Protection Programs Audit
07/08/10	Schedule	Internal and External Audit Schedule
6/24/10	Short Form Assessment	Radiation Monitor Emerging Issues

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. Type	Title
6/16/10	QHSA	DCPP Air Operated Valve Program
6/17/10	QHSA	DCPP Performance Monitoring and STARS Round Robin
6/17/10	QHSA	Engineering Outsourcing Design Quality Process Evaluation
6/2/10	Self Assessments	Controls for High Radiation Areas
6/24/10	Mid-Cycle Assessment	Final Report
6/14/10	Benchmarking	DCPP Leadership Academy Initial Benchmarking
	Benchmark & SA Schedule	None for month of July
	QHSA Schedule	None for month of July

I. Performance Information (PPIR, Operating Plan, Station Initiatives)

Date	Doc. Type	Title
2010		Operating Plan 2010 - 2014
June 2010	PPIR	
05/24/10	Station Initiative	Security Program Validation
07/06/10	Station Initiative	Operational Focus
07/23/10	Station Initiative	Electrical Safety
07/27/10	Station Initiative	Problem Evaluation Thoroughness
07/29/10	Station Initiative	Engineering Evaluation Rigor Improvement

July 2010 DCISC
List of Documents Transmitted Electronically

J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Title
	Please see PPIR for INPO Performance Indicator Table
07/28/10	Assessment of INPO Guideline 09-008 "Achieving Excellence in Transformer, Switchyard, and Grid Reliability", July 2009

K. Operational Documents (ODM Minutes, POAs)

Date	Doc. No.	Title
ODMs	50326418	TCV-2 Oscillations
ODMs	50326942	Reconveyance of ODM for Unit 1 TCV-2 Oscillations
POA		None for month of July

L. Miscellaneous

Date	Title
07/14/10	DCPP Site Status Report
07/29/10	Stop Work Order Memo from Director - QV

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	06/21/10	T-1 Critique
Maintenance	06/28/10	T-1 Critique
Maintenance	07/05/10	T-1 Critique
Maintenance	07/12/10	T-1 Critique
Maintenance	07/19/10	T-1 Critique

N. Documents Previously Transmitted during the Month

Date	Title
06/10/10 – 07/20/10	QV Real Time Report

August 2010 DCISC
List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
08/12/10	2010-017	DCP 1000000340, Backup SFP Cooling System

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
08/02/10	DCL-10-081	Response to NRC Environmental Audit Information Request for the Applicant's Environmental Report - Operating License Renewal Stage
08/02/10	DCL-10-082	Response to NRC Letter dated July 6. 2010. Request for Additional Information for the Applicant's Environmental Report - Operating License Renewal Stage
08/02/10	DCL-10-097	Response to NRC Letter dated July 19, 2010, Request for Additional Information (Set 9) for the Diablo Canyon License Renewal Application
08/05/10	DCL-10-086	Licensee Event Report 2-2010-002-00, Diablo Canyon Power Plant Unit 2 SI Test Line Unanalyzed Condition
08/06/10	DCL-10-088	Licensee Event Report 1-2010-003-00, Diablo Canyon Power Plant 230kV Historical Evaluation of Condition Prohibited by Technical Specification
08/09/10	DCL-10-102	Response to NRC Request for Additional Information Regarding License Amendment Request 10-03, "Damping Values for the Seismic Design and Analysis of the Reactor Vessel Integrated Head Assembly"
08/12/10	DCL-10-096	Response to NRC Letter dated July 14, 2010, Request for Additional Information (Set 8) for the Diablo Canyon License Renewal Application
08/12/10	DCL-10-098	Response to NRC Letter dated July 15, 2010, Request for Additional Information (Set 10) for the Diablo Canyon License Renewal Application
08/12/10	DCL-10-103	ASME Section XI Inservice Inspection Program Relief Request NDE-RCS-SE-2R16 Use of Alternate Sizing Qualification Criteria Through a Protective Clad Layer - Proprietary Info
08/13/10	DCL-10-099	Response to NRC Request for Additional Information Regarding Diablo Canyon Topical Report, "Process Protection System Replacement Diversity & Defense-in-Depth Assessment" – Proprietary Info
08/17/10	DCL-10-100	Response to NRC Letter dated July 20,2010, Request for Additional Information (Set 11) for the Diablo Canyon License Renewal Application
08/17/10	DCL-10-101	Response to NRC Letter dated July 20, 2010, Request for Additional Information (Set 12) for the Diablo Canyon License Renewal Application
08/17/10	DCL-10-104	Response to NRC Letter dated July 20,2010, Request for Additional Information (Set 13) for the Diablo Canyon License Renewal Application

August 2010 DCISC
List of Documents Transmitted Electronically

08/17/10	DCL-10-107	Response to NRC Letter dated July 22, 2010, Request for Additional Information (Set 14) for the Diablo Canyon License Renewal Application
08/18/10	DCL-10-109	Emergency Plan Implementing Procedure Update
08/18/10	DCL-10-105	Response to NRC Letter dated July 22,2010, Request for Additional Information (Set 15) for the Diablo Canyon License Renewal Application
08/19/10	DCL-10-110	Withdrawal of Superseded Cyber Security License Amendment Requests
08/25/10	DCL-10-090	Licensee Event Report 1-2010-004-00 - Diablo Canyon Power Plant Pressurizer Level Control During Ramps and Degassing Operations
08/27/10	DCL-10-079	Licensee Event Report 1-2010-001-01 - Common Cause Control Room Ventilation Radiation Detector Failures
08/27/10	DCL-10-106	Response to NRC Letter dated July 6, 2010, Request for Additional Information for the Applicant's Environmental Report - Operating License Renewal Stage
08/30/10	DCL-10-113	Response to NRC Letter dated August 3, 2010, Request for Additional Information (Set 16) for the Diablo Canyon License Renewal Application

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
07/23/10	Diablo Canyon Power Plant - NRC Component Design Bases Inspection Report 05000275/2010007 AND 05000323/2010007
07/30/10	Diablo Canyon Power Plant, Unit Nos. 1 and 2 - Issuance of Amendments re: Critical Damping Values FOR Control Rod Drive Mechanism Pressure Housings (TAC NOS. ME2995 and ME2996)
08/03/10	RAI Related to the Review of DCPP License Renewal Application (TAC Nos. ME2896 and ME2897) – Aging Management Review and Aging Management Programs – Set 16
08/09/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897) – Scoping and Screening and Aging Management Review
08/25/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Metal Fatigue
08/26/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) - Time Limited Aging Analyses And Aging Management Programs (Set 17)
08/26/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897) – Aging Management Programs

August 2010 DCISC
List of Documents Transmitted Electronically

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

Date		Title
		None

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		None
PSRC Minutes		
07/28/10	2010-023	Calculation 9000006525 (N100)
07/30/10	2010-024	LER 1-2010-001-01
08/09/10	2010-025	DCP 1000000340, Backup SFP Cooling System
08/17/10	2010-026	Calculation 9000006525 (N-100) – Max. Flow from ECCS
08/23/10	2010-027	LER – Pressurizer Level Control
08/25/10	2010-028	1R16 Outage Safety Plan
08/27/10	2010-029	MA1.ID14 OTSC – Turbine Building Crane Operations

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCAs	60025143	Security Issues
ACE	60025163	2010PIR - EDG load calc frequency
ACE	60026483	CDBI - MOV Prog Errors and H.1.bCDBI - MOV Prog Errors and H.1.b
ACE	60026627	H.1.b - Nonconservative Assumptions
ACE	60027141	LTA LBIE for OP B-1A:X
ACE	60027183	NRC Violation LBIE Screen -FLUR comp ms
ACE	60027187	CDBI Violation: FSAR Feedline Ref.
ACE	60027188	2010 CDBI: MWTP supply configuration
ACE	60027326	TS SR 3.3.4.2 missed surveillance
ACE	60027363	SLUR SSER9 not in FSAR
ACE	60027423	OP F-1-III add P&L
ACE	60027425	QDEF-Sec Sups entering incorrect turnover
ACE	60027489	Potent. Adverse Trend - Work Hour Viol.
ACE	60027524	O&G in CDT >001D NPDES Limit @ Discharge
ACE	60027560	NRC Non Cited Violation - Tact Course
ACE	60027701	DSL 1-2 EQD-12 Trans Switch Manipulation
Eff. Eval		None

August 2010 DCISC
List of Documents Transmitted Electronically

G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. Type	Title
	QPAR	None
08/04/10	Audits	2010 Fire Protection Audit
08/13/10	Audits	Procurement Process Audit
	Audit Schedule	None
08/03/10	Short Form Assessments	Use of the Corrective Action Program During the 2010 Mid-Cycle Self Assessment

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. Type	Title
07/01/10	Self Assessment	On-Line Chemistry Data Management And Retrieval Capabilities Self-Assessment
07/05/10	Self Assessment	Oversight / Command and Control Self-Assessment
06/24/10	Self Assessment	Mid-Cycle Assessment
06/08/10	Benchmarking	Refueling Outage Milestones Benchmark
	Benchmarking	Plant Milestones
08/10/10	Benchmarking	Outage Management Comanche Peak Resource Share
	Benchmarking and SA Schedule	None
Aug 2010	QHSA	FLOC (in SAP) - Self-Assessment Quick Hit (FLOC SAQH)
08/17/10	QHSA	Pre-NRC Triennial Heat Sink Inspection
08/11/10	QHSA	Procedure and Document Services Procedure Upgrade Project Readiness for 2011
05/21/10	QHSA	OJT/TPE Quick Hit Self-Assessment

I. Performance Information (PPIR, Operating Plan, Station Initiatives)

Date	Doc. Type	Title
	Operating Plan	None
	PPIR	July PPIR

August 2010 DCISC
List of Documents Transmitted Electronically

I. Performance Information (PPIR, Operating Plan, Station Initiatives) Continued

08/25/10	Station Initiative	Operational Focus
08/18/10	Station Initiative	Performance Improvement
08/16/10	Station Initiative	Premiere Survey
08/09/10	Station Initiative	Response to INPO Letter on Recent Industry Events
08/26/10	Station Initiative	Integrated Security Action Plan
08/26/10	Station Initiative	Employee Concerns Program
08/26/10	Station Initiative	Transformer Reliability
08/30/10	Station Initiative	Problem Evaluation
08/30/10	Station Initiative	Electrical Safety
08/31/10	Station Initiative	Engineering Evaluation Rigor Improvement

J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Doc. No.	Title
		Please see PPIR for INPO Performance Indicator Table

K. Operational Documents (ODM Minutes, POAs)

Date	Doc. No.	Title
ODMs		None
POA	50320419	Westinghouse LTSP Spectra for Head Proj.

L. Miscellaneous

Date	Title
7/20/10	PG&E @ Work – DCPP Edition
8/18/10	PG&E @ Work – DCPP Edition
	Recent Industry Shortfalls presentation

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	07/26/10	T-1 Critique
Maintenance	08/02/10	T-1 Critique
Maintenance	08/09/10	T-1 Critique
Maintenance	08/16/10	T-1 Critique
Maintenance	08/23/10	T-1 Critique

N. Documents Previously Transmitted during the Month

Date	Title
07/20/10 – 08/24/10	QV Real Time Report

September 2010 NSOC
List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
09/09/10	2010-013	Revision of Calculation 9000006525 (N-100), Maximum Flow from ECCS
10/01/10	2010-019	Pressurizer Level Increase in Modes 3, 4, and 5 FSARU

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
09/07/10	DCL-10-116	Response to NRC Letter dated August 9,2010, Request for Additional Information (Set 18) for the Diablo Canyon License Renewal Application
09/07/10	DCL-10-117	Information to Support NRC Review of DCPP License Renewal Application (LRA)
09/09/10	DCL-10-114	Submittal of Diablo Canyon Power Plant Topical Report, Process Protection System Replacement Diversity & Defense-in-Depth Assessment, Revision 1 (10 CFR 2.390)
08/19/10	DCL-10-111	Alert and Notification Design Report
08/19/10	DCL-10-112	Alert and Notification Design Report Failure Modes and Effects Analysis
09/24/10	DCL-10-120	Response to NRC Letter dated August 26, 2010, Request for Additional Information (Set 17) for the Diablo Canyon License Renewal Application
09/22/10	DCL-10-121	Response to NRC Letter dated August 25,2010, Request for Additional Information (Set 19) for the Diablo Canyon License Renewal Application
09/22/10	DCL-10-122	Response to NRC Letter dated August 26,2010, Request for Additional Information (Set 20) for the Diablo Canyon License Renewal Application and LRA Errata
09/24/10	DCL-10-115	Licensee Event Report 1-2010-002-02, Potential Loss of Safety Related Pumps due to Degraded Voltage During Postulated Accidents
09/29/10	DCL-10-123	Response to NRC Letter dated August 30, 2010, Request for Additional Information (Set 21) for the Diablo Canyon License Renewal Application
09/29/10	DCL-10-125	Notification Letter Designating Diablo Canyon Balance of Plant Systems within the Cyber Security Rule Scope
09/30/10	DCL-10-126	Response to NRC Letter dated September 1, 2010, Request for Additional Information (Set 22) for the Diablo Canyon License Renewal Application

September 2010 NSOC
List of Documents Transmitted Electronically

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
07/22/10	Summary of Telephone Conference Call Held on July 1, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application-Aging Management Programs
08/04/10	NRC Information Notice 2010-14: Containment Concrete Surface Condition Examination Frequency and Acceptance Criteria
08/10/10	Diablo Canyon Power Plant - NRC Integrated Inspection Report 05000275/2010003 AND 05000323/2010003
08/11/10	Audit Report Regarding The Diablo Canyon Nuclear Power Plant License Renewal Application (TAC NOS. ME2896 AND ME2897)
08/13/10	Summary of Telephone Conference Call Held on August 3, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application Scoping and screening and Aging Management Review
08/13/10	Safety Project Manager Change for the License Renewal Project for DCPP (TAC Nos. ME2896 and ME2897)
08/13/10	Diablo Canyon Power Plant, Unit Nos. 1 and 2 – Project Manager Assignment
08/25/10	Diablo Canyon Power Plant, Unit nos. 1 and 2 - Withdrawal of an Amendment Request (TAC NOS. ME2667 and ME2668)
08/26/10	Summary of Telephone Conference Call Held on July 29,2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application, Time Limited Aging Analyses and Aging Management Programs Review
08/27/10	Summary of Telephone Conference Call Held On August 17, 2010, Between the U.S. Nuclear Regulatory Commission And Pacific Gas And Electric Company Concerning Draft Request For Additional Information Related To The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application -Metal Fatigue
08/27/10	Acceptance Review for Diablo Canyon License Amendment Request For Cyber Security Plan (ME4290 and ME4291)
08/30/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) -Aging Management Review and Time-Limited Aging Analyses (Set 21)
09/01/10	Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) -Aging Management Programs (Set 22)

September 2010 NSOC
List of Documents Transmitted Electronically

C. **NRC Incoming Correspondence** (including Inspection Reports) cont'd

09/01/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897) – Aging Management Programs (Set 22 Clarification on Responses)
09/01/10	Mid-Cycle Performance Review And Inspection Plan – Diablo Canyon Power Plant
09/01/10	Mid-Cycle Security Performance Review And Inspection Plan – Diablo Canyon Power Plant (Security Related)
09/01/10	Diablo Canyon Power Plant Unit 1 – Notification of Inspection (NRC Integrated Inspection Report 05000275/2010005) and Request for Information
09/09/10	Diablo Canyon Power Plant - NRC Problem Identification and Resolution Inspection Report 05000275/2010006 AND 05000323/2010006
09/15/10	Summary of Telephone Conference Call Held On August 12, 2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
09/15/10	Summary of Telephone Conference Call Held On August 18, 2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
09/17/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (Tac Nos. ME2896 and ME2897) -Scoping and Screening (Set 26)
09/17/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) -Aging Management Programs (Set 24)
09/23/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897) -Time Limited Aging Analyses (Set 25)

D. **NRC Generic Correspondence** (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

Date		Title
07/22/10	NRC Information Notice 2010-13: Failure to Ensure that Post-Fire Shutdown Procedures can be Performed	

September 2010 NSOC
List of Documents Transmitted Electronically

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		NONE
PSRC Minutes		
08/31/10	2010-030	Ten Percent Steam Dump Valve Revitalization
09/08/10	2010-031	Calc N-100 (LBIE 2010-013); LER 1-2010-002-02

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCAs		NONE
ACE	60025168	2010PIR - TCOA / FSAR gap
	60027710	CDBI - SLUR Design Control NCV
	60027845	NRC Violation: inadequate 50.59 DG Chang
	60027941	NRC PI: RCS Leakage U1 Exceeds Threshold
	60027942	NRC PI: RCS Leakage U2 Exceeds Threshol
	60028004	unable to perform scheduled STP's
	60028005	BEACON neutron model inconsistencies
	60028006	Security - Potential Green NCV
	60028007	Security - Potential Green NCV
	60028008	Security - Potential Green NCV
	60028009	Security - Potential Green NCV
	60028061	Jul 2010 Training S/A Negative Comment 2
	60028062	Jul 2010 Training S/A Negative Comment 5
	60028063	Jul 2010 Training S/A Negative Comment 4
	60028064	Jul 2010 Training S/A Negative Comment 6
	60028090	Jul 2010 Training S/A Negative Comment 3
	60028149	Security Peer Recommendations
	60028165	QAAF-Personnel inaccurate rpt of TO
	60028209	Operability determination requested late
	60028323	PPC Remediation Project Implementation
Eff. Eval		CARB Interim Corrective Action Eff. Eval

September 2010 NSOC
List of Documents Transmitted Electronically

G. **QV Documents** (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. No.	Title
09/02/10	QPAR	QPAR 2nd Period 2010
08/31/10	Audit	Fitness For Duty/Concentra Programs Audit
	Audit Schedule	NONE
	Short Form	NONE
9/11/10	QV Status Report	DCPP Site Status Report

H. **Self Assessment/Benchmarking** (SA/BM Reports/Schedules)

Date	Doc. No.	Title
	Quick Hit Self-Assessment (QHSA) Schedule	NONE
	Formal Benchmarking and Self-Assessments Schedule	NONE
	QHSA	NONE

I. **Performance Information** (PPIR, Operating Plan, Station Initiatives)

Date	Doc. No.	Title
	Operating Plan	NONE
09/16/10	PPIR	August PPIR Report
09/03/10	Action Plan	2010 Diversity Status
09/08/10	Action Plan	Electrical Safety – Operating Supply
09/15/10	Action Plan	Engineering Evaluation Rigor Improvement
09/17/10	Action Plan	Integrated Security Action Plan
09/17/10	Action Plan	Security Material Condition Action Plan
09/22/10	Action Plan	Operations Revitalization Plan
10/04/10	Action Plan	2009 Premier Survey
09/29/10	Action Plan	2010 Problem Evaluation Thoroughness Action Plan

J. **INPO Documents** (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Doc. No.	Title
		Please see PPIR for INPO Performance Indicator Table
08/31/10		INPO PI Assist Report

September 2010 NSOC
List of Documents Transmitted Electronically

K. **Operational Documents** (ODM Minutes, POAs)

Date	Doc. No.	Title
ODM	50340491	Status of Unit 1 RCP Seal Leakage
POA	50307598	LTCA 2010PIR DG Lic Bases load exceeded
POA	50340417	DG Nonconformance with RG 1.9 Rev. 0

L. Miscellaneous

Date	Title
09/30/10	PG&E @ Work – DCPP Edition
08/30/10	PG&E @ Work – DCPP Edition
09/23/10	PG&E @ Work – DCPP Edition

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	08/30/10	T-1 Critique
Maintenance	09/06/10	T-1 Critique
Maintenance	09/13/10	T-1 Critique
Maintenance	09/20/10	T-1 Critique

N. Documents Previously Transmitted during the Month

Date	Title
08/25/10 – 09/28/10	QV Real Time Report

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October 2010 NSOC/DCISC
List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
10/05/10	2010-021	Integrated Head Assembly (IHA)
10/15/10	2010-015	CFCU Anti-reverse Rotation Device
10/15/10	2010-016	CFCU Anti-Reverse Rotation Device
10/09/10	2010-020	No Longer Credit Use of Creek Water
10/01/10	2010-019	Pressurizer Level Increase in Modes 3, 4, & 5
10/23/10	2010-023	FSARU 15.4.3 Steam Generator Tube Rupture Revised Analysis for Margin to Overfill
10/30/10	2010-024	Replace RCDT Hatch Covers with Grating

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
10/12/10	DCL-10-128	Response to NRC Letter dated September 13, 2010, Request for Additional Information (Set 23) for the Diablo Canyon License Renewal Application
10/08/10	DCL-10-129	Response to NRC Letter dated September 15, 2010, Summary of Telephone Conference Held on August 18, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
10/12/10	DCL-10-130	Response to NRC Letter dated September 17, 2010, Request for Additional Information (Set 24) for the Diablo Canyon License Renewal Application
10/12/10	DCL-10-132	Response to NRC Letter dated September 17, 2010, Request for Additional Information (Set 26) for the Diablo Canyon License Renewal Application
10/13/10	DCL-10-127	Material Status Report for the Period Ending August 31, 2010
10/15/10	DCL-10-137	Response to NRC Letter dated September 22, 2010, Summary of Telephone Conference Call Held on August 5, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
10/21/10	DCL-10-139	Diablo Canyon Units 1 and 2 – 3Q2010 – PI Data Elements (QR) and (CR)
10/21/10	DCL-10-131	Response to NRC Letter dated September 23, 2010, Request for Additional Information (Set 25) for the Diablo Canyon License Renewal Application
10/25/10	DCL-10-141	Revision to the Unit 1 Reactor Vessel Material Surveillance

October 2010 NSOC/DCISC
List of Documents Transmitted Electronically

		Program Withdrawal Schedule
10/27/10	DCL-10-124	Information to Support NRC Review of DCPP License Renewal Application (LRA) Environmental Report – Operating License Renewal Stage
10/27/10	DCL-10-133	Response to NRC Letter dated September 29, 2010, Summary of Telephone Conference Call Held on August 31, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information (Sets 2 and 13) Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
10/27/10	DCL-10-134	Response to NRC Letter dated September 28, 2010, Summary of Telephone Conference Call Held on September 2, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
10/27/10	DCL-10-135	Response to NRC Letter dated September 30, 2010, Request for Additional Information (Set 28) for the Diablo Canyon License Renewal Application
10/27/10	DCL-10-138	Response to NRC Letter dated September 29, 2010, Request for Additional Information (Set 27) for the Diablo Canyon License Renewal Application
10/28/10	DCL-10-042	Emergency Plan Implementing Procedure Update

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
09/30/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897) -Fire Protection (Set 28)
09/13/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) - scoping and screening (Set 22)
09/22/10	Summary of Telephone Conference Call Held on August 5,2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (Set 2)
09/27/10	Meeting Summary for the Licensing Basis Verification Project Public Meeting on September 22, 2010 for DCPP
09/28/10	Summary of telephone conference call held on September 2, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and

October 2010 NSOC/DCISC
List of Documents Transmitted Electronically

	Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897) (Sets 1, 4 and 12)
09/29/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897) – Aging Management Review (Set 27)
09/29/10	Summary of Telephone Conference Call Held on August 31, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (Sets 2 and 13)
09/29/10	Diablo Canyon Power Plant, Unit Nos. 1 and 2 -Issuance of Amendments Re: Revision to Final Safety Analysis Report Update Section 3.7.1.3, "Critical Damping Values" (TAC NOS. ME4056 and ME4057)
10/08/10	Request for Withholding Information From Public Disclosure for Diablo Canyon Power Plant, Unit Nos. 1 and 2 (TAC Nos. ME4094 and ME 4095)
10/15/10	Summary of Telephone Conference Call Held on September 16, 2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning the Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application -Time Limited Aging Analysis
10/15/10	Summary of Telephone Conference Call held on September 22, 2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning the Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application – Aging Management Programs
10/15/10	Summary of Telephone Conference Call Held on September 27,2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning the Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application -Aging Management Review
10/15/10	Revision of Schedule for the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
10/20/10	Request for Withholding Information from Public Disclosure for Diablo Canyon Power Plant, Unit Nos. 1 AND 2 (TAC Nos. ME4094 and ME4095)
10/25/10	Diablo Canyon Power Plant, Unit Nos. 1 and 2 -Project Manager Assignment
10/25/10	Request for Withholding Information from Public Disclosure for Diablo Canyon Power Plant, Unit No.2 (TAC No. ME4577)
10/29/10	Diablo Canyon Power Plant, Unit No.1 -Approval OF Proposed Reactor Vessel Material Surveillance Program Withdrawal Schedule (TAC No. ME4924)

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters,

October 2010 NSOC/DCISC
List of Documents Transmitted Electronically

Regulatory Issue Summaries, Administrative Letters)

Date		Title

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		NONE
PSRC Minutes		If none, state none . . . .
10/05/10	2010-010	Inservice Testing Program Plan, Rev. 3; OIM7.ID1, Rev. 33
09/29/10	2010-033	LBIE 2010-019
10/13/10	2010-032	Pressurizer Level Increase in Modes 3, 4 and 5
10/18/10	2010-034	IHA DCP U1 (and U2 document change only)
10/18/10	2010-035	Discontinue Use of Diablo Creek Water
10/20/10	2010-036	POA Update for Unit 1 Cycle 17 Core Reload
10/23/10	2010-037	FSARU 15.4.3 SGTR MTO Analysis
10/26/10	2010-038	Reactor Vessel Head Plenum Heavy Load Lift
10/28/10	2010-039	RFR Subjects
10/30/10	2010-040	U1 Replace RCDT Hatch Covers

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCAs	60027841	Security Issue – Protected Area Boundary
ACE	60026984	QAAF: Fire doors OOT (STP M-70C) (ACE)
	60027840	Security Issue – Exercise Performance
	60027842	Security Issue – System Performance
	60028062	Jul 2010 Training S/A Negative Comment 5
	60028064	Jul 2010 Training S/A Negative Comment 6
	60028090	Jul 2010 Training S/A Negative Comment 3
	60028092	Adverse Trend: CALFIRE Delays in PA Accs
	60028165	QAAF-Personnel inaccurate rpt of TO
	60028268	QDEF-Procedure non-compliance SP 420
	60028366	QAAF-SGI not marked as required
	60028433	Fuel placed in wrong SFP location
	60028490	Loss of charging flow during CCP swap
	60028570	Intake Top Deck Conduit Damaged
	60028758	Sim Guide development/revision issues
	60028759	QDEF-PI data entry without qual
	60028809	Security Testing Not Completed on Time
	60028888	QAAF – Insider Mitigation Findings
	60028928	HT ACE: NCV: CAs Not Prompt, DG

October 2010 NSOC/DCISC
List of Documents Transmitted Electronically

	60029015	QDEF-Defense Strategy Matrix inaccurate
	60029685	Temperature below PTLR requirement
Eff. Eval		If none, then state, "No Evals for this month"

G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. No.	Title
	QPAR	NONE
	Audit Reports	NONE
	Audit Schedule	NONE
10/27/10	103010045	Short Form Assessment Peer Review Station Activities 1R16
10/19/10	102840006	Short Form Assessment Follow-up for Unresolved Issue from 2nd Period 2010 QPAR

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. No.	Title
	Quick Hit Self-Assessment (QHSA) Schedule"	NONE
	Formal Benchmarking and Self-Assessments Schedule	NONE
	QHSA	NONE

I. Performance Information (PPIR, Operating Plan, Station Initiatives)

Date	Doc. No.	Title
	PPIR	NONE
10/07/10	Action Plan	Problem Evaluation Thoroughness Action Plan
10/30/10	Action Plan	Performance Improvement Focus Area Action Plan
11/03/10	Action Plan	Operations Revitalization Plan
10/12/10	Action Plan	Engineering Evaluation Rigor Improvement Action Plan
10/06/10	Action Plan	Response to INPO Letter on Recent Industry Events
10/05/10	Action Plan	Increase Employee Concerns visibility and promote as an alternate resolution path.

J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Doc. No.	Title
		Please see PPIR for INPO Performance Indicator Table

K. Operational Documents (ODM Minutes, POAs)

Date	Doc. No.	Title

October 2010 NSOC/DCISC
List of Documents Transmitted Electronically

ODMs	50358276	U-2 High Swell Warning 11-2-10
	50353699	U-2 Condenser dp
POA	50340070	U-1 Increased RCS Leakage by R-10C
	50328013	IFW: Node Communication failure alarms
	50351839	RMI not found in Bio-wall pentrat
	50352240	Unit Two DMIMS loss of power
	50354652	U2 TMS Train B Failure
	50301767	CETC TT54 spiking causing SCMM alarms
	50313348	Leakby on FCV-2-924-Polisher Vessel 2-2
	50297191	U-2 PK 0508 RCS Vlv Stem Lkage Alarm
	50312260	Bus 22D/E ground in & out
	50348358	Battery 2-1 Ground Indicated
	50352578	Unit 2 – Rods stepped in 3 and ½ steps
	50350918	Unit 2 – Insulation in Bio-wall penetrate
	50355265	Post Loca recirculation Flow

L. Miscellaneous

Date	Doc. No.	Title
		NONE . . . .

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	09/27/10	T-1 Critique
Maintenance	10/04/10	T-1 Critique
Maintenance	10/11/10	T-1 Critique
Maintenance	10/18/10	T-1 Critique

October 2010 NSOC/DCISC
List of Documents Transmitted Electronically

N. Documents Previously Transmitted during the Month

Date	Title
09/29/10 – 11/03/10	QV Real Time Report . . .

November 2010 NSOC
List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
11/17/10	LBIE 2010-025	Auxiliary building Control Board Replacement -Phase 4B

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
11/08/10	DCL-10-140	Response to NRC Letter dated November 5, 2010, Summary of Telephone Conference Call Held on September 30, 2010 Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant. Units 1 and 2, License Renewal Application - Scoping and Screening
11/16/10	DCL-10-143	Core Operating Limits Report for Unit 1 Cycle 17
11/24/10	DCL-10-146	Response to Telephone Conference Call Held on November 10, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
11/24/10	DCL-10-147	Response to Draft Requests for Additional Information (Sets 31 & 33) for the Diablo Canyon License Renewal Application
11/24/10	DCL-10-148	Response to NRC Letter dated November 03,2010, Request for Additional Information (Set 29) for the Diablo Canyon License Renewal Application
11/24/10	DCL-10-149	Response to NRC Request for Additional Information Regarding the 180-Day Steam Generator Report for Diablo Canyon Power Plant Unit 2 Fifteenth Refueling Outage
11/24/10	DCL-10-151	Response to Telephone Conference Call Held on November 9, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
11/30/10	DCL-10-152	Update to Notification Letter Designating Balance of Plant Systems within the Cyber Security Rule Scope

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
11/01/10	Diablo Canyon Power Plant - NRC Integrated Inspection Report 05000275/2010004 AND 05000323/2010004
11/02/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897) – Time Limited Aging Analysis – (Set 30)
11/03/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897) – Aging Management Programs (Set 29)

November 2010 NSOC/DCISC
List of Documents Transmitted Electronically

11/05/10	Summary of Telephone Conference Call Held on September 30, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application - Scoping and Screening
11/17/10	Summary of Telephone Conference Call Held on October 14, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application Time-Limited Aging Analyses

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

Date		Title

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		If none, state none . . . .
PSRC Minutes		
10/31/10	**2010-041**	RFR Follow-up Items
11/02/10	**2010-042**	Insulation in Bio-Shield Wall Penetrations (Mode 4 RFR)
11/03/10	**2010-043**	RFR Binder (Mode 4 to 3)
11/06/10	**2010-044**	Results of Walkdown of Modification for Flowpath to Sump. Results of the 1R16 Testing Program.
11/07/10	**2010-045**	Results of Walkdown of Modification for Flowpath to Sump. Results of the 1R16 Testing Program – Follow-up. Heater 2 Drip Tank Movement. RFR Program.
11/17/10	**2010-046**	DCP 1*321, LBIE 2010-025: Aux Building Control Board Replacement – Phase 4B

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCAs		"No RCAs for this month"
ACE	60027183	HT ACE: NRC Violation LBIE Screen – FLUR
	60028694	RCP 1-4 Cause Analysis Determination
	60029016	Evaluate Adherence to PSP – Watch Tours
	60029082	Scissor Lift Tipping Event in Cavity
	60029083	RRVCH Documentation not RMS Unit 2
	60029136	Perform an Equipment ACE

November 2010 NSOC/DCISC
List of Documents Transmitted Electronically

	60029165	Avila Main Gates
	60029240	Adverse Trend for Sec FMR Waivers
	60029352	QDEF-Unqualed Point of Origin Search
	60029396	QAAF-Sec Procedures Inadequate
	60029684	Fire Barrier Seal Removed without Auth.
	60029920	3Q10 Insp – Risk Assessment TS 3.3.4
	60029921	3Q10 NRC Exit – Door 223
Eff. Eval		EFF EVAL FOR N0002150, "Power Cable to CCW Pump 2-3 Shorted to Ground"

G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. No.	Title
		If none, then state, "No QPAR for this month"
11/16/10	103220024	Checklist for Evaluation of Third-Party Audits of FFD Programs – Quest Diagnostics
10/30/10	Schedule	Diablo Canyon Power Plant Internal & External Audit Schedule
11/09/10	102840006	Short Form Assessment: Follow-up for Unresolved Issue from 2nd Period 2010 QPAR

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. Type.	Title
		If none, state, "No updated Quick Hit Self-Assessment (QHSA) Schedule"
06/28/10	Self Assessment	2010 Check Valve Program Self Assessment
07/15/10		Foreign Material Exclusion Program Self Assessment
10/13/10		Self Assessment of Shift Manager and Shift Technical Advisor Training Programs
07/26/10		Human Performance Self Assessment
08/16/10		Technical and Maintenance Training Self Assessment Objectives 1-6
04/21/10		DCPP Component Design Basis Inspection
05/11/10	Benchmarking	Strategic Projects Benchmarking
10/23/10		Byron Benchmarking – Station Leadership Review of CAP Products

November 2010 NSOC/DCISC
List of Documents Transmitted Electronically

09/14/10	QHSA	DCPP Engineering Programs Quick Hit
07/13/10		2010 SISI Program
09/20/10		Security Material Equipment Condition Action Plan Progress
09/21/10		UFSAR Fidelity and Change Control
11/23/10		Engineering Program for the Civil Maintenance Rule

I. Performance Information (PPIR, Operating Plan, Station Initiatives)

Date	Doc. No.	Title
PPIR		September/October PPIR
11/08/10	Action Plan	Cost Performance Action Plan
11/16/10		2010 Electrical Safety Action Plan
11/19/10		Operational Focus
11/28/10		Engineering Evaluation Rigor Improvement Action Plan
11/29/10		2009 Premier Survey
12/0/10		2010 Problem Evaluation Thoroughness Action Plan
12/02/10		2010-2011 Operating Plan Performance Improvement Focus Area Integrated Action Plan
12/07/10		Large Power Transformer Reliability

J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Doc. No.	Title
		Please see PPIR for INPO Performance Indicator Table

K. Operational Documents (ODM Minutes, POAs)

Date	Doc. No.	Title
ODMs	50361403	U-2 Control Rod Issue
	50361780	U-2 Control Rod Issue
POA	50032999	RCP 2-3 #1 seal leak-off spiking
	50033830	CETC TT20 irradic indications
	50034595	U2 PK11-22 and PK11-15 RM alarms
	50035560	LTCA: AIR DRYER 0-1 panel redesign req'd
	50245278	U-1 Calorimetric Pwr Oscilation
	50266116	LTCA Calculation N-114 non conservative
	50282379	CETC TT38 spiking high
	50301167	LTCA CDBI: Unanalyzed Condition 230 kV
	50319489	GE Fans require 2 operators to start
	50359646	Replace RCS-1-8076 & restore TS-67 relay

	50360369	Cel 82 is spiking
	50361190	TT-17 spiking high
	50361857	DEG21 annunciators lit and won't clear
	50361919	Monitoring not in effect – U2 Pol. Roof
	50362589	DEG21 LOW STARTING AIR PRES ALARM
	50363088	Ground on 21D
	50363094	MSR 1-2 C Hp Drain Tank LCV 152
	50363380	PRT pressure rise (4.5 psig in 2 hours)

L. Miscellaneous

Date	Doc. No.	Title
11/16/10	Audit # 102770004	2010 Professional Assessment and Consultation, Inc. Audit
11/30/10	DCL-10-153	Diablo Canyon Units 1 and 2 Annual Review of the Emergency Action Levels
11/30/10	DCL-10-154	Diablo Canyon Units 1 and 2 Annual Review of the Emergency Action Levels
11/23/10		PG&E @ Work – DCPP Edition

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	11/09/10	T-1 Critique
Maintenance	11/10/10	T-1 Critique
Maintenance	11/18/10	T-1 Critique
Maintenance	11/24/10	T-1 Critique
Maintenance	12/01/10	T-1 Critique

November 2010 NSOC/DCISC
List of Documents Transmitted Electronically

N. Documents Previously Transmitted during the Month

Date	Title
11/03/10 – 12/01/10	QV Real Time Report

December 2010 NSOC
List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
		NONE

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
12/06/10	DCL-10-150	Response to NRC Letter dated November 24, 2010, Request for Additional Information for the Applicant's Environmental Report – Operating Renewal Stage
12/06/10	DCL-10-155	Response to NRC Letter dated November 2, 2010, Request for Additional Information (Set 30) for the Diablo Canyon License Renewal Application
12/21/10	DCL-10-157	Snubber Visual Examination and Functional Testing Related to the Inservice Inspection Program Third 10-Year Interval
12/29/10	DCL-10-158	10 CFR 54.21 (b) Annual Update to the DCPP License Renewal Application and License Renewal Application Amendment No. 34
12/08/10	DCL-10-159	Emergency Plan Implementing Procedure Update
12/13/10	DCL-10-160	Response to Telephone Conference Call Held on November 10, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
12/13/10	DCL-10-162	Response to NRC Draft Request for Additional Information (Draft Set 34), dated November 10, 2010, for the Diablo Canyon License Renewal Application
12/13/10	DCL-10-163	Response to Telephone Conference Call Held on November 18, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Reponses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
12/13/10	DCL-10-164	Response to NRC Draft Request for Additional Information (Draft Set 35), dated November 29, 2010, for the Diablo Canyon License Renewal Application
12/26/10	DCL-10-171	Notification of Unusual Event, December 25, 2010
12/31/10	DCL-10-172	Delay of Submittal – PG&E Shoreline Fault Zone Final Report

December 2010 NSOC
List of Documents Transmitted Electronically

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
11/17/10	Diablo Canyon Power Plant - NRC license renewal inspection Report 05000275/2010008 and 05000323/2010008
11/24/10	Request for Additional Information Related to the Environmental Review of the Diablo canyon nuclear power plant. Units 1 and 2, License Renewal Application: Sama Clarifications (TAC Nos. ME2825 and ME2826)
12/01/10	Summary of Telephone Conference Call Held on November 9, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company, Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)
12/08/10	Summary of Telephone Conference Call Held on November 10, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company, Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)
12/20/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)-Aging Management Program and Time Limited Aging Analyses – Set 36
12/20/10	Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)-Time Limited Aging Analyses – Set 37

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

Date		Title
		NONE

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		NONE
PSRC Minutes		. .
12/01/10	**2010-047**	DDP 1*171 and DDP 1*367 U2 SI Test Header Project and U2 SI Travel Stop Project

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCAs		No RCAs for this month
ACE	60017741	Feedwater Heater 1-6A High Level

December 2010 NSOC
List of Documents Transmitted Electronically

Type	Doc. No.	Title
	60020961	NRC Violation 2009 3rd Q: FSAR Update
	60025684	Task performed w/o proper Qualification
	60027187	CDBI Violation: FSAR Feedline Ref.
	60028064	Jul 2010 Training S/A Negative Comment 6
	60028933	U1 CST Code Break Valves
	60029436	12kv D&E bus bar insul. Found cracked
	60029681	Possible Rigging Adverse Trend
	60029838	3Q10 NRC Exit – Operability Evaluations
	60029920	3Q10 Insp – Risk Assessment TS 3.3.4
	60030163	1R16 FME Perf & Monitoring Weak
	60030886	Clearance Reported Off Early
	60030938	QAAF-Inadequat imp of Sec Training Prog
	60030939	FCV-146, Steam Leak at Actuator Housing
Eff. Eval		No Evals for this month

G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. Type.	Title
12/14/10	QPAR	Quality Performance Assessment Report (QPAR), Third Period 2010
12/20/10	Audit Report	2010 Security Program Audit
		No new Schedule for this month
		No Short Form Assessments for this month

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. Type	Title
		No updated Quick Hit Self-Assessment (QHSA) Schedule
12/22/10	Benchmarking	NRC Regional Utility Group Region IV Meeting
08/21/10		Security Morale Benchmark Trip, South Texas Project
05/27/10		Benchmark for Iron Transport: Feed Water Dispersant
12/15/10	QHSA	Chemistry Laboratory Reagent and Standard Inventory Practices
12/21/10		Design Criteria Memoranda Quick Hit Self-Assessment
01/03/11	BM Schedule	Benchmarking 2010 Schedule
01/03/11	SA Schedule	Self-Assessment 2010 Schedule

December 2010 NSOC
List of Documents Transmitted Electronically

I. Performance Information (PPIR, Operating Plan, Station Initiatives)

Date	Doc. No.	Title
PPIR		November PPIR . . . .
PPIR		December PPIR
Station Initiative		No updated Station Initiatives . . .

J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Doc. No.	Title
		Please see PPIR for INPO Performance Indicator Table

K. Operational Documents (ODM Minutes, POAs)

Date	Doc. No.	Title
ODMs	50361780	U-2 Unexpected Inward Rod Motion
	50365066	U-1 Megawatt Step Change
POA	50368801	Rev 1: EDG Load Reject SR Non-conserv

L. Miscellaneous

Date	Doc. No.	Title
12/16/10		PG&E @ Work – DCPP Edition

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	12/09/10	T+1 Critique
Maintenance	12/16/10	T+1 Critique
Maintenance	12/22/10	T+1 Critique
Maintenance	12/31/10	T+1 Critique

N. Documents Previously Transmitted during the Month

Date	Title
12/01/10 – 01/04/11	QV Real Time Report

January 2011 NSOC
List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
		None for the month of January

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
01/05/11	DCL-11-004	License Event Report 1-2011-001-00: Mode Transition With Turbine-Driven Auxiliary Pump 1-1
01/07/11	DCL-10-166	Response to Telephone Conference Call Held on December 8, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant Units 1 and 2, License Renewal Application
01/07/11	DCL-10-168	Response to NRC Letter dated December 20, 2010, Request for Additional Information (Set 37) for the Diablo Canyon License Renewal Application
01/07/11	DCL-11-006	Response to Telephone Conference Held on January 4, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
01/07/11	DCL-11-005	Report on the Analysis of the Shoreline Fault Zone, Central Coastal California
01/12/11	DCL-10-167	Response to NRC Letter dated December 20, 2010, Request for Additional Information (Set 36) for the Diablo Canyon License Renewal Application
01/12/11	DCL-11-001	Response to Telephone Conference Call Held on December 14, 2010, Between U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
01/21/11	DCL-11-002	Response to Telephone Conference Call Held on December 9, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
01/25/11	DCL-11-012	Change in Status for Senior Reactor Operator License
01/28/11	DCL-11-009	Emergency Response Data System Transition from Existing Modem to Virtual Private Network Technology

January 2011 NSOC
List of Documents Transmitted Electronically

01/31/11	DIL-11-001	License Amendment Request 11-001: Revision to Technical Specifications 1.1, 2.0, 3.1.1, 3.1.2, 4.1.2, and 5.1.3; Addition of Technical Specifications 2.3 and 3.1.4; and. Request for an Exemption from the Requirements of 10 CFR 72.236(f)

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
01/05/11	Summary of December 9, 2010, Pre-Licensing Meeting with Pacific Gas and Electric Company on Plans to Submit a License Amendment to Incorporate Management of New Geotechnical Seismic Information into its Design and Licensing Basis (TAC NOS. ME5033 and ME5034)
01/05/11	Generic Fundamentals Section of the Written Operator Licensing Examination
01/10/11	Diablo Canyon Power Plant Cyber Security Plan (ME4290 and ME4291)
01/10/11	Summary of Telephone Conference Call Held on December 1, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)
01/10/11	Summary of Telephone Conference Call Held on December 8, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Response Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)
01/10/11	Safety Evaluation Report with Open Items Related to the License Renewal of Diablo Canyon Nuclear Power Plant Units 1 and 2
01/13/11	Forthcoming Meeting with Representatives of Pacific Gas and Electric Company (TAC NOS. ME5033 and ME5034)
01/14/11	Diablo Canyon, Units 1 and 2, - Notification of NRC Initial Operator Licensing Examination 05000275/2011301; 05000323/2011301
01/18/11	1/27/11 Public Meeting to Discuss the Region IV License Renewal Inspection Results

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

Date		Title
		None

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		None
PSRC		

January 2011 NSOC
List of Documents Transmitted Electronically

Minutes		
12/15/10	**2010-048**	OM7.ID1, Problem Identification and Resolution
01/05/11	**2011-001**	LER 2011-1-0, Mode Transition with Turbine-Driven Auxiliary Feedwater Pump 1-1 Inoperable
01/12/11	**2011-002**	RAI Regarding Scoping & Screening, E-Plan Section 7 Rev 4 Change 7

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCAs	60031440	TRNG Assessment Challenge Board results
	60031440	TRNG Assessment Challenge Board results (approved by CARB)
ACE	60028006	Security – Green NCV
	60028092	Adverse Trend: CALFIRE Delays in PA Accs
	60031122	Evaluate AFW pump as left data
	60031122a	Evaluate AFW pump as left data (Re-perform a HT ACE)
	60031194	QAAF – Problems removed from CAP
	60031763	4Q NRC Inspection – Violation on OM8.ID4
Eff. Eval		No Evals for this month

G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. No.	Title
		No QPAR for this month
		No Audit Reports for this month
		No new Schedule for this month
01/31/11	103190005	Short Form Assessment – Licensing Basis Verification Project, Phase 1

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. No.	Title
		No updated Quick Hit Self-Assessment (QHSA) Schedule
01/13/11	103500025	QA Self Assessment – Quality Verification
		No QHSA for this month

January 2011 NSOC
List of Documents Transmitted Electronically

I. Performance Information (PPIR, Operating Plan, Station Initiatives)

Date	Doc. No.	Title
2009		Operating Plan 2009 – 2013: No new updates . . . .
PPIR		January PPIR will be in next transmittal
Station Initiative		Performance Improvement – Operating Plan

J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Doc. No.	Title
		Please see PPIR for INPO Performance Indicator Table

K. Operational Documents (ODM Minutes, POAs)

Date	Doc. No.	Title
ODMs		Unit 2, #2 Htr Drain Pump
POA	50370698	ABVS M-4A/B Single Failure Vulnerability

L. Miscellaneous

Date	Doc. No.	Title
01/11/11		PG&E @ Work – DCPP Edition
01/19/11		PG&E @ Work – DCPP Edition
01/27/11		PG&E @ Work – DCPP Edition
01/20/11	110200109	Timeliness of 10CFR50.54(t) Assessment of Emergency Preparedness

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	201052	T-1 Critique
Maintenance	201101	T-1 Critique

N. Documents Previously Transmitted during the Month

Date	Title
01/04/11 – 01/25/11	QV Real Time Report
01/25/11	DCPP Site Status Report - January

February 2011 NSOC
List of Documents Transmitted Electronically

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A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
02/01/11	2011-002	Fire Protection Program Change – Alt Comp Measure
02/18/11	2011-003	BBRE Guard Towers #s 1-6

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
02/01/11	DCL-11-003	Response to Telephone Conference Call Held on December 14, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
02/04/11	DCL-11-008	Response to Telephone Conference Call Held on January 4, 2011, Between U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, Environmental Report – Operating License Renewal Stage
02/08/11	DCL-11-014	Response to Request for Additional Information E-mail dated January 10, 2011, from the U.S. Nuclear Regulatory Commission (ME4290 and ME4291) Concerning the Diablo Canyon Power Plant, Units 1 and 2, Cyber Security Plan License Amendment Request 09-05
~~02/11/11~~	~~DCL-11-013~~	~~Inservice Inspection Report for Unit 1 Sixteenth Refueling~~ Outage
02/11/11	DCL-11-007	Licensee Event Report 1-2010-003-01, Supplement to Diablo Canyon Power Plant 230 kV Historical Evaluation of Condition Prohibited by Technical Specification
02/17/11	DCL-11-018	License Amendment Request 11-02 – Revision to Technical Specification 3.7.1, "Main Steam Safety Valves (MSSVs)

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
01/10/11	Diablo Canyon Power Plant, Units 1 and 2 – NRC Emergency Preparedness Annual Inspection Report 05000275/2010501 and 05000323/2010501
01/11/11	Summary of Telephone Conference Call Held on November 18, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)
01/11/11	Summary of Telephone Conference Call Held on December 9, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information

February 2011 NSOC
List of Documents Transmitted Electronically

	Response Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)
01/19/11	Diablo Canyon Power Plant, Unit 2 – Notification of Inspection (NRC Integrated Inspection Report 05000323/2011003) and Request for Information
01/20/11	Forthcoming Meeting with Representatives of Pacific Gas and Electric Company (TAC NOS. ME5284 and ME5285)
01/21/11	Summary of Meeting with Pacific Gas and Electric Company Regarding the Results of the Shoreline Fault Zone Seismic Report
01/24/11	Diablo Canyon Power Plant, Unit Nos. 1 and 2 – Issuance of Amendments Re: Revision to Technical Specification 3.4.15. "RCS Leakage Detection Instrumentation" (TAC No. ME1644 and ME1645)
01/25/11	Summary of Telephone Conference Call Held on December 16, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Numbers ME2896 and ME2897)
01/25/11	Summary of Telephone Conference Call Held on December 22, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Numbers ME2896 and ME2897)
01/26/11	Forthcoming Meeting With Industry and Licensee Representatives Re: Transition of Non-Pilot Licensees to National Fire Protection Association Standard 805
01/26/11	Forthcoming Meeting with Representatives of Pacific Gas and Electric Company (PG&E) (TAC NOS. ME5352 and ME5353)
02/07/11	Summary of Telephone Conference Call Held on December 14, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Response Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Numbers ME2896 and ME2897)
02/07/11	Diablo Canyon Power Plant – NRC Integrated Inspection Report 05000275/2010005 and 05000323/2010005
02/07/11	Summary of Telephone Conference Call Held on January 4, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Numbers ME2896 and ME2897)
02/14/11	Summary of Telephone Conference Call Held on January 19, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Open Items Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, Safety Evaluation Report (TAC Numbers ME2896 and ME2897)
02/16/11	Summary of the Public Meeting to Discuss the Results of the Diablo

February 2011 NSOC
List of Documents Transmitted Electronically

	Canyon Power Plant License Renewal Inspection
02/23/11	Summary of January 26, 2011, Pre-Licensing Meeting with Pacific Gas and Electric Company On Responses to the U.S. Nuclear Regulatory Commission Staff's Questions From the Previous Public Meeting on December 9, 2010 (TAC NOS. ME503 and ME5034)

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

Date		Title
01/31/11	IN 2011-02	Operator Performance Issues Involving Reactivity Management at Nuclear Power Plants

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		NONE
PSRC Minutes		
01/26/11	**2011-003**	DIL 11-xxx (LAR 11-xxx), Revision to TS 1.1, 2.0, 3.1.1, 3.1.2, 4.1.2, and 5.1.3; Addition of TS 2.3 and 3.1.4; and Exemption from the requirements of 10 CFR 72.236(f)
02/01/11	**2011-004**	OM8.ID4, Fire Protection Program Change, Alternate Compensatory Measure Fire Areas 10-76 and 20-76
02/09/11	**2011-005**	LER 1-2010-003-01, "Supplement to DCPP 23kV Historical Evaluation of Condition Prohibited by TS;" LAR 11-02, Revision to TS 3.7.1, "Main Steam Safety Valves (MSSVs);" OP2.ID2, "Tagging Requirements"
02/18/11	**2011-006**	DCP 1000000403, Rev. 0, LBIE 2011-003 Installation of six new Bullet and Blast Resistant Enclosure (BBRE) guard towers at various locations inside the plants protected are to enhance plant's security system.
02/23/11	**2011-007**	- PHIP# 2009-S018-004, Transition to NFPA 805 License Basis; Request PSRC permission to establish a PSRC subcommittee for review of NFPA 805 LAR documentation. - OP2.ID2, Tagging Requirements - OM7.ID1, Problem Identification and Resolution

February 2011 NSOC
List of Documents Transmitted Electronically

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCAs		No RCAs for this month
ACE	60026402	TS 3.7.7 violation – CDBI
	60027845	HT ACENRC Violation: inadequate 50.59 DG
	60028005	BEACON neutron model inconsistencies
	60028092	Adverse Trend: CALFIRE Delays in PA Accs
	60028433	Fuel placed in wrong SFP location (Operation 31)
	60028433	Fuel placed in wrong SFP location (Operation 32)
	60028490	Loss of charging flow during CCP swap (Operation 31)
	60028490	Loss of charging flow during CCP swap (Operation 32)
	60028694	RCP 1-4 Cause Analysis determination
	60029081	10CFR73 App B Compliance Issue (Operation 31)
	60029081	10CFR73 App B Compliance Issue (Operation 32)
	60029083	RRVCH Documentation not RMS Unit 2
	60029165	Avila main gates
	60029352	QDEF-Unqualed point of origin searche (Operation 31)
	60029352	QDEF-Unqualed point of origin searche (Operation 32)
	60029685	Temperature below PTLR requirement (Operation 31)
	60029685	Temperature below PTLR requirement (Operation 32)
	60029838	3Q10 NRC Exit – Operability Evaluations (Operation 31)
	60029838	3Q10 NRC Exit – Operability Evaluations (Operation 32)
	60029839	3Q10 NRC Exit – ASW Code Break Valve
	60030938	QAAF-Inadequate imp of Sec Training Prog
	60031122	Evaluate AFW pump as left data
	60031194	QAAF – Problems removed from CAP
	60031425	Eval. Design options for CFCU circuit
	60031441	Poor 1R16 Schedule Discipline
	60031582	QV Effectiveness
	60032189	Document additional test data
	60032191	Non-conservative SR 3.8.1.10
	60032500	U2 ABVS DAMPER M-4A FAILED ON SWAP
	60032771	U 1 SR 3.0.3 ENTRY FOR MISSED SR 3.3.1.4
Eff. Eval		Effectiveness Evaluation for RCA 60014096, "Inadequate Evaluation Thoroughness"

G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. No.	Title
		No QPAR for this month

February 2011 NSOC
List of Documents Transmitted Electronically

02/03/11	100330019	Audit of 1R16 Design Changes
02/23/11	Audit Schedule	Diablo Canyon and Humboldt Bay Power Plants Internal & External Audit February 23, 2011
01/26/11	110380042	Short Form Assessment – HBPP Multi Agency Radiological Site Survey and Investigation Manual (MARSSIM) Characterization Survey Planning and Execution: Characterization Survey of the Liquid Fuel Oil Storage Tank Footprint Survey Number HBPP-CHAR-OOL10-01-01
02/22/11	110550005	Short Form Assessment – HBPP Multi Agency Radiological Site Survey and Investigation Manual (MARSSIM) Characterization Survey Planning and Execution: Characterization Survey of the Liquid Fuel Oil Storage Tank Footprint Survey Number HBPP-CHAR-OOL10-01-02
02/28/11		DCPP Site Status Report

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. No.	Title
		No updated Quick Hit Self-Assessment (QHSA) Schedule
		No Formal Benchmarking and Self-Assessments Schedule
		No QHSA for this month

I. Performance Information (PPIR, Operating Plan, Station Initiatives)

Doc Type	Date.	Title
2011	01/18/11	Operating Plan 2011 – 2015
PPIR	02/14/11	Plant Performance Improvement Report
	03/17/11	Plant Performance Improvement Report
Station Initiative	02/28/11	95002 Inspection Readiness Action Plan
	02/25/11	Evaluation Thoroughness Action Plan
	02/25/11	Electric Power Reliability Initiative Action Plan
	02/28/11	Employee Industrial Safety Initiative, 2011 – 2015 Nuclear Generation Operating Plan
	02/22/11	Ste Modernization Initiative Action Plan
	03/16/11	2010-2011 Operating Plan, Performance Improvement Focus Area Integrated Action Plan
	01/31/11	Operational Focus

February 2011 NSOC
List of Documents Transmitted Electronically

J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Doc. No.	Title
		Please see PPIR for INPO Performance Indicator Table

K. Operational Documents (ODM Minutes, POAs)

Date	Doc. No.	Title
ODMs		Operational Decision Making Report, RCP 1-3 No 2 Seal Leakage
		Operational Decision Making Report, PRT Pressure Rise (4.5 psig in 2 hrs)
		Operational Decision Making Report, SFP Hx 2-1 CCW Leak
POA	50290655	LTCA: Wyle Test Set-up Error
	50373996	CCW Surge Tank RV Backpressure
	50378557	EDG Fuel Oil Day Tank min volume not met

L. Miscellaneous

Date	Doc. No.	Title
02/14/11		PG&E @ Work – DCPP Edition
02/28/11		PG&E @ Work – DCPP Edition
02/01/11		PG&E @ Work – Bulletin
02/08/11		PG&E @ Work – Bulletin
02/15/11		PG&E @ Work – Bulletin
02/23/11		PG&E @ Work – Bulletin

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	201102	T-1 Critique
	201103	T-1 Critique
	201104	T-1 Critique
	201105	T-1 Critique
	201106	T-1 Critique
	201107	T-1 Critique
	201108	T-1 Critique
	201109	T-1 Critique
	201110	T-1 Critique

Date	Title
01/26/11- 3/2/11	QV Real Time Report

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March 2011 NSOC
List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
03/04/11	2011-004	Revision 4 of the Physical Security Plan
03/09/11	2010-014	Changes to the DCPP UFSAR and ISFSI UFSAR

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
03/04/11	DCL-11-015	Emergency Plan Implementing Procedure Update
03/11/11	DCL-11-026	Licensee Event Report 1-2011-002-00, Diablo Canyon Power Plant Units 1 and 2 Auxiliary Building Ventilation System Single Failure Vulnerability and Loss of Unit 2 Auxiliary Building Ventilation System
03/14/11	DCL-11-022	Pacific Gas and Electric Company Supplements a Response to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
03/17/11	DCL-11-034	Pacific Gas and Electric Company's Response to Document Request List for NRC 95002 Inspection – Sections A and B
03/17/11	DCL-11-035	Supplement to Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal. and Containment Spray Systems"
03/18/11	DCL-11-032-Public	Request for Exemption from Specific 10 CFR Part 73 Requirements
03/23/11	DCL-11-029	Annual Report of Occupational Radiation Exposure for 2010
03/23/11	DIL-11-002	Annual Radioactive Effluent Release Report for 2010
03/25/11	DCL-11-020	10 CFR 54.21(b) Update to the DCPP License Renewal Application
03/25/11	DCL-11-021	Pacific Gas and Electric Company Comments on the Safety Evaluation Report with Open Items Related to the Diablo Canyon Power Plant License Renewal
03/25/11	DCL-11-023	Response to Summary of Telephone Conference Call Held on February 28, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information for the Diablo Canyon License Renewal Application
03/25/11	DCL-11-036	Update Regarding the Intake Structure and Discharge Conduits Inspections
03/25/11	DCL-11-037	Response to Telephone Conference Calls Held on February 2 and 4, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application

March 2011 NSOC
List of Documents Transmitted Electronically

03/28/11	DCL-11-038	License Amendment Request 11-03, Revision to Technical Specification 3.8.1, "AC Sources – Operating" for Traveler TSTF-163, Revision 2, and Exception to Regulatory Guide 1.9, Revision 0
03/31/11	DCL-11-039	Decommissioning Funding Report for Diablo Canyon Power Plant Units 1 and 2

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
02/16/11	Diablo Canyon Power Plant – Notification of Inspection (NRC Inspection Report 05000275/201104; 05000323/2011004) and Request for Information
02/17/11	Revision of Schedule for the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
03/04/11	Summary of February 3, 2011, Third Pre-licensing, Phase 0 Meeting with Pacific Gas and Electric Company to Discuss the Architecture for the Digital Upgrade Replacement of the Eagle 21 Process Protection System (TAC NOS. ME5284 and ME5285)
03/04/11	Annual Assessment Letter for Diablo Canyon Power Plant Units 1 and 2 (Report 05000275/2011001 and 05000323/2011001)
03/17/11	Summary of Telephone Conference Calls Held on February 2 and 4, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897)
03/23/11	Forthcoming Meeting with Pacific Gas and Electric Company
03/29/11	Diablo Canyon Power Plant, Unit No. 2 – Approval of Request for Relief NDE-RCS-SE-2R16 From Examination Requirements of ASME Code, Section XI, Appendix VIII, Supplement 10, Root Mean Square Error (TAC No. ME4577)

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

Date	Title
	NONE

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		N/A
PSRC Minutes		
03/04/11	**2011-008**	Security Plan Change

March 2011 NSOC
List of Documents Transmitted Electronically

03/09/11	**2011-009**	- FSAR Change – Various Sections: LBIE 2011-014; - LER 1-2011-002-00; Diablo Canyon Power Plant Units 1 and 2 Auxiliary Building Ventilation System Single Failure Vulnerability and Loss of Unit 2 Auxiliary Building Ventilation
03/10/11	**2011-010**	LER 1-2011-002-00; Diablo Canyon Power Plant Units 1 and 2 Auxiliary Building Ventilation System Single Failure Vulnerability and Loss of Unit 2 Auxiliary Building Ventilation
03/23/11	**2011-011**	- E-Plan, Section 7 – Facilities and Equipment - 2R16 Outage Safety Plan and Schedule - LAR, Rev. to TS 3.8.1
03/27/11	**2011-012**	- OP1.DC1, Administrative Program to Control the Return to Power After a Reactor Trip – Review
03/27/11	**2011-013**	- OP1.DC1, Administrative Program to Control the Return to Power After a Reactor Trip – Review; Unit 2 Restart

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCAs	60024480	P.1(c) X-cutting Issue
ACE	60017741	Feedwater Heater 1-6A High Level
	60027560	NRC Non Cited Violation – Tact Course
	60027840	Security Issue – Exercise Performance
	~~60027841~~	~~Security Issue – Protected Area Boundary~~
	60027842	Security Issue – System Performance
	60028570	Intake Top Deck Conduit Damaged
	60028809	Security Testing Not Completed on Time
	60028888	QAAF – Insider Mitigation Findings
	60028928	HT ACE: NCV: CAs Not Prompt, DG
	60029015	QDEF-Defense Strategy Matrix Inaccurate
	60029396	QAAF-Sec Procedures Inadequate
	60030938	QAAF-Inadequate imp of Sec Training Prog (032)
	60030938	QAAF-Inadequate imp of Sec Training Prog (033)
	60031374	QDEF-Station Key Gap – FME
	60031425	Eval. design options for CFCU circuit
	60032302	LTA POA – 4Q10 NCV
	60032771	U 1 SR 3.0.3 ENTRY FOR MISSED SR 3.3.1.4
	60033060	Increased leakage during installation
	60033061	Deletion of Testing for Lighting
	60033203	4Q10 NCV: Insulation in bioshield
	60033289	4Q10 NCV: Blocked flowpath, shield plug
	60033305	QAAF – QA prog req's not met in SA's (030)
	60033305	QAAF – QA prog req's not met in SA's (031)
	60033384	Adverse trend—Non compliance OM6.ID12

March 2011 NSOC
List of Documents Transmitted Electronically

	60033678	DEP – Adverse Trends Ops Simulator
	60033679	NRC Violation: Test Control STP M-15
	60033689	DG 2-1 Fuel Leak
Eff. Eval		No Evals for this month

G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. No.	Title
		No QPAR for this month
		No Audit Reports for this month
		No new Schedule for this month
03/24/11	110810013	Site Emergency Signal First Level Escalation
03/17/11	110330004	STARS Plant Aging Management Center of Business Corrective Action Program Assessment
03/31/11	110900014	Assessment of the ABVS Single Failure Vulnerability Emerging Issue

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. No.	Title
02/09/11	SA 50299341	PG&E DCPP Emergency Planning Program Assessment
11/30/10	SA Report 50313420	Fire Probabilistic Risk Assessment
02/18/11	SA Report 50308550	Oversight of Supplemental Personnel
03/28/11	SA Report	NEI 08-07 – Security Performance Objectives and Criteria
08/17/10	BM Report 50314929	Benchmarking Report for System Engineering Managers Meeting
03/03/11	ASMP BNHF 50373448	Benchmark Report – Work Planning: Work Package Quality
01/03/11	ASMP BNHI 50368245	VC Summer Quick Hit Benchmark
02/05/11	BM DA50356602 & DN 50373036	INPO Benchmark Visit – Performance Improvement
02/23/11	BM 50383163	Benchmarking Report Project Management Working Group Meeting

March 2011 NSOC
List of Documents Transmitted Electronically

02/20/11	QHSA 50373913	USA Regulatory Affairs Training
11/29/10	QHSA 50355603	Diablo Canyon Security Procedure Quality
01/31/11	QHSA 50367137	Configuration Management Quick Hit Self Assessment
01/23/11	QHSA 50370027	Scientech Licensing Development Training (LPD)
02/15/11	ASMP SAQH 50375314	Project Management Office Quick Hit Self Assessment

I. Performance Information (PPIR, Operating Plan, Station Initiatives)

Doc Type	Date.	Title
Operating Plan	3/28/11	2011 – 2015 Nuclear Generation Operating Plan, Rev. 1
PPIR		March PPIR will be in next transmittal
Station Initiative	4/7/11	Performance Improvement – Operating Plan
	4/7/11	95002 Inspection Readiness Action Plan
	3/31/11	SOER 10-2 Recommendation 1.b, Communication of Station Priorities, SAPN # 50327321

J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Doc. No.	Title
		Please see PPIR for INPO Performance Indicator Table

K. Operational Documents (ODM Minutes, POAs)

Doc Type	Doc. No.	Title
ODMs	3/17/11	RCP 1-3 No 2 Seal Leakage (Follow-up ODM)
	3/9/11	U-1 FCV-179 Failed to mid-position
	3/17/11	U-1 PRT Pressure Rise (Follow-up ODM)
POA	50383957	LTCA SR 3.8.1.3/3.8.1.14 Non Conform

March 2011 NSOC
List of Documents Transmitted Electronically

L. Miscellaneous

Date	Doc. No.	Title
03/11/11	DCL-11-031	Unusual Event at the Diablo Canyon Power Plant
03/29/11		PG&E @ Work – DCPP Edition
03/01/11		PG&E @ Work – Bulletin
03/08/11		PG&E @ Work – Bulletin
03/15/11		PG&E @ Work – Bulletin
03/22/11		PG&E @ Work – Bulletin
03/30/11		PG&E @ Work – Bulletin

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	201111	T-1 Critique
	201112	T-1 Critique
	201113	T-1 Critique
	201114	T-1 Critique

N. Documents Previously Transmitted during the Month

Date	Title
3/3/11 - 4/6/11	QV Real Time Report

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List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
04/26/11	2011-005	Replace RCDT Hatch Covers with Grating
04/28/11	2011-006	230 kV System Dual Unit Trip Licensing Change

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
04/01/11	DCL-11-028 HBL-11-007	2011 Annual Statement of Insurance for Pacific Gas and Electric Company's Diablo Canyon Power Plant and Humboldt Bay Power Plant
04/10/11	DCL-11-047	Request for Deferral of Issuance of Diablo Canyon Power Plant Renewed Operating Licenses
04/13/11	DCL-11-045-Public	Request for Exemption from Specific 10 CFR Part 73 Requirements
04/21/11	DCL-11-055	Supplement to License Amendment Request 11-02, Revision to Technical Specification 3.7.1, "Main Steam Safety Valves (MSSVs)"
04/21/11	DCL-11-053	One Hundred Eighty-Day Steam Generator Report for Diablo Canyon Power Plant Unit 1 Sixteenth Refueling Outage
04/28/11	DCL-11-049	2010 Annual Radioactive Effluent Release Report
04/28/11	DCL-11-050	2010 Annual Radiological Environmental Operating Report
04/28/11	DCL-11-051	2010 Annual Nonradiological Environmental Operating Report
~~04/28/11~~	~~DCL-11-052~~	~~Licensee Event Report 1-2011-003-00, Deviation From~~ License Condition for Physical Protection Due to Tsunami Event
04/28/11	DCL-11-056	Pacific Gas and Electric Company's Response to Schedule a NRC Focused Problem Identification and Resolution Inspection re: Cross-cutting Theme in Problem Evaluation

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
02/18/11	Summary of Telephone Conference Call Held on January 25, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Item Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, Safety Evaluation Report (TAC NOs. ME2896 and ME2897)
04/05/11	Diablo Canyon Power Plant, Unit No. 2 – Evaluation Regarding the 2009 Steam Generator Tube Inspections (TAC No. ME3995)
04/11/11	Summary of Telephone Conference Calls Held on February 28 and March 17, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License

	Renewal Application (TAC NOs. ME2896 and ME2897)
04/12/11	Summary of Telephone Conference Call Held on January 4, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Regarding the Severe Accident Mitigation Analysis for the Proposed License Renewal of Diablo Canyon Nuclear Power Plant Units 1 and 2

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

Date		Title
		No Generic Correspondence

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		No NSOC Documents
PSRC Minutes		
04/20/11	**2011-014**	**- LER 1-2011-003-00; Deviation From License Condition for Physical Protection Due to Tsunami Event** **- DCP 1000000453 and 1000000397; Replace RCDT Concrete Hatch Covers with Grating**
04/28/11	**2011-015**	**- DCP 1000000470; 230 kV System Dual Unit Trip Licensing Change** **- SAPO 60024240; FLUR Load Shed Relay Setpoint Change**

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCA	60027842	Security Issue – System Performance
ACE	60029083	RRVCH Documentation not RMS Unit 2
	60032191	Non-conservative SR 3.8.1.10
	60033290	U2 SFP Pump found tripped.
	60033679	NRC Violation: Test Control STP M-15
	60033723	QAAF – Training PD's and APs
	60033724	QAAF – Inadequate CA follow-up
	60033905	QAAF – No Mech Maint ERO position 24/7 (-030)
	60033905	QAAF – No Mech Maint ERO position 24/7 (-031)
	60033985	Error Identified in U2 SNM Move Sheet
	60034469	Security Green NCV – SGI
	60034655	NRC 1Q11 Insp-12kV Bus Rm Fire Barrier

Arpil 2011 DCISC
List of Documents Transmitted Electronically

Eff. Eval		No Evals for this month

G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. No.	Title
04/25/11	QPAR	QPAR – First Period 2011 – November 12, 2010 to March 31, 2011
03/31/11	Audit Report	2011 Training and Qualification Program Audit
		No new Schedule for this month
04/04/11	110900014	Short Form Assessment – Assessment of the ABVS Single Failure Vulnerability Emerging Issue
04/15/11	111240014	ISFSI Upgrade Equipment Inspection QV Short Form Assessment
04/12/11		DCPP Site Status Report

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. No.	Title
		No updated Quick Hit Self-Assessment (QHSA)
		No Formal Benchmarking and Self-Assessments Schedule
04/04/11	SAPN 50384199	Confined Space Quick-Hit Self-Assessment

I. Performance Information (PPIR, Operating Plan, Station Initiatives)

Doc Type	Date	Title
Operating Plan	3/28/11	2011 – 2015 Nuclear Generation Operating Plan, Rev. 1 - No new updates
PPIR	4/14/11	Plant Performance Improvement Report
Station Initiative	4/12/11	Evaluation Thoroughness Action Plan
	4/12/11	Fire Protection Action Plan
	4/18/11	Employee Industrial Safety Initiative 2011-2015 Nuclear Generation Operating Plan
	4/15/11	DCPP Nuclear Safety Culture Improvement Plan
	5/9/11	2010-2011 Performance Improvement Initiative Integrated Action Plan

Arpil 2011 DCISC
List of Documents Transmitted Electronically

J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Doc. No.	Title
		Please see PPIR for INPO Performance Indicator Table

K. Operational Documents (ODM Minutes, POAs)

Date	Doc. No.	Title
ODMs	4/27/11	Vessel 2-4 Unisolable
	5/6/11	U-1 Megawatt Step change follow-up ODM
POA		No POAs

L. Miscellaneous

Date	Title
4/18/11	PG&E @ Work – DCPP Edition
5/3/11	PG&E @ Work – Bulletin
4/26/11	PG&E @ Work – Bulletin
4/12/11	PG&E @ Work – Bulletin
4/5/11	PG&E @ Work – Bulletin
4/1/11	DCPP Organizational Charts

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	201115	T-1 Critique
	201116	T-1 Critique
	201117	T-1 Critique

N. Documents Previously Transmitted during the Month

Date	Title
04/07/11 – 05/09/11	QV Real Time Report . . . . .

May 2011 DCISC
List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
05/05/11	2011-007	FLUR Load Shed Relay Setpoint Change
05/18/11	2011-008	Unit 2 Cycle 17 Reload

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
05/10/11	DCL-11-060	Licensee Event Report 1-2011-003-01, Deviation From License Condition For Physical Protection Due to Tsunami Event
05/13/11	DCL-11-061	Emergency Plan Implementing Procedure Update
05/25/11	DCL-11-063	Licensee Event Report 2-2011-001-00: Unit 2 Reactor Trip From Loss of Main Feedwater Pump 2-1
05/31/11	DCL-11-067CL	Presentation for Forthcoming Pre-Licensing Meeting for Process Protection System Replacement

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
04/19/11	Diablo Canyon Power Plant, Unit Nos. 1 and 2 – Safety Evaluation for Topical Report, "Process Protection System Replacement Diversity & Defense-In-Depth Assessment" (TAC Nos. ME4094 and ME4095)
04/21/11	Summary of Public Scoping Meetings Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
05/06/11	Environmental Project Manager Change for the License Renewal Project for Diablo Canyon Nuclear Power Plant (TAC Nos. ME2825 and ME2826)
05/11/11	Diablo Canyon Power Plant – NRC Integrated Inspection Report 05000275/2011002 and 05000323/2011002
05/13/11	Diablo Canyon Power Plant, Unit Nos. 1 and 2 – 2011 Decommissioning Funding Status Report – Request For Additional Information (TAC Nos. ME5476 and ME5477)
05/13/11	Summary of March 31, 2011, Pre-Licensing Meeting with Pacific Gas and Electric Company on Responses to the U.S. Nuclear Regulatory Commission Staff's Questions from the Previous Public Meeting on January 26, 2011(TAC Nos. ME5033 and ME5034)
05/13/11	Diablo Canyon Power Plant – NRC Temporary Instruction 2515/183 Inspection Report 05000275/2011006 and 05000323/2011006
05/16/11	Forthcoming Pre-Licensing Meeting with Pacific Gas and Electric Company
05/19/11	Public Meeting with Pacific Gas and Electric Company
05/23/11	Summary of April 11, 2011, Meeting with Pacific Gas and Electric Company on National Fire Protection Association 805 Transition Project (TAC Nos. ME5888 and ME5889)
05/24/11	Diablo Canyon Power Plant, Unit 2 – Revision to Regulatory Commitment for Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" Response (TAC No. ME5870)

May 2011 DCISC
List of Documents Transmitted Electronically

05/31/11	Summary of May 18, 2011, Meeting with the Nuclear Energy Institute, Industry Representatives, and Licensees on Transitioning to National Fire Protection Association Standard 805

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

Date	Title
05/09/11	Cyber Security Plan Implementation Schedule

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		No NSOC Documents
PSRC Minutes		
05/06/11	**2011-016**	**- LAR 11-04; Revision to TS 3.6.6, "Containment Spray and Cooling Systems," TS 3.7.5, "Auxiliary Feedwater (AFW) System," TS 3.8.1, "AC Sources – Operating," TS 3.8.9, "Distribution Systems – Operating," and TS Example 1.3-3** **- LER 1-2011-003-01; Deviation From License Condition For Physical Protection Due to Tsunami Event**
05/18/11	**2011-017**	**- MMD M000084; Unit 2 Cycle 17 Reload**
05/23/11	**2011-018**	**- LER 2-2011-001-00; Unit 2 Reactor Trip From Loss of Main Feedwater Pump 2-1**
05/25/11	**2011-019**	**- RFR - 480 V Bus H Transformer Spacers – SAPN 50399325** **- RFR - FME – Effect of Conditions and Threats in Aggregate** **- RFR – Fuel Assembly that was picked up incorrectly – SAPN 50397768**
05/27/11	**2011-020**	**- RFR – Charging Pump 2-2** **- RFR – POAs on Emergency Diesel Generators – 50307598, 50341329, 50368801, 50378557, 50382957**
05/30/11	**2011-021**	**- RFR – POAs on Emergency Diesel Generators – 50307598, 50341329, 50368801, 50378557, 50382957** **- RFR – Charging Pump 2-2** **- RFR – Secondary Steam Leaks** **- RFR – Start up Power**
05/31/11	**2011-022**	**- RFR – Start up Power** **- RFR – Pressurizer Safety Valves**

May 2011 DCISC
List of Documents Transmitted Electronically

F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCA	60028927	NRC IR 2010-006 10 CFR 50.9(a)
	60034557	U2 Reactor Trip
ACE	60018721	HT ACE: NRC Finding IR 09-003: GDC
	60033134	QAAF-Inadequate RCA Sec Prog Health
	60033678	DEP – Adverse Trend Ops Simulator
	60033995	MSR 1-2C LP Drn Tnk Hi Level
	60034470	QAAF – Lost Parts
	60034660	2010 NRC Triennial HX Insp NCV
	60034846	QAAF: No HT ACE for ABVS SFV Issue
	60035111-030	U2 missed surveillance – STP I-13C
	60035111-031	U2 missed surveillance – STP I-13C
	60035351	Steam Leak at FWH 1-3A FW Outlet
	60035352-030	NRC IR 2011402 – SEC Failure to Use CAP
	60035352-031	NRC IR 2011402 – SEC Failure to Use CAP
	60035354	NRC IR 2011402 – Security Failure Duties
	60035355	NRC IR 2011402 – Sec Implement Proc
Eff. Eval	60005500	CAP IMPLEMENTATION DOES NOT MEET

G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. No.	Title
		No QPAR for this month
Audit Report		
05/12/11	110560011	2011 Maintenance Audit
05/12/11	102310015	2010 Material Handling and Storage Audit
05/23/11	110050001	Emergency Preparedness Program Audit
Audit Schedule		
05/24/11		Diablo Canyon and Humboldt Bay Power Plants Internal & External Audit Schedule May 24, 2011
Short Form Assessment		
04/21/11	111110028	Short Form Assessment – Implementation of the Maintenance Procedure MP M-50.20
05/18/11	111380005	Short Form Assessment – Maintenance Peer Review: Station Activities 2R16

May 2011 DCISC
List of Documents Transmitted Electronically

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. No.	Title
		No updated Quick Hit Self-Assessment (QHSA) Schedule
		No Formal Benchmarking and Self-Assessments Schedule
		No QHSA or Benchmarking Reports

I. Performance Information (PPIR, Operating Plan, Station Initiatives)

Doc Type	Date	Title
Operating Plan	05/12/11	2011 – 2015 Nuclear Generation Operating Plan, Rev. 2 -
PPIR	06/10/11	Plant Performance Improvement Report
Station Initiative	06/14/11	Employee Industrial Safety Initiative 2011 – 2015 Nuclear Generation Operating Plan
	05/18/11	Evaluation Thoroughness Action Plan

J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

Date	Doc. No.	Title
		Please see PPIR for INPO Performance Indicator Table

K. Operational Documents (ODM Minutes, POAs)

Date	Doc. No.	Title
ODMs	06/09/11	U-2 MSR RVs 202 & 204 Weeping
	06/16/11	U-2 MSR RVs 202 & 204 Weeping Follow-up
POA	50400100	OE Gas intrusion CS system
	50404966	Primary Equip & Support Load Combination
	50405029	CFCU 2-2 and 2-4 ARRD Noise
	50407034	Feedline Break Analysis and Pzr Overfill

L. Miscellaneous

Date	Title
06/14/11	PG&E @ Work – Bulletin
06/07/11	PG&E @ Work – Bulletin
06/01/11	PG&E @ Work – Bulletin
05/24/11	PG&E @ Work – Bulletin
05/17/11	PG&E @ Work – Bulletin
05/11/11	PG&E @ Work – Bulletin

May 2011 DCISC
List of Documents Transmitted Electronically

M. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	201118	T+1 Critique
	201119	T+1 Critique
	201120	T+1 Critique
	201121	T+1 Critique
	201122	T+1 Critique
	201123	T+1 Critique

N. Documents Previously Transmitted during the Month

Date	Title
05/10/11 – 06/02/11	QV Real Time Report

June 2011 DCISC
List of Documents Transmitted Electronically

A. Licensing Basis Impact Evaluations

Date	LBIE No.	Title
06/02/11	2011-010	Replace Unit 1 Westinghouse 7100 Process Control System
06/03/11	2011-009	Replacement LBIE Review – GFFD Removal

B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

Date	Letter No.	Title
06/01/11	DCL-11-059	License Amendment Request 11-04: Revision to Technical Specification (TS) 3.6.6, "Containment Spray and Cooling Systems," TS 3.7.5, "Auxiliary Feedwater (AFW) System," TS 3.8.1, "AC Sources – Operating," TS 3.8.9, "Distribution Systems – Operating," and TS Example 1.3-3
06/08/11	DIL-11-003	Supplement to License Amendment Request 11-001, Revision to Technical Specifications 1.1, 2.0, 3.1.1, 3.1.2, 4.1.2, and 5.1.3; Addition of Technical Specifications 2.3 and 3.1.4; and , Request for an Exemption from the Requirements of 10 CFR 72.236(f)
06/10/11	DCL-11-065	Thirty-Day Response to NRC Bulletin 2011-01: "Mitigating Strategies"
06/10/11	DCL-11-071	Response to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, 2011 Decommissioning Funding Status Report (TAC Nos. ME 5476 and ME5477)
06/18/11	DCL-11-073	Core Operating Limits Report for Unit 2 Cycle 17
06/23/11	DCL-11-075	Emergency Plan Implementing Procedure Update
06/24/11	DCL-11-076	Request for Extension of Enforcement Discretion and Commitment to Submittal Date for 10 CFR 50.48(c) License Amendment Request
06/30/11	DCL-11-078	Licensee Event Report 1-2011-004-00, Emergency Diesel Generators Actuated Upon 230 kV Isolation Due to Maintenance Activities on Relay Panel

C. NRC Incoming Correspondence (including Inspection Reports)

Date	Title
05/31/11	Response to Request for Deferral of Issuance of Renewed Operating Licenses and Revision of Schedule for the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application
06/02/11	Safety Evaluation Report Related to the License Renewal of Diablo Canyon Nuclear Power Plant, Units 1 and 2
06/07/11	Notice of 52-Month Delay and Order Requiring Status Reports
06/09/11	Forthcoming Meeting with Pacific Gas and Electric Company (TAC Nos. ME5033 and ME5034)
06/21/11	Diablo Canyon Power Plant, Unit Nos. 1 and 2 – Exemption from the

	Requirements of 10 CFR Part 73, Section 55 (TAC Nos. ME6041 and ME6042)
06/28/11	Summary of Annual Performance Assessment Meeting with Pacific Gas and Electric Company

D. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

Date	Doc. No.	Title
NSOC		NONE
PSRC Minutes		
Date	Mtg Number	Subject
06/01/11	2011-023	DCP N049369/N050369; LBIE 2011-009, "Removal of GFFD"
06/03/11	2011-024	Readiness for Restart Program/Transition to Modes 1 and 2
06/28/11	2011-025	Physical Security Plan; EDG Actuated Upon 230 kV Isolation Due to Maintenance Activities on Relay Panel

E. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

Type	Doc. No.	Title
RCAs		No RCAs for this month
ACE		No ACEs for this month
Eff. Eval		No Evals for this month

F. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

Date	Doc. No.	Title
07/06/11		QPAR – Second Period 2011 – April 1, 2011 through June 6, 2011
		No Audit Reports for this month
		No new Schedule for this month
06/14/11	110810027	Short Form Assessment - DCPP Licensing Basis Impact Evaluations
06/29/11	111780010	Short Form Assessment – Assessment of the POA Documented in DA SAPN 50410266 (Shoreline Fault Evaluation against SSE)
06/16/11		1Q2011 Nuclear Safety Culture Monitoring Panel Report

June 2011 DCISC
List of Documents Transmitted Electronically

G. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

Date	Doc. No.	Title
		No updated Quick Hit Self-Assessment (QHSA) Schedule
04/05/11	SAPN 50383339	Safety Monitor Risk Assessment Program Benchmark, Location: Comanche Peak Nuclear Power Plant
04/29/11	SAPN 50391649	Trip/Benchmark Report, Location: Santa Maria de Garoña NPP
01/2011		Optimized Site-Specific ALARA Assessment PG&E Diablo Canyon Power Plant
04/18/11	SAPN 50350426	Self-Assessment of Licensed Operator Requalification Program and Simulator
03/29/11		STARS Gas Accumulation Self Assessment
06/22/11	SAPN 50387975	Self-Assessment Report Performance Improvement
04/11/11	SAPN 50373410	Work Control Process – AP 928 Implementation Self Assessment Report
10/05/09	SAPN 50271688	SONGS Chemistry training Self Assessment
04/21/10	SAPN 50264066	DCPP Component Design Basis Inspection
06/07/11	SAPN 50381702	License Basis Verification Project Quick Hit Self Assessment
04/27/11	SAPN 50383028	NRC EP Rulemaking Project Quick Hit Self-Assessment
06/29/11	SAPN 50410394	Snubber Program Assessment Quick Hit Self Assessment
05/24/11	SAPN 50401548	2011 Response Tampering Event Quick Hit Self-Assessment
06/15/11		Work Order Closure Documentation Quick Hit Self Assessment

H. Performance Information (PPIR, Operating Plan, Station Initiatives)

Doc Type	Date	Title
Operating Plan	05/12/11	2011 – 2015 Nuclear Generation Operating Plan, Rev. 2 -
PPIR	07/14/11	Plant Performance Improvement Report
Station Initiative	July 2011	Security Action for Excellence
	06/28/11	Employee Industrial Safety Initiative 2011-2015 Nuclear Generation Operating Plan

June 2011 DCISC
List of Documents Transmitted Electronically

	07/17/11	Operations Block and Tackle
	07/07/11	Diablo Canyon Power Plant Nuclear Safety Culture Improvement Plan
	07/08/11	Evaluation Thoroughness Action Plan

I. Operational Documents (ODM Minutes, POAs)

Date	Doc. No.	Title
ODMs		No ODMs for this month
POA		No POAs for this month

J. Miscellaneous

Date	Title
06/27/11	PG&E @ Work – DCPP Edition
06/21/11	PG&E @ Work – Bulletin
06/28/11	PG&E @ Work – Bulletin
07/06/11	PG&E @ Work – Bulletin
07/12/11	PG&E @ Work – Bulletin
07/19/11	PG&E @ Work – Bulletin

K. Subcommittee Documents

Subcommittee	Date/Doc	Title
Maintenance	201124	T+1 Critique
	201125	T+1 Critique
	201126	T+1 Critique
	201127	T+1 Critique
	201128	T+1 Critique

L. Documents Previously Transmitted during the Month

Date	Title
06/02/11 – 07/10/11	QV Real Time Report

22nd Annual Report, Volume 2, Exhibit C, Diablo Canyon Power Plant (DCPP) Operations

1.0 PG&E/DCPP Organizations

The DCPP organization chart is included as an attachment.

2.0 Summary of Diablo Canyon Operations

2.0.1 Capacity Factor

During the assessment period of July 1, 2011, through June 30, 2012, Diablo Canyon's Combined "Capacity Factor" averaged 85.32% (Net Maximum Dependable Capacity). Capacity factor is the amount of power produced expressed as a percentage of the maximum theoretical amount.

Unit 1 Operating Summary

During the 12-month reporting period ending June 2012, Unit 1's Capacity Factor was 74.72% (Net Maximum Dependable Capacity). The table below includes descriptions of operating events that impacted Unit 1 generation.

Unit 1 Power Generation Events July 2011 – June 2012

Date	Type	Curtailed Power Level	Event
9/2/11	Curtailment	44%	Circulating Water Tunnel Cleaning
9/911	Curtailment	Slight	Repair HP Drain Tank Valve
10/10/11	Curtailment	52%	Repair Main Feedwater Pump, Main Steam Valve Actuator and Condenser Waterbox Pick & Dredge
12/28/11	-	100%	Unexpected Partial Step-in of Control Rods
2/2/12	-	100%	Manual Reduction in Secondary Power to Repair Feedwater Heater Valve
2/26/12	Curtailment	92%	Correct Mispositioned Feedwater Valve
4/1/12	Curtailment	53%	Manual Reduction for High Seas & Increased Condenser Pressure
4/22/12	Refueling Outage	0%	1R17 Refueling Outage

Unit 2 Operating Summary

During the 12-month reporting period ending June 2012, Unit 2's Capacity Factor was 95.96% (Net Maximum Dependable Capacity). This period included a refueling outage.

The table below includes descriptions of operating events that impacted Unit 2 generation.

Unit 2 Power Generation Events July 2011 – June 2012

Date	Type	Curtailed Power Level	Event
6/5/11	On-Line	100%	Return to Power from Outage 2R16
9/2/11	Curtailment	50%	Remove Kelp from Intake Facility
12/3/11	Curtailment	88%	Main Turbine Control Valve Testing
1/20/12	Curtailment	99+%	Repair Feedwater Heater Leak
2/13/12	Curtailment	51%	Ocean Cooling Water Tunnel Cleaning
3/30/12	Curtailment	93%	Repair Main Steam Valves
4/23/12	Curtailment	18%	Overload of ocean "SALP" on Intake Traveling Screens

2.0.2 Refueling Outages

The Unit 1 seventeenth refueling outage (1R17) was a significant outage, which included the Pressurizer valve replacement, generator exciter rotor replacement, vital battery replacements, polar crane upgrade, reactor process control system replacement, and other moderately sized projects. Outage performance was as follows:

Performance Goals	Goal	Actual
Recordable/Disabling Injuries	0/0	1/0
Nuclear Safety Events	0	0
Human Performance Events	0	2
Outage Duration (Days)	<40	55
Radiation Dose (Person-Rem)	<50	41.7
Significant Foreign Material Events	0	0
Security Loggable Events	10	7

2.0.3 Collective Radiation Dose Equivalent Exposures

The bulk of personnel radiation exposure occurs during refueling outages. For this reason, the total annual exposure is largely dependent upon the outage planning effectiveness, radiation levels, outage duration, number of outages conducted in the year and emergent maintenance activities. Collective radiation dose for Refueling Outage 1R17 was 41.7 Person-Rem versus a goal of 50, which represents the lowest dose Unit 1 outage for DCPP. Non-outage radiation doses typically amount to about eight person-Rem per year., though DCPP projects about seven person-Rem for 2012.

2.0.4 Unplanned Reactor Trips

PG&E's goal is to have no unplanned automatic reactor trips per unit per year while critical. Unnecessary reactor trips not only reduce plant capacity factor, they also represent unnecessary challenges to safety systems and may indicate substandard operating or maintenance practices. Manual trips are not counted because PG&E believes this might inhibit operator-initiated trips and actions to protect equipment. There were no trips during the reporting period.

2.0.5 Unplanned Safety System Actuations

This indicator is the sum of the number of unplanned emergency core cooling system (ECCS) actuations (whether the ECCS actuation set point has been reached or from a spurious or inadvertent ECCS signal) and the number of unplanned emergency AC power system actuations that result from the loss of power to a safeguards bus. For Diablo Canyon, ECCS actuations include actuations of the high-pressure injection system, the low-pressure injection system, or the accumulators. Such actuations should be avoided because the plant should be maintained in a safe configuration to preclude actuations, and unnecessary challenges to plant safety systems should be minimized. PG&E's goal for this indicator continues to be no unplanned safety system actuations at DCPP. No actuations occurred during the reporting period.

2.0.6 Chemistry Effectiveness Indicator (CEI)

DCPP has adopted the industry Chemistry Effectiveness Indicator (CEI) to measure overall station chemistry effectiveness. The CEI includes metrics for the Primary Chemistry and the Secondary Chemistry and is a measure of chemical control as well as contaminant control.

The CEI can range from 0 to 100 with a lower value demonstrating better chemistry control. Currently the top quartile PWR plants have typical values of 3 or less.

Diablo Canyon unit 1 has an 18-month rolling composite of 0.0 for Unit 1 (excellent, industry top quartile) and 0.92 (good, industry second quartile) for Unit 2 as of June 2010. This represents overall Green (excellent) performance.

2.0.7 Fuel Reliability

The purpose of the fuel reliability indicator is to monitor progress in achieving and maintaining high fuel integrity. Failed fuel represents a breach in the initial barrier for preventing offsite release of fission products. Such failure also has a detrimental effect on operations and increases the radiological hazards to plant workers.

Based on measurement of both steady-state reactor coolant activity and transient iodine spiking, PG&E determined that both Units 1 and 2 operated without any failed rods during the period from July 1, 2011 to June 30, 2012. Unit 1 has operated without any failed rods since the beginning of Cycle 5. The Unit 2 radiochemistry data indicate that Unit 2 has been operating without fuel defects during Cycle 15 (April 2008 to date).

PG&E continues to follow its fuel reliability programs, including the aggressive preventive maintenance inspection of new and irradiated fuel, continued implementation of procedural guidelines to prevent fuel damage during both power and refueling operations, implementation of chemistry controls, fuel assembly reconstitution for identified rod failures, tracking and disposition of damaged fuel assemblies and strict controls to exclude foreign material from the reactor coolant system.

22nd Annual Report, Volume 2, Exhibit E, DCISC Plant Tours of Diablo Canyon Power Plant

The DCISC tours the Diablo Canyon Power Plant during most fact-finding meetings to observe or inspect items it is reviewing. Also, the DCISC conducts plant tours with members of the public three times per year during its public meetings. For the two years following the terrorist events of September 11, 2001 no public tours were held. The DCISC resumed public tours at its June 2, 2004 public meeting. This exhibit includes a database of the areas of the plant DCISC and the public have toured.

Table 1 – Ten-Year Record of DCISC Tours of DCPP (Through June 2011)

Area No.	Location	System/Area	Tour No(s) (See Table 2) (Bold = Public Tour)
TB–1	TB – Buttress Area	Condensate Polishing System	*, 09–9
TB–2	TB – El 73 NH/SH (U1&2)	Condensate Pumps	*, 02–4, 05–7, 09–8
		Condensate Cooler	
TB–3	TB El 85 NH	Oily Water Separator Room	02–8
TB–4	TB – El 85 NH/SH (U1&2)	Condensate Booster Pumps	
		Letdown Storage Tanks	
		Main Feedwater Pumps	*, 02–4, 07–11, 02–5, 09–8, 05–7, 06–6
		Condenser Water Box	*, 02–4, 07–9
		Plant Air Compressors	
		Service Water HX	
		Lube Oil Storage Tanks	11–1
		Component Cool. Water HX	
TB–5	TB El 85 (U1&2)	EmergencyDiesel Generators	00–2, 02–4, 02–6, 04–2, 05–4, 05–7, 06–5, 07–7,09–5, 09–8,09–9, 10–2, 10–7
TB–6	TB El 85 (U1&2)	4kV & 12kV Non–vital Switchgear	02–4, 02–7, 07–2

TB–7	TB Buttress El 104 (U2)	Technical Support Center	02–1, 02–3, 03–1, 07–4, 10–3
TB–8	TB El 104 (U1&2)	4kV Vital Cable Spread. Rms.	02–6, 05–7
		Isophase Bus Cooling System	
TB–9	TB El 104 (U1&2)	Main Lube Oil Resvr. /Cooler	11–1
		Feedwater Heaters	*, 02–5
		Mid–condenser & Hoods	
		Seawater Evaporators	
		Steam Jet Air Ejectors	*, 02–1, 02–8
TB–10	TB El 119 (U1&2)	4kV Vital Switchgear	
		Switchgear Ventilation Fans	
TB–11	TB El 119 (U1&2)	Isophase Busses	*
		LP Cond. Exhaust Hoods	*
		Moisture Septrs. /Reheaters	
		Tech. Maintenance Shop	
TB–12	TB El 140 (Turbine Deck) (U1&2)	Main Turbines, Generators & Steam Leads & Valves	*, 02–1, 02–4, 03–1, 03–2, 04–2, 04–3, 05–7, 06–4, 06–9, 08–7, 10–2, 10–5, 10–7
TB–13	TB El 140 NH	Outage Coordination Center	04–3, 08–8, 09–8
TB–14	U1 TB 140 NH	Operations Support Center	00–3
AB–1	AB El 55	Pipe Tunnel Area	02–8
AB–2	AB El 64 (U1&2)	Boron Injection Tanks	
		Residual Heat Removal Pumps	
		Gas Decay Tanks & Cmprsrs.	09–1
		Radwaste Monitor Tanks	09–1
		Liquid Radwaste Storage Tanks	09–1
AB–3	AB El 73 (U1&2)	Residual Heat Removal HXs	
		Compnt. Cool. Water Pumps	

		Charging Pumps	
		Containment Spray Pumps	
		Boron Injection Tanks	
AB–4	AB El 85 (U1&2)	Penetration Area	02–4
		Post–LOCA Sampling Station	
		Waste Gas Analyzer	09–1
AB–5	AB EL 85(U1&2)	Safety Injection Pumps	
		Boric Acid Evap.	
		Aux. Control Board	11–7
		Let down & Seal Return HX	
AB–6	AB EL 85	Chemistry Offices & Labs	02–8, 04–1
		RP Offices & Labs	04–1
		RCA Access Control	02–4, 03–2, 04–1, 04–3, 06–4, 06–9, 09–1, 09–9
		Hot Showers & Laundry	09–1
AB–7	AB El 85	Auxiliary Boiler	
AB–8	AB El 100 (U1&2)	Penetration Area	
AB–9	AB El 100 (U1&2)	Aux. Feedwater Pumps	07–6, 12-1
		Volume Control Tank	
		Demineralizers	
		Boric Acid Transfer Pumps	
AB–10	AB El 100 (U1&2)	480 V Vital Bus	
		Hot Shutdown Panel	09–9, 10–2, 10–7, 11–7
AB–11	AB El 115 U1&2)	Penetration Area–MS & FDW	
		Radwaste Processing Area	04–2
		Ion Exchangers	09–1
AB–12	AB El 115 (U1&2)	Vital Batteries, Chargers & Inverters	11–6
		Rod Control Cabinets	
AB–13	AB El 115 (U1&2)	Plant Ventilation System	
AB–14	AB El 128 (U1&2)	Cable Spreading Room	02–6
AB–15	AB El 140 (U1&2)	Control Room Area	02–1, 02–2, 04–2, 05–4, 07–7, 08–7, 08–8, 09–9, 10–2, 10–5, 11–7
AB–16	AB El 140 (U1&2)	SG Blowdown Tank	
		Containment Equipment & Personnel Hatches	02–4, 04–1

FH–1	FH El 85 (U1&2)	Fuel Handling Supply Fans & Radiation Monitoring	
FH–2	FH El 100 (U1&2)	Spent Fuel Pool Pumps/HXs	10–8
		Spent Fuel Ventilation Sys.	
FH–3	FH El 140 (U1&2)	Spent Fuel Pool	02–2, 02–4, 03–2, 04–2, 04–3, 06–1, 07–10, 08–8, 09–9, 10–8, 11–7
		Cask Decon (El 115)	
		New Fuel Storage	09–9
		Firewater Pumps (El 115)	02–6, 09–6, 10–8
FH–4	FH El 140 NH/SH	Hot Machine Shop	09–9
		Hot Tool Room	
C–1	Containment (U1&2)	Containment Area	03–2, 04–3, 06–4, 11–7
		Reactor Coolant System	
		Accumulators	
		Pressurizer Relief Tank	
		Cont. Sump / Screen	
		Refueling Canal	
		Containment Fan Coolers	
A–1	Admin. Bldg. El 128	Communications Rooms	
		Computer Center	
		Security Access Control	***, 06–7, 07–3, 07–8, 07–12, 08–2, 08–6, 08–9, 10–4, 10–6, 10–9, 11–4, 11–5, 11–8, 12-3, 12-5, 12-8**
T–1	Training Building	Training Building Simulator	02–1, 02–3, 03–1, **04–4, 05–2, 05–5, 05–8, 06–3, 06–7, 07–3, 07–8, 07–12, 08–2, 08–6, 08–9, 09–4, 09–7, 09–10,** 10–3,**10–4, 10–6, 10–9,** 11–1, 11–3, **11–4, 11–5, 11–8, 12-3, 12-5, 12-8**
T–2		Maintenance Training Facility	**09–4, 12-5**
I–1	Intake Structure Area (U1&2)	General Area & Overlook	**04–4, 05–2,05–5, 05–8, 06–3, 06–7,** 07–1, **07–3, 07–8, 07–12,08–2, 08–6, 08–9, 09–4,**

			09–7, 09–10, 10–4, 10–6, 10–9, 11–4, 11–5, 11–8, 12-3, 12-5, 12-8
		Traveling Screens	09–2
		Circulating Water Pumps	02–2, 09–2, 06–2
		Auxiliary Saltwater Pumps	
O–1	Outside TB El 85 (U1&2)	Main & Auxiliary Transformers	*, 02–4, 05–4, 06–9, 09–2, 09–9, 10–2, 10–7
O–2	Outside FH and Yard (U1&2)	Condensate Storage Tank,	*, 07–6, 08–5, 08–7, 09–8
		Primary Water Storage Tank,	*
		Refueling Water Storage Tank	*
O–3	Outside TB (east side)	Diesel Fuel Oil Storage Tank (buried)	
O–4	Warehouse Area	Main Warehouse	09–3
		Warehouses A&B	
O–5	Outside (U1&2)	Cold Machine Shop	09–9
O–6	Outside, Radwaste Area	Radwaste Storage Facility	04–2, 09–1
		Radwaste Storage Tanks	
		Laundry Facility	
O–7	Plant Overlook Area	Waste Water Holding & Treatment System Facilities	**04–4, 05–2, 05–5, 05–8, 12-3. 12-5, 12-8**
		Polymetrics Sys. /Reservoir	
O–8	"Patton Flats" Area	Hydronautics System	
		Biology Lab	
		Hazardous Waste Stor. Bldg	
		Fire Protection System	02–6, 09–6
		Plant Sewage Treatment Fac	
		Paint Facility	
O–9	500 kV Switch yard	500 kV Switchyard &	**04–4**
		Control Building	03–1, **06–3**, 06–8
O–10	230 kV Switchyard	230 kV Switchyard & Control Building	03–1, **04–4**, **06–3**, 06–8
O–11	Discharge Structure	Discharge Structure	03–1,**06–3**, **08–2**, **08–6**, **08–9**, **09–4**, **09–7**,

			09–10, 12-3, 12-5, 12-8
OS–1	Offsite	Emergency Operations Facility	02–1, 02–3, 03–1, 05–1, 05–3, 07–4, 10–3, 02–3, 03–1, 05–1, 05–3, 07–4
		Joint Media Center	08–3, 10–3, 11–1, 11–3, 12--6
Other		Other Specific Areas:	
	AB	Asset Team Work Area	
	AB	Elect. Asset Team Work Area	
	AB	Fire Pumps, Piping & Equipment	02–6, 09–6
	AB	Security System Components & SAS	
		Seismic Gap Modifications	
		Expansion Joint Failures	
		Temporary Jumpers	03–2, 08–4, 09–5
		Human Performance	09–1
		Simulation Lab	02–1, 02–8
		Radiation Monitoring System	05–6, 06–10
		Outside Control Area, Firing Range, Protected Control Area (including selected alarm stations, delay barriers, check points, vehicle barriers, gun ports, watch stations, and overall visible security features)	**06–3**, 06–10, **07–4**, 07–6, **08–2**, **08–6**,**08–9**
		ISFSI Site	**10–4**, **10–6**, **10–9, 12-3, 12-5, 12-8**
		Admin Bldg Tall Bookcase Seismic Bracing	12-7
		Control Room Ready Room Tall Bookcase Seismic Bracing	10–8, 12-7

* Systems/areas marked with "*" have also been visited on many tours due to their location along routes frequently traveled.

Legend:

- AB = Auxiliary Building
- FH = Fuel Handling Building
- TB = Turbine Building
- NH = North Half
- SH = South Half
- HX = Heat Exchanger
- El = Elevation
- HVAC = Heating, Ventilation & Air Cond.
- U1&2 = Units 1 and 2 have separate facilities/equipment

Table 2 – Ten-Year Chronological Record of Past DCISC DCPP Tours (through June 2012)

Tour No.	Date(s)	Participants	Locations/Components Observed
02–1	8/17/01	EGP, RFW	Radiation Monitoring System (TB, CR, Main Steam, Steam Jet Air Ejector, Plant Vent, CR Air Intake), Simulator, TSC, EOF
02–2	9/21/01	ADR, JEB	CR,ISFSI area, Intake Structure
02–3	11/16/01	PRC, JEB	Simulator, TSC, EOF, JMC
02–4	12/13/01	PRC, RFW	TB, Containment Access Portal, CCHX, Main Transformers, 12kV Switchgear, EDG, Condensate Booster Pumps, Condensate Pumps, Main Feedwater Pumps, Condenser, RCA Portal, Fuel Handling Bldg., Spent Fuel Pool
02–5	2/28/02	ADR, JEB	Condenser System
02–6	3/26/02	PRC, RFW	Fire protection System, U2 Cable Spreading Room, 12kV Switchgear, EDG, Fire Pumps, Fire Jockey Pumps, various fire detectors
02–7	4/17/02	PRC, JEB	12kV System (switchgear, buses, transformers)
02–8	6/3/02	EDG, RFW	Radiation Effluent Release Points & Controls (U2 Vent Bldg., Plant Vent, TB Oily Water Separator, Steam Air Ejector), RP Counting Room, AB Pipe Tunnel (Gas Decay Tank Rad Monitor), U1 Primary Sample Sink
03–1	10/23/02	EGP, JEB	Control Room Simulator, Technical Support Center (TSC), Emergency Offsite Facility (EOF), Joint Media Center JMC), Turbine Deck, Plant Discharge Structure, 230/500 kV Switchyard Control Room
03–2	2/11/03	EGP, RFW	Medical Center,Low Level Radioactive Waste (LLW) Storage, Unit 2 Containment, Unit 2 Spent Fuel Pool, Human Performance Simulation Lab

04–1	10/23/03	EGP, RFW	TLD Dosimetry Lab, Whole Body Counting Room, RP Remote Audio/Visual Containment Comm. Room, Radiation Area Access Control Point, Chemistry Counting Room, Containment Access Control Points
04–2	3/4/04	ADR, JEB	Control Room, Turbine Bldg. Floor, Unit 1 Spent Fuel Bldg., EDG Room,Low Level Waste Processing & Storage Areas, Human Performance Training Area
04–3	4/22/04	EGP, RFW	Outage Coordination Center, Protective clothing change area, Radiation control entry area, Unit 1 Containment, Unit 1 Spent Fuel Pool, Unit 2 Spent Fuel Pool, Turbine operating floor, RP outage offices, RP Containment remote A/V monitoring station
04–4	**6/2/04**	**Public Tour**	**Plant Overlook, 230 kV & 500 kV Switchyards, Control Room Simulator, Intake Overlook**
05–1	9/22/04	PRC, RFW	Emergency Operations Facility, Joint Media Center
05–2	**10/5/04**	**Public Tour**	**Plant Overlook, 230 kV & 500 kV Switchyards, Control Room Simulator, Intake Overlook**
05–3	12/8/04	PFP, RFW	Emergency Operations Facility, Joint Media Center
05–4	1/14/05	ADR, JEB	Control Room, Emergency Diesel Generators, Main Yard
05–5	**2/16/05**	**Public Tour**	**Plant Overlook, 230 kV & 500 kV Switchyards, Control Room Simulator, Intake Overlook**
05–6	4/7/05	PFP, RFW	Outside Control Area, Firing Range, Protected Control Area (including selected alarm stations, delay barriers, check points, vehicle barriers, gun ports, watch stations, and overall visible security features).
05–7	5/3/05	WFC, RFW	Turbine Building (operating deck and lower levels), Control Room, Emergency Diesel Generator (EDG) Room, Cable Spreading Room
05–8	**6/2/05**	**Public Tour**	**Plant Overlook, 230 kV & 500 kV Switchyards, Control Room Simulator, Intake Overlook**
06–1	9/8/05	PFP, JEB	Spent Fuel Building
06–2	9/21/05	WFC, RFW	Auxiliary Salt Water System in Intake Structure
06–3	**10/13/05**	**Public Tour**	**Plant Overlook, 230 kV & 500 kV Switchyards,ISFSI Site, Control Room Simulator, Intake, Outfall**
06–4	11/10/05	PFP, RFW	Containment, Unit 2 Turbine Deck & RCA
06–5	12/20/05	PFP, JEB	EDG
06–6	1/19/06	ADR, SS, RFW	Compressed Air System
06–7	**2/16/06**	**Public Tour**	**Control Room Simulator, Security Building, Intake**
06–8	3/22/06	PFP, JEB	230 & 500 kV Switchyards

06–9	5/4/06	ADR, JEB	Turbine Deck, Spent Fuel Pool, RCA, Auxiliary Building, Outside Yard
06–10	6/1/06	PFP, RFW	ISFSI Construction, Security Force–on–Force Drill
07–1	8/3/06	ADR, JEB	Intake Structure
07–2	9/6/07	WFC, SS, RFW	12kV System
07–3	**10/18/06**	**Public Tour**	**Control Room Simulator, Security Building, Intake**
07–4	10/25/06	PFP, RFW	Simulator, Technical Support Center, Emergency Operations Center (EOC), Media Center, ISFSI Site
07–5	11/28/06	WFC, JEB	Make–up Water System
07–6	12/14/06	PFP, RFW	Auxiliary Feedwater System, Pumps, Piping, Valves and Condensate Storage Tank
07–7	1/17/07	ADR, JEB	Control Room, Turbine Deck and Emergency Diesel Generator Rooms and ISFSI
07–8	**1/31/07**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
07–9	3/21/07	WFC, RFW	Component Cooling Water System Components
07–10	4/18/07	ADR, WFC	Spent Fuel Pool
07–11	5/30/07	PFP, RFW	Main Feedwater System Control System
07–12	**6/13/07**	**Public Tour**	**Control Room Simulator, Security Bldg, Intake, Overlook, ISFSI**
08–1	8/21/07	WFC, RFW	I&C Components in Various Locations in AB, CR & TB
08–2	**10/24/07**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
08–3	9/18/07	ADR	Joint Media Center
08–4	11/13/07	WFC, VSB, RFW	Human Performance & Safety Simulation Lab
08–5	12/19/07	ADR, JEB	NewSteam Generator Storage Area
08–6	**1/23/08**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
08–7	2/27/08	RJB, JEB	Control Room, Turbine Floor & SG Work in Yard
08–8	3/10/08	ADR, JEB	SG Work in Yard, Fuel Handling Bldg., Control Room, Outage Meeting
08–9	**6/25/08**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
09–1	7/16/08	WFC, RFW	Radwaste Processing & Storage, CVCS Filter Gallery, LRWS Ion Exchange Cubicles, Unit 2 Equipment Drains & Tank, LRWS & GRWS Discharge Radiation Monitors, Unit 2 Waste Gas Compressor and Decay Tank, Chemical Drain Tank, L&HS Tank, B.5.b Equipment Storage

09–2	8/27/08	RJB, JEB	Intake Structure, ASW Pump, Main Bank Transformer
09–3	9/16/08	PFP, RFW	New Unit 1 SG Storage, Warehouse
09–4	**10/7/08**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
09–5	11/5/08	RJB, RFW	Human Performance & Safety Simulators, Unit 2 Turbine Building, EDGs 2–1 & 2–3
09–6	12/17/08	PFP, JEB	Fire Protection Equipment
09–7	**2/11/09**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
09–8	3/3/09	RJB, JEB	SG Replacement, Turbine Building, EDG 1–2, MFW Pumps, CDN Pumps, Condensate Storage Tank, Outage Control Center
09–9	5/19/09	PFP, DCL, RFW	Turbine Building, EDG 1–3, Control Room, Intake Area, Discharge Cove, RCA Portal, SFPs 1 & 2, Hot/Cold Machine Shops, Yard Area, Transformers
10–1	7/22/09	PFP, DCL, JEB	ISFSI, Admin. Building Protective Window Film
10–2	8/10/09	PL, WFC, RFW	Turbine Building (all levels), Emergency Diesel Generator Room, Control Room, Alternate Shutdown Panel, Plant Yard, Main Transformers, Ocean Intake & Discharge
10–3	9/2/09	RJB, JEB	Control Room Simulator, Technical Support Ctr, Emergency Operations Ctr, Joint Information Ctr
10–4	**12/9/09**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
10–5	12/16/09	PFP, RFW	Turbine Deck Units 1 & 2, Control Room
10–6	**2/10/10**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
10–7	3/16/10	RJB, RFW	Control Room Simulator, Turbine Building, Alternate Shutdown Control Panel, Emergency Diesel Generator Room, Plant Yard, Main Transformers, Main Steam Safety Valves
10–8	5/12/10	PFP, RFW	Units 1 & 2 Spent Fuel Pools, SFP Pump, SFP Cleanup System, SFP Heat Exchanger, Training Building Tall Bookcase Seismic Bracing, Operations Ready Room Tall Bookcase Seismic Bracing
10–9	**6/2/10**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
11–1	7/6/10	PFP, DCL	Simulator, EOF, JIC
11–2	8/4/10	RJB, JEB	Main Lube Oil Room, CARDOX System
11–3	8/11/10	PFP, RFW	Simulator, EOF, JIC

11–4	**11/17/10**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
11–5	**2/15/11**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
11–6	4/19/11	PL, RFW	Unit 1 Vital Batteries and Racks, Battery Chargers, Switchgear, Vital Inverters and one train of Non–Vital Batteries and Chargers.
11–7	5/25/11	PFP, DCL	Auxiliary Building Control Panel, Control Room, Unit 2 Spent Fuel Pool, Containment, AB, TB
11–8	**6/22/11**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
12-1	8/10/11	RJB. RFW	Observe Licensed Operator Training in Training Bldg.
12-2	11/16/11	PL, RFW	Turbine-Driven Auxiliary Feedwater Pumps
12-3	**11/4/11**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
12-4	12/13/11	PRF, RFW	Compressed Air System Components
12-5	**2/9/12**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**
12-6	3/14/12	PL, RFW	Control Room Simulator, Emergency Operations Center, Joint Information Center
12-7	5/22/12	PFP, RFW	Control Room, Turbine Building All Levels, Yard, Cold Machine Shop, I&C Shop. Outage Coordination Center
12-8	**6/20/12**	**Public Tour**	**Control Room Simulator, Security Building, Intake, Overlook, ISFSI**

***** Systems/areas marked with "*****" have also been visited on many tours due to their location along routes frequently traveled.

Legend:

ADR = David Rossin

AFW = Auxiliary Feedwater

CCW = Component Cooling Water

CFCU = Containment Fan Cooler Unit

CR = Control Room

CW = Circulating Water (condenser)

DCL = Dave Linnen

DFO = Diesel Fuel Oil

DG = Emergency Diesel Generator

EDG = Emergency Diesel Generator

EGP = Gail dePlanque

EOF = Emergency Operations Facility

FDW = Feedwater

HC = Hyla Cass

HHW = Herb Woodson

ISFSI = Independent Spent Fuel Storage Inst

JEB = Jim E. Booker

JIC = Joint Information Center

OCC = Outage Coordination Center

PFP = Per Peterson

PL = Peter Lam

PRC = Phil Clark

RCA = Radiation Control Area

RFW = Ferman Wardell

RHR = Residual Heat Removal

RJB = Robert Budnitz

RTL = Bob Lancet

SFP = Spent Fuel Pool

SG = Steam Generator

SI = Safety Injection System

SPDS = Safety Parameter Display System

TB = Turbine Building

TSC = Technical Support Center

WEK = Bill Kastenberg

WFC = Bill Conway

WHO = Warren Owen

22nd Annual Report, Volume 2, Exhibit F, Open Items List

The DCISC Open Items List is an on-going list of items the DCISC tracks for follow-up, monitoring, or action. The list is updated at each of the three DCISC Public Meetings per year.

Open Item Types: M = Monitor F = Follow-up I = Issue Items in*Italics* are new or revised
FF = Fact-finding Meeting, PM = Public Meeting, Q = Quarter

Item No.	Type	Open Item Category/Description	Last Actions	Next Action
CO		Conduct of Operations (CO)		
CO-5	M	*Clearance Process Performance & Improvements. [Reviewed 1& 2R16 clearances at 7/09 FF – satisfactory.]Reviewed Electrical Clearance ACE at 5/12 FF – satisfactory.]*	10/09 FF 7/11 FF	Following 1R17 3Q12 FF
CO-7	M	Review DCPP storm response experience and strategy every 12 months during or after annual winter storm season. [Reviewed at 5/10 FF – satisfactory.]	7/09 FF 5/10 FF	2Q13 FF
CO-8	M	Monitor all reactor trips – automatic and manual (review trip LERs at public meetings). [Unit 2 trip 7/11 FF]	10/07 PM 7/11 FF	Post-trip FFs & PMs
CO-9	F	Reactivity Management – review annually. [Found satisfactory 5/10 & 8/11 FFs.]	5/10 FF 8/11	1Q13 FF
CO-10	M	Mispositioning Errors (Equipment Status) – monitor the status of mispositioning errors and actions to resolve. *[Reviewed at 7/11 FF – satisfactory. Reviewed Component Mispositioning Prevention Team at 5/12 FF – need follow-up-– good performance.]*	10/10 FF 7/11 FF 5/12 FF	Following 1R17 2Q13 FF
CO-11	M	Operator concerns and issues – review periodically the status of operator concerns and issues. [Reviewed at 3/10 FF – satisfactory, but continue to monitor.] [Operator Burdens Reduction reviewed at January 2011 FF – satisfactory.] [*Reviewed Operator/Union discipline issue at April 2011 FF – no safety concern.*]	8/09 FF 3/10 FF	4Q12 FF

CM		Conduct of Maintenance (CM)		
CM-7	I	Review PG&E's progress in complying with the amendment to 10CFR50.55a which provides the requirements for ISI of containment structures (degradation). Review the concrete report when available. [*DCPP presented Unit 1 at 2/12 PM - satisfactory.*]	7/01 FF 9/11 FF 2/12 PM	7/12 FF (U2)
CM-10	M	On-line Maintenance: review the implementation of on-line maintenance annually, including the 12-week Rolling Maintenance Schedule about how well it is working & impacting risk. Review trend of amount of on-line maintenance. [*Reviewed at April 2011 FF: satisfactory.*][Reviewed On-Line Mnt 1/12 FF – satisfactory.]	06/07 FF 09/08 FF 04/11 FF 1/12 FF	1Q14 FF
CM-13	M	Review Maintenance Department performance measures, staffing, etc. approximately annually. [Mnt reviewed at November 2011 FF – satisfactory.] [Reviewed Troubleshooting Program 12/11 FF – satisfactory.] [Reviewed FME 1/12 FF – satisfactory.]	11/11 FF 2/11 FF 1/12 FF	1Q13 PM
EN		Engineering Program (EN)		
EN-16	F	DCPP Systems – review a system (or structure or component), system health, long-term plan, Maintenance Rule performance & walkdown with System Engineer at FFs. [Reviewed AFW Pumps 11/11 FF & 1/12 FF and Compressed Air System 12/11 FF – satisfactory.][CR Ventilation System 3/12 FF – satisfactory. Safety Injection 5/12 FF – satisfactory.]	9/11 FF 11/11 FF 1/12 FF 5/12 FF	3Q12 FF
EN-19	F	Review every 12-18 months major Engineering Programs, including Configuration Management, Aging Management, System Engineering (system health & long-term plans), Valve Testing, Margin Management, Staffing, etc. [Reviewed Environmental Qualification Program & License Basis Verification Program in December 2010 FF – both satisfactory.] [Margin Management reviewed	5/10 FF 5/10 FF 8/10 FF 9/10 FF *2/11 FF* *9/11 FF*	2Q12 FF

		January 2011 FF – satisfactory.] [Reviewed System Engineering Pgm February 2011: satisfactory.]		
EN-20	F	Review or observe Plant Health Committee meetings. [Reviewed at October 2010 FF & December 2010 FF - satisfactory.] [4/12 FF – satisfactory.]	8/11 FF 4/12 FF	3Q12 *FF*
EN-27	F	Equipment Qualification Program – review biennially. [Reviewed Dec 2010 FF – satisfactory.]	12/08 FF 12/10 FF	4Q12 FF
EN-28	F	Engineering Issues – QPAR and ACE 600110245 (QPAR Engineering Department Gap) identified gaps to excellence in Engineering and less-than-adequate review of design bases for licensing decisions (10CFR50.59). [ACE 600118500, "Configuration Management". Reviewed at July 2010 FF – satisfactory, continue monitoring.] [Reviewed Engineering Rigor Action Plan in February 2011: satisfactory.] {Reviewed Engineering Rigor Action Plan Status 12/11 FF – satisfactory.]	7/10 FF 11/10 PM 12/10 FF 2/11 FF 12/11 FF	4Q12 FF
EN-29	F	ACE 600117543, "Adverse Trend in Licensing Basis Issues". The DCISC should monitor DCPP's Licensing Basis Verification Project. [Reviewed at the 11/11 FF – found satisfactory, continue to monitor.]	12/10 FF 11/11 FF	4Q12 FF
HP		Human Performance: Human Errors and Improving Safety & Efficiency of Plant Performance		
HP-1	M	Review human performance & human behavior items (including error reduction programs, HP PIs, aberrant behavior statistics, FFD, stress reduction programs, Personnel Accountability Policy, Human Performance Steering Committee & Subcommittee, Centers of Excellence, Org. Development). [Reviewed 3/12 and 4/12 FFs – satisfactory.]	12/09 FF 12/10 FF 3/12 FF 4/12 FF	2Q13 FF
HP-18	M	Review biennially operator aging, physical fitness, "no solo" issues, attention enhancement, stress management, & incentives for operator focus and fitness. [Reviewed & found acceptable at 3/10 & 8/11	3/10 FF 8/11 FF	4Q13 FF

		FFs]		
HP-25	M	Further observations and improvements in the Management Observation Program should be reviewed by DCISC [Reviewed April 2010 – satisfactory.] [Reviewed Observation & Coaching 12/11 FF – satisfactory.]	4/10 FF 12/11 FF	4Q13 FF
HS		Health, Nuclear Safety Culture and Safety Conscious Work Environment		
HS-6	F	Follow DCPP progress in establishing/improving its safety culture (and its subset Safety Conscious Work Environment and including Employee Concerns & Differing Opinion Programs). [Reviewed Premier Culture Survey 8/10 & 8/11 FFs– satisfactory.] [Reviewed at 1/12 FF – satisfactory.]	8/10 FF 8/11 FF 1/12 FF	1Q13 FF
PI		Performance Improvement Programs		
PI-1		DCPP Performance Improvement Programs: Corrective Action, Self-Assessment, Operating Experience [and line use of OE], Benchmarking, etc. [Reviewed CAP self-assessment at 3/10 FF – satisfactory.] [CAP reviewed at 12/10 FF & Benchmarking 9/11 – satisfactory.] [PI action plan 9/11] [S-A Pgm reviewed 11/11 FF – satisfactory.] [4/12 FF reviewed NRC p.1.c cross-cutting issue – lifted.] [Reviewed Performance Improvement Station Initiative at 4/12 FF– satisfactory.]	9/11 FF 11/11 FF 2/12 PM 4/12 FF	7/12 FF
EP		Emergency Preparedness (EP)		
EP-2	M	Attend and observe DCPP emergency drills and exercises annually, paying special attention to JMC communications to the media and public, including radiation release communications to the public, coordination of information release with SLO County, and extension of drills to better exercise FMTs & JMC. [UDAC 3/12 FF – satisfactory. Drill 3/12 FF – satisfactory. 4/12 FF offsite support – satisfactory.]	7/10 FF 9/10 FF 3/12 FF 4/12 FF	11/7/12 full scope exercise
EP-3	M	MIDAS Upgrade – monitor DCPP's actions to evaluate upgrading to a new version of MIDAS, based on SLO County concerns	1/11 FF 5/12 FF	Close

		reported at the 6/08 PMDCPP has initiated a project to evaluate. [Reviewed 5/12 FF – upgrade completed - satisfactory – remove MIDAS upgrade as separate open item - close.]		
EP-4	F	Emergency Preparedness: coordinate with Fukushima review item BDB-1.		
RA		Risk Assessment and Management (RA)		
RA-5	M	Review overall PRA program annually. Include Fire PRA Upgrade & Shutdown Analysis in next review. Much work underway (including plant specific shutdown risk analysis). Review PRA Group resources/capabilities. [Reviewed 4/12 FF – satisfactory.]	8/10 FF 2/11 PM 4/12 FF	2Q13 FF RJB
RA-6	M	DCPP's shift from its ORAM Program to another safety monitoring program [Safety Monitor] to assess the risk associated with taking equipment out of service for online maintenance. [Reviewed at Jan 2012 FF: Safety Monitor fully functional. Close item after follow-up FF in July or Aug 2012.]	5/09 FF 10/09 FF 9/11 FF	2Q12 FF After Outage (7 or 8/12 FF)
NS		Nuclear Safety Oversight and Review (NS)		
NS-5	M	Monitor NSOC meetings periodically to observe their processes and their review of nuclear safety issues. [Reviewed at 1/19/11 FF - satisfactory]	1/09 FF 1/11 FF	7/12 & 10/18 2012
NS-9	M	Monitor DCPP's program to track INPO Areas for Improvement. Review with DCPP INPO Coordinator. Review after mid-cycle review. [Reviewed progress in addressing INPO evaluation AFIs 12/11 FF – satisfactory.]	9/10 FF 4/11 FF 12/11 FF	3Q12 FF
RP		Radiation Protection (RP)		
RP-3	M	Regularly review RP outage performance. [Reviewed in December 2010 - satisfactory.]	12/09 PM 12/10 FF	3Q11 FF (1R17)
RP-12	M	Review annual DCPP radiological release report each year. Review at Summer or Fall FFs. [Reviewed at 7/10 FF, 7/11 FF & 8/11 FF: acceptable.]	7/10 FF 7/11 FF	7/12 FF
QP		Quality Programs (QP)		
QP-3	M	Review the activities and results of QV audits	8/11 FF	7/12 FF

		as well as PG&E's outside biennial audits, including timeliness of corrective actions. Review annually – include 4th quarter QPAR with yearly results. [Reviewed QV Site Status Report at 8/11 FF] [Reviewed QPAR 1/12 FF– satisfactory.]	1/12 FF 2/12 PM	
QP-9	F	Software QA Program: SQA Program determined satisfactory in Sept. 2006 FF meeting.[Reviewed at December 2010 FF – satisfactory.]	9/06 FF 12/10 FF	4Q13 FF
NF		Nuclear Fuel Performance (NF)		
NF-9	M	Nuclear Fuel Performance & Issues (review annually). [Reviewed at November 2011 FF: satisfactory.]	9/10 FF 11/11/ FF	4Q12 FF
ER		Equipment Reliability and Life Cycle Management (ER)		
ER-5	M	Monitor the Equipment Reliability Process approximately annually. [Reviewed at 8/10, 8/11 & 9/11 FFs & 7/11 (SPV) FF: satisfactory.]	7/11 FF 8/11 F	3Q12 FF
OE		Organizational Effectiveness & Development (OE)		
OE-1	F	Review DCPP Operating Plan each year after development. [Reviewed Operating Plan Performance Indicator Focus Area October 2010 FF – satisfactory.] [Reviewed 2010 results & 2011 plan at April 2011 FF: satisfactory.] [Reviewed 2012 Operating Plan and 2011 results at 1/12 FF – satisfactory.]	10/10 FF 4/11 FF 1/12 FF	1Q13 FF
OE-3	F	Review the status of STARS – Strategic Teaming and Resource Sharing Initiative periodically. [Reviewed at 1/11 FF – satisfactory.]	9/09 FF 1/11 FF	1Q13 FF
SE		System and Equipment Performance/Problems (SE)		
SE-26	M	Review reactor pressure vessel compliance status after next set of surveillance samples is analyzed and effective vessel lifetime projections are updated. [Reviewed specimen status at 10/10 FF: satisfactory.]	1/07 FF 10/10 FF	Following 2R17
SE-36	M	Review the Boric Acid Corrosion Control Program bi-annually. [Reviewed BACC at August 2010 FF: satisfactory]	8/09 FF 8/10 FF	3Q12 FF
SE-38	F	Add Containment Fan Cooler Unit modifications to enable reduced maintenance for future FF review. [Reviewed	10/08 FF 3/10 FF	3Q12 FF

		3/10 FF – final mods to be installed May 2011 in 2R16.] [Coordinate with BDB-1 (Fukushima) review.] [Reviewed 3/12 FF – needs follow-up following 1R17.]	3/12 FF	
SE-39	F	Review and tour following selected refueling outages the inspections and repairs of concrete Intake Structures. [Reviewed at 7/09 FF – satisfactory.]	7/09 FF	3Q12 FF
SE-40	F	Monitor the status of transformers and leakage and failures and corrective actions. [Reviewed at November 2010 PM – satisfactory & follow up after 1R16.] [Large transformers 9/11 FF]	11/10 PM 9/11 FF	3Q12 FF
SE-41	F	[Reviewed Spent Fuel Pool Cooling at 7/11 FF: recommendation for DCPP to review post-seismic cooling and add depth instrument.]Spent Fuel Cooling: coordinate with BDB-1, Fukushima review. [Reviewed as part of Fukushima review at 5/12 FF. Close here and follow with Fukushima items (BDB items).]	6/11 PM 7/11 FF	Close
SG		Steam Generator Performance (SG)		
SG-6	M	Review Steam Generator performance metrics after refueling outages and the 5-year tube inspections. Monitor DCPP's position on SONGS SG tube wear. Determined premature for Mar 2012 FF. [Tube inspections 11/10 PM, SG performance 6/11 PM] [Reviewed 5/12 FF – satisfactory – continue to monitor.]	6/11 PM	3Q12 FF (1R17)
OM		Outage Management (OM)		
OM-3	M	During outages, monitor Outage Coordination Center, Control Room, and containment walkdown/inspection (end of outage). Review outage turbine work. [Reviewed at May 2011 FF – satisfactory.] [Reviewed at 5/12 FF – satisfactory.]	5/11 FF 5/12 FF	2Q13 FF (2R17)
OM-4	M	Review Outage Safety Plan, safety margin trends, and plans for mid-loop operation for each outage. Review outage results following each outage at FFs and PMs. [Reviewed 1R17 plan at 3/12 FF – satisfactory.]	2/11 FF 3/12 FF	1Q13 FF 2R17
SEC		Security (SEC)		

SEC-3	M	Monitor interaction of Security and Operations, Engineering, Maintenance, and Emergency Preparedness for effects on nuclear safety. [Reviewed at December 2010 FF – satisfactory.] [Reviewed Cyber-Security April 2011 FF: satisfactory. Review specific mods to see how handled with new NRC regs. [Reviewed Safety-Security Interface 12/11 FF – satisfactory.]	5/09 FF 12/10 FF 4/11 FF 12/11 FF	4Q12 FF
SF		Independent Spent Fuel Storage Installation –ISFSI (SF)		
SF-1		Monitor ISFSI operations, including cask transfer. [Reviewed ISFSI video March 2010 FF – satisfactory. Video was shown at June 2010 PM: well done.] [Reviewed at December 2010 FF – satisfactory.] [Reviewed loose ISFSI hold-down bolts at 4/12 FF – satisfactory.]	6/10 PM 12/10 FF	Following next campaign (2012)
SC		Seismic & Tsunami (SC)		
SC-3	M	Long-Term Seismic Program: review periodically. Review significant seismic events as they occur. Reviewed at 6/09 PM. [Reviewed 3/10 FF – progress satisfactory. Continue to monitor.]	3/10 FF 11/10 PM	3Q12 RJB
SC-4	M	Monitor new DCPP risk-based Probabilistic Tsunami Hazard Analysis. [PG&E has completed. [Reviewed at 8/11 FF – satisfactory. Add to 10/11 PM].] [Coordinate with BDB-1, Fukushima review.]	5/08 8/11 FF	3Q12 RJB
SC-5	F	Review whether [DCPP] has any seismic safety program that looks at personnel safety and bracing of furniture, and to get a tour around the plant to inspect for potential seismic hazards associated with tall furniture. [Reviewed at May 2011 FF: recommendation for DCPP to develop schedule to fix.] [DCISC continue to monitor.] [Coordinate with BDB-1 (Fukushima) reviews.] [Reviewed 5/12 FF – no progress – another DCISC recommendation. Review 4Q12 FF.]	5/10 FF 7/10 FF 5/11 FF 5/12 FF	4Q12 FF PFP
SC-6*	M	Seismically Induced system Interactions (SISI). Include general seismic workplace safety.[Reviewed at July 2010 FF: status improving – continue to monitor.]	7/10 FF 5/11 FF	4Q12 FF RJB

		[Coordinate with BDB-1, Fukushima review.]		
SC-7	M	Shoreline Fault – follow activities and events with the Shoreline Fault. [Shoreline POA 9/11 FF]	9/10FF 8/11 FF 9/11 FF	3Q12 FF but after NRC report
SC-8*	M	Monitor DCPP response and actions to NRC Generic Letter 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States for Existing Plants."	2/12 PM	4Q12 FF RJB
SC-9*	F	He [PFP] observed there is a need to review and think generally about the ability of non safety related equipment and its capacity to survive earthquakes and Dr. Peterson stated he would request that an item be included on the Committee's Open Items List for further investigation and to review equipment qualification practices at DCPP for non safety related equipment from the perspective of seismic qualification.	2/12 PM	4Q12 FF RJB
* Review together				
FP		Fire Protection (FP)		
FP-5	M	Review Fire Protection Program and Systems every two-three years, including QV audits and NRC triennial inspections. Review the health and correction of degraded systems every six months. [Reviewed at August 2010 FF: satisfactory] [Reviewed at 1/11 FF – satisfactory.] NRC Triennial NFPA 805 Transition Audit in October 2012 – review at 1Q13 FF.	8/10 FF 1/11 FF	1Q13 FF
FP-6	M	Monitor DCPP's process of converting to the National Fire Protection Association's Regulation 805 (NFPA 805) standard. [Reviewed in the 1/11 & 8/11 FF - satisfactory.] [Reviewed 4/12 FF – satisfactory.]	8/11 FF 4/12 FF	1Q13 FF
FP-7	F	NRC examination of DCPP's "Fire Protection - NFPA 805 Transition Period" as the Triennial Fire Protection Inspection during the weeks of October 22, 2012 and November 5, 2012		1Q13 FF
LD		Learning & Development Programs (LD)		
LD-3	M	Review technical, operations & accredited training programs at least annually. [Reviewed licensed operator training	9/08 FF 1/11 FF 8/11 FF	3Q12 FF

		program 9/08 FF & 8/11 FF – satisfactory.] [July 2010 Training Self-Assessment reviewed at January 2011 FF – satisfactory.] [Training Oversight Committee 8/11 FF]		
LD-6	F	Observe operator re-qualification, other classes, management observation training, RP training, weekly, etc. periodically in FF meetings. [Reviewed operator simulator class at 3/10 FF & Licensed Op. training – satisfactory.] [Reviewed 2011 Licensed Operator examinations 1/12 FF – satisfactory.]	8/11 FF 1/12 FF	7/12 FF
OT		Overtime Control (OT)		
OT-6	M	Review and monitor DCPP implementation of new NRC work hour rules and the resulting effect on overtime. [Reviewed at September 2010 FF – satisfactory.] Review ACE on Fatigue Management Rule in 2011 FF.] [Reviewed NRC Fatigue Management Rule implementation 7/11 FF – satisfactory.]	12/09 FF 9/10 FF 7/11 FF	4Q12 FF
NR		Nuclear Regulatory Commission Items (NR)		
NR-3	M	Monitor the Non-Cited Violation Tracking & Trending Program annually at the Jan/Feb Public Meetings. [Reviewed NRC NCV & allegation trends at 3/12 FF – improvement noted.]	1/07 PM	PMs
NR-4	F	Meet with NRC Resident Inspectors regularly. [Met with NRC Senior Resident Inspector 1/12 & 3/12 FFs – satisfactory.]	1/12 FF 3/12 FF	4Q12 FF
LR		License Renewal (LR)		
LR-1	F	CEC: The Committee should conduct an evaluation of issues and make recommendations for any mitigation plans related to reactor pressure vessel integrity . . . in connection with PG&E's application for a twenty-year license extension for the plant and should consider reactor vessel surveillance reports in context of changes predicted to the predicted seismic hazard in the vicinity of the plant site. [Reviewed at February 2011 FF: satisfactory. Continue to review.]	11/10 PM 2/11 FF 2/11 PM	*On hold for DCPP LR re-start*
CL		Closed Loop Cooling (CL)		

CL-1	M	Monitor DCPP's responses and actions to the EPA proposed regulations on closed loop cooling (best technology available) for thermal power plants. [Reviewed at December 2010 FF – DCPP feasibility study satisfactory.] [Reviewed at 12/11 FF – satisfactory.]	11/10 PM 12/10 FF 12/11 FF	4Q12 FF
CL-2	F	Monitor response to DCISC letter sent to SWRCB Nuclear Review Committee. (6/12 PM: Follow up with SWRCB with letter – Rob/Bob)	6/11 PM	Hold for SWRCB response
BDB		Beyond Design Basis Events (e.g, Fukushima Event)		
BDB-1	F	June 21, 2011 PPT list of BDB topics – to be reviewed/approved by DCISC. [Fukushima actions 9/11] [Reviewed update on DCPP Fukushima actions 12/11 FF – satisfactory.] [Fukushima update 2/12 PM.]	6/11 PM 9/11 FF 12/11 FF	Revise as shown immediately below.
BDB-1	*F*	*Monitor DCPP plans, responses and actions on all Fukushima action items. [Reviewed items at 5/12 FF – satisfactory.]*	*5/12 FF*	*4Q12 FF*
BDB-2	F	Spent Fuel Pool Level Monitoring	6/11 PM	4Q12 FF
BDB-3	F	Station Blackout	6/11 PM	4Q12 FF
BDB-4	F	SAMGs and EDMGs – in response to Dr. Peterson's observation concerning the station blackout at the Fukushima Daiichi plant, where the procedural reliance was on a single, steam driven pump, that it might be prudent to stage portable equipment, Mr. Guldemond replied that there are no clear ties between EOPs and EDMGs and, in response to Dr. Budnitz' comment, he stated that operating under EOPs was preferred as use of EMDGs must be warranted under 10CFR50.54(x). Dr. Peterson commented this situation may warrant further review as a station blackout leaves a plant vulnerable and that vulnerability requires the plant to be prepared to enter EMDGs, Mr. Guldemond agreed but stated EMDGs have specific scenarios and presume severe damage. [Consider future FF on portable equipment.]	6/11 PM	4Q12 FF
BDB-5	F	Stranded Plant		4Q12 FF
O		Other Items (O)		

		None		
Public Meeting Items (PM) (Reference: Public Meeting Minutes Pages)				
2/11 PM 2	F	In response to Dr. Peterson's question whether the County during emergency drills and exercises routinely orders precautionary evacuations before PG&E makes a recommendation concerning such actions or whether the County has ordered an evacuation contrary to PG&E's recommendation, Mr. David stated he would review with Mr. Ginn the frequency of such events during combined drills with the County over the past three years to determine whether there is a trend toward over-conservatism on the County's part. [Reviewed at 5/12 FF – satisfactory – close.]	2/11 PM	Close
6/11 PM 7	F	Mr. Ginn stated that PICs, SODAR and the meteorological towers are all have uninterrupted power sources (UPS). Mr. Ginn stated he believed the UPS duration to be 12-14 hours but would have to check and verify that information. [Information provided by DCPP 10/3/11 e-mail. Close]	6/11 PM	Close
8	F	Dr. Peterson remarked that the U.S. did extensive radiation surveys in connection with the releases from Fukushima Daiichi and dispersion models were run by Lawrence Livermore Laboratories. He suggested preliminary data may indicate that these capabilities were not as great as expected and he commented DCPP may want to follow the updates of those models and ensure that the vendor for MIDAS does likewise. Mr. Ginn stated DCPP is working with the U.S. Department of Energy and the NRC and used the previous tracer studies to validate the DCPP model and believes it selected a capable vendor for MIDAS. Dr. Peterson stated the Committee would schedule an action for follow up during a future fact-finding to validate the [MIDAS] code from the results of the data obtained from Fukushima Daiichi and he commented that over the upcoming year DCPP's vendor should also be doing this. Mr. Ginn stated that presently DCPP is working with INPO, the Nuclear Energy Institute (NEI) and with the NRC on these efforts. [Reviewed at 5/12 FF – satisfactory – close.]	6/11 PM	Close
9	F	In response to Dr. Lam's inquiry about depletion of	6/11 PM	Close

		battery power due to its being required to power building systems such as lighting, Mr. Guldemond stated that it was his belief the lighting system had its own battery backup system but he would need to review and confirm that this is the case. [Information provided by DCPP in 10/3/11 e-mail – satisfactory – close.]		
10	F	Dr. Budnitz remarked, and Mr. Guldemond agreed, there is a question about the capacity of the catalytic converters and this should be placed on the Open Items List, or provided by Mr. Guldemond, to examine what capacity per minute may be achieved by the hydrogen recombiners. [Information provided by DCPP in 10/3/11 e-mail – satisfactory – close.]	6/11 PM	Close
11	F	Dr. Budnitz commented there was also contribution due to adverse interaction including hydrogen migration between multiple units, principally Fukushima's Reactors Nos. 1 and 2 and Dr. Budnitz stated there was a further need to review issues of adverse interaction between units at DCPP. [Information provided during DCISC 2/12 Public Meeting – close.]	6/11 PM	Close
10/11 PM 1	F	Dr. Peterson reviewed the Committee's discussion in Section 4.15 of the 21st Annual Report of an engineering decision related to having changed the positional setting of a limit switch on a valve and stated in his view PG&E did not exercise good engineering judgment. Even though the safety significance of the change was small, as a general principle, Dr. Peterson observed it is better not to make modifications to the plant that reduce safety margin in order to comply with technical specification requirements. The members discussed and determined to ensure a fact-finding visit with the DCPP engineers involved in making the decision regarding modifying the limit switch setting is scheduled to further review this issue. [Reviewed with DCPP by Per Peterson – satisfactory – close.]	10/11 PM	Close
3	F	PG&E has now developed a plan to conduct measurements of the subsurface areas near the shoreline from Port San Luis to Morro Bay to identify anomalies which could challenge the DCPP design basis. The new analysis is expected to identify not	10/11 PM	9/12 FF RJB

		only what behavior may be expected but also how much uncertainty exists and whether that degree of uncertainty is acceptable. The DCISC will continue to follow the results of the studies.		
5	F	Unit 1 Containment Concrete Inspection Results - a ten-year inspection conducted in June, July and October 2010. At the time of the fact-finding, the inspection report for U-2 was not available and is expected to be provided soon. [Unit 2 to be reviewed at 7/12 FF.]	10/11 PM	7/12 FF
7	F	[NRC will] order licensees to provide reliable SFP instrumentation including parameters to be monitored, review of the locations of instrumentation, qualifications for instrumentation, and makeup strategies. Dr. Peterson recommended DCPP consider installing a bubbler tube to allow the water level in its spent fuel pools to be checked manually with no need for electrical power. {reviewed at 5/12 FF – satisfactory – close.]	10/11 PM	Close
8	F	The Chair thanked [CalFire] Chief Lewin for his comments and directed that they be accurately included in the Minutes for this public meeting. Dr. Budnitz stated that he would very much like to discuss all these topics with Chief Lewin during a future fact-finding visit and then the Committee could form its own independent assessment and he commented this was an area which the DCISC should review. Dr. Peterson expressed his appreciation and thanks to Chief Lewin and agreed with Dr. Budnitz that additional meetings should be arranged to review in detail all the issues raised by Chief Lewin.	10/11 PM	Close
10	F	Dr. Peterson observed that after Fukushima there are going to be assessments made concerning whether battery capacity needs to be added and he inquired whether DCPP has the current capability to hook up portable generators and procedures to recharge batteries from those portable generators. Mr. West replied that this issue was being evaluated at DCPP he was unaware of any portable equipment or procedures to recharge the batteries other than described in his presentation. He stated any change to in-plant procedures would include 150 days for the plant to respond. Dr. Peterson commented this issue	10/11 PM	Close

		should be part of the DCISC's beyond design basis category on the Open Items List and a subject for future fact-finding. [Reviewed at 5/12 FF – satisfactory – close.]		
11	F	Mr. Becker stated the ECP reports directly to PG&E's Chief Nuclear Officer while the DPO Program is an administrative procedure which works to achieve a consensus. He agreed to provide information to the DCISC on the final adjudication procedure followed by the DPO Program. [Information provided by DCPP in 10/3/11 e-mail – satisfactory – close.]	10/11 PM	Close
12	F	The Safety Culture Monitoring Panel at DCPP is headed by the QV Director and is a diverse team with experienced personnel from various departments which reports at least quarterly to the plant's senior leadership team. Membership on the Panel is limited and Mr. Becker stated membership on the Panel should not be too broad. Membership is also limited to protect the confidentiality of personal information. The Panel has issued two reports which Mr. Becker offered to share with the DCISC. [Information provided by DCPP in 10/3/11 email – satisfactory – close.]	10/11 PM	Close
2/12 PM 1	F	Mr. Wellington agreed to review the process for providing documents in advance of a public meeting and determine whether there is a way Ms. Lewis can receive a copy of the draft minutes prior to a public meeting. (Completed – close)	2/12 PM	Close
2	F	Dr. Peterson directed that an item should be created on the DCISC Open Items List concerning Committee Recommendation R11-3 regarding expanding DCPP's post earthquake response procedures to require examination of the Spent Fuel Pool (SFP) levels after an earthquake and consider providing a permanently installed, remote, wide-range, SFP level monitoring capability. [Reviewed at 5/12 FF – satisfactory – close.]	2/12 PM	Close
3	F	The Committee agreed to follow-up on an existing Open Item regarding Committee Recommendation R11-4 which recommends developing and implementing a schedule for taking necessary action to seismically brace furniture appropriately and to better educate plant staff about seismic hazards and	2/12 PM	Close

		seismic safety. PG&E's Mr. Peter Bedesem reported a DCPP-specific procedure is to be written regarding seismic bracing of furniture. [Reviewed at 5/12 FF – not satisfactory – close here and follow with Item SC-5.]		
4	F	Concerning recommendation R11-1, Consultant Linnen pointed out that the literal wording of the response did not appear to be consistent with PG&E's intent and the Committee agreed to provide an opportunity for PG&E to correct its response to R11-1. [Revised response provided – satisfactory – close.]	2/12 PM	Close
5	F	Drs. Lam, Budnitz and Peterson replied that a meeting will be scheduled with Chief Lewin for that discussion and an item so directing has been incorporated into the Committee's Open Items List. [Reviewed external emergency support at 4/12 FF – close?]	2/12 PM	9/12 FF or 11/12 FF
6	F	He stated the decline in performance for U-1 was due to an event which occurred during reinstallation of a control module when a pinched wire penetrated its insulation and caused a short, which blew a fuse, which resulted in the loss of power to control instrumentation and U-1 experienced an unanticipated drop in power by approximately 2% as a result. In response to Dr. Budnitz' question Mr. David confirmed a cause evaluation for this event is being performed and Dr. Budnitz stated the Committee would review the evaluation when it is available. [ACE 50449872, U1 Transient – Power Loss to Four Racks" provided with April document package- close]	2/12 PM	Close
7	F	He observed there is a need to review and think generally about the ability of non safety related equipment and its capacity to survive earthquakes and Dr. Peterson stated he would request that an item be included on the Committee's Open Items List for further investigation and to review equipment qualification practices at DCPP for non safety related equipment from the perspective of seismic qualification. [Added new Open Item SC-9 – close here.]	2/12 PM	Close
8	F	Dr. Peterson stated this issue relates to issues	2/12 PM	4Q12 FF

		reviewed previously by the DCISC, such as evacuation of schools during an emergency, and he recommended a fact-finding be scheduled by the Committee to review in detail about lessons learned concerning the important role social media plays in emergency planning. Dr. Peterson stated it is difficult for society to make adequate preparations for dealing with disasters and he expressed his appreciation to all those who work in that area. He commented the idea of placing an increased focus on flexible, mobile, capabilities that can be used and sent to wherever they are need gives a much better ability to respond and it would be worthwhile to better understand how social media fits into a response.		

22nd Annual Report, Volume 2, Exhibit G, DCISC Public Contacts

The following exhibits describe contacts by members of the public during the reporting period.

Exhibit G.1 DCISC Telephone/Correspondence Log (PDF)

Exhibit G.2 DCISC Correspondence (PDF)

Exhibit G.3 Comments Received at Public Meetings

22nd Annual Report, Volume 2, Exhibit H, DCISC Recommendations and PG&E Responses

The DCISC makes recommendations in each of its annual reports based on reviews and investigations made during the reporting period. PG&E responds to each recommendation, and the responses are included in Section 9.0 of this annual report. This Exhibit H includes the previous DCISC reporting period recommendations, PG&E responses, and the status of DCISC disposition.

Table 1 – DCISC Recommendations from Last Reporting Period

Cumulative Record No. 214

DCISC Recommendation	Recommendation Reference	PG&E Response / Action	PG&E Response / Action References	Status
Due to the substantial increase in the numbers of NRC Non-cited Violations and Severity Level IV Violations over the last two reporting periods and because the NRC Substantive Crosscutting Issue in Problem Identification and Resolution still exists, the DCISC recommends that DCPP re-examine its earlier Root Cause Analysis for effectiveness and consider an independent review of its corrective actions by Quality Verification, the	Recommendation R11-1, 2010/2011 DCISC Annual Report, Section 3.5.	PG&E: PG&E shares the DCISC's concerns about the trend in the number of violations assigned to Diablo Canyon by the NRC.PG&E recognizes this gap to excellence and is addressing it via one of the five station initiatives identified in the DCPP 2012 – 2015 Operating Plan. The Regulatory Excellence Initiative describes how Diablo Canyon organization will improve its regulatory performance by fully understanding regulatory requirements, recognizing gaps and risks, taking prompt	2010/2011 DCISC Annual Report, Section 9.0, PG&E Response to DCISC Recommendations February 9-10, 2012 DCISC Public Meeting (Exhibit B.6)	Closed

Nuclear Safety Oversight Committee, or the Institute of Nuclear Power Operations in an assist visit.		interim action to close the gaps, and applying Performance Improvement techniques to address the risks. This will include closing the substantive cross-cutting issue in problem evaluation thoroughness, accurately identifying all reportable conditions, making timely notifications, and improving communications with NRC Resident and Regional Inspectors. The strategies we will use to achieve this are: Establish standards and reinforce expectations and tools for station personnel who interact with NRC inspectors to ensure we provide timely, complete, and accurate communications. Effectively use the Corrective Action Program to address and close performance gaps related to regulatory performance, and do so in a timely manner. Increase the use of regulatory operating		

		experience to prevent missed surveillance, safety system functional failures, and identifying Diablo Canyon performance deficiencies in station design. Consistently use regulatory operating experience, self-assessments, and readiness review boards to ensure proper preparation for NRC inspections. Provide the necessary training to station personnel to ensure the level of competency needed to identify, assess compliance with, and make changes to the current licensing basis. Specific actions to implement these strategies are tracked via the Regulatory Excellence Action Plan. DCISC: Accepted – closed.		

Cumulative Record No. 215

DCISC Recommendation	Recommendation Reference	PG&E Response / Action	PG&E Response / Action References	Status
The DCISC recommended	Recommendation R11-2, 2010/2011	PG&E: PG&E agrees with the	2010/2011 DCISC Annual Report,	Closed

that DCPP initiate and promptly complete its first self-assessment of the significant gap in the thoroughness and rigor of its engineering evaluations, which was to have been completed by the end of 2010.	DCISC Annual Report, Section 4.3.3.	DCISC regarding the continued monitoring and assessment of the corrective actions taken to improve the thoroughness and rigor of engineering (and other station) evaluations. The self-assessment identified in the recommendation was cancelled at the direction of the Director, Engineering Services. The subject self-assessment was considered redundant to effectiveness evaluation required by the Corrective Action Program. On November 17, 2011, PG&E completed and the Corrective Action Review Board approved, an interim effectiveness evaluation for the corrective actions to prevent recurrence for the Root Cause	Section 9.0, PG&E Response to DCISC Recommendations February 9-10, 2012 DCISC Public Meeting (Exhibit B.6)	

		Evaluation associated with problem evaluation thoroughness in November 2011. This assessment was performed because one of the corrective actions to prevent recurrence will not be complete until the end of 2014 – The Licensing Basis Verification Project (LBVP). PG&E wanted to assure that the other actions taken were providing the desired result. The assessment concluded, " . . .that significant progress has been made to date regarding station program improvements and ownership. However, inconsistencies in the application of the generic governance across station programs is preventing full achievement of the desired			

		outcomes. Interim corrections to achieve the long-term outcomes defined by the RCE effectiveness criteria are necessary." Actions to address these observations are being tracked in the Corrective Action Program and as part of the Evaluation Thoroughness Action Plan. All tasks identified to date in the action plan, with the exception of the LBVP, will be complete by June 2012. PG&E will continue to monitor the effectiveness of actions taken and make adjustments as necessary. DCISC: Accepted – close and monitor.		

Cumulative Record No. 216

DCISC Recommendation	Recommendation Reference	PG&E Response / Action	PG&E Response / Action References	Status

DCPP's Post Earthquake Response Procedure should be expanded to require examination of Spent Fuel Pool (SFP) levels after an earthquake and sampling locally for indications of possible SFP liner leakage. DCPP should also consider providing permanently installed, remote wide-range SFP level monitoring capability.	Recommendation R11-3, 2010/2011 DCISC Annual Report, Section 4.20.3.	PG&E: PG&E agrees with the DCISC that the lessons learned from the events at the Fukushima Daiichi power plant should be evaluated and incorporated at Diablo Canyon, as determined to be appropriate by those evaluations. Casualty Procedure CPM-4, "Earthquake" Revision 27 was made effective on January 19, 2012 as a result of this recommendation. When Spent Fuel Pool level is suspect, the procedure directs the dispatch of an operator to verify that the Spent Fuel Pool levels are stable and that adequate Spent Fuel Pool cooling is in service. Diablo Canyon has representatives participating in a number of industry efforts to assure that all	2010/2011 DCISC Annual Report, Section 9.0, PG&E Response to DCISC Recommendations February 9–10, 2012 DCISC Public Meeting (Exhibit B.6)	Closed (item added to Open Items List)

		applicable lessons learned are captured and acted upon. These industry efforts, as well as son-to-be-issued direction from the Nuclear Regulatory Commission will result in a significant number of actions (including Spent Fuel Pool level monitoring capability) that, once finalized, Diablo Canyon will implement to assure the continued safe operation of the facility. DCISC: Accepted (and added item to Open Items List)		

Cumulative Record No. 217

DCISC Recommendation	Recommendation Reference	PG&E Response / Action	PG&E Response / Action References	Status
DCPP needs to develop and implement a schedule for taking the necessary actions to brace furniture appropriately	Recommendation R11-4, 2010/2011 DCISC Annual Report, Section 4.20.3.	PG&E: PG&E agrees with the DCISC that the safety of Diablo Canyon Plant staff, including from seismic threats, is of	2010/2011 DCISC Annual Report, Section 9.0, PG&E Response to DCISC Recommendations February 9–10, 2012 DCISC Public	Closed – continue to monitor

throughout the station, and to better educate plant staff about seismic hazards and seismic safety.		paramount importance. It should be noted that PG&E maintains high levels of seismic awareness and control of materials within the power plant itself via the Seismically Induced System Interaction Program. The concerns raised by the Committee revolve around similar concerns in the context of office environments. PG&E's standard to address this concern is Utility Procedure: RE-2002P-01, "Bracing Cabinets and Storage Racks Procedure." Diablo Canyon is committed to comply with this standard. The examples noted by the Committee in a project work area also do not meet the Diablo Canyon standards for general area	Meeting (Exhibit B.6)	

		housekeeping. This deviation has been entered into, and will be addressed by, the Corrective Action Program. With regard to the more general concern of preventing office furniture from tipping during a seismic event, Diablo Canyon believes that this concern has been addressed by an alternative to bracing. The file cabinets that were observed in the Control Room briefing area (as well as the remodeled floors in the Administration Building) were procured with counterweights installed in the bases of the units. The weights are sufficient to assure a low center of gravity that they will not tip. They comply with the requirements of the above-mentioned		

		procedure without additional bracing. One of the five station initiatives identified in the DCPP 2012 – 2015 Operating Plan, the Site Modernization Initiative, assures the station remains focused on a number of areas including the concerns identified in this recommendation. It provides a schedule for assuring that all Diablo Canyon-related facilities are upgraded to meet current standards. DCISC: Accepted – continue to monitor.		

GENERAL INFORMATION ABOUT THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

INTRODUCING THE INDEPENDENT SAFETY COMMITTEE

The Diablo Canyon Independent Safety Committee ("DCISC") was created by the State of California's Public Utilities Commission ("PUC") and held its first meeting in May 1990. The DCISC is a three-person committee whose members are charged with reviewing and making recommendations concerning the safety of operations at Pacific Gas and Electric Company's ("PG&E") Diablo Canyon Nuclear Power Plant ("Diablo Canyon"), located on a 750-acre site along the central California coastline in San Luis Obispo County. Diablo Canyon provides electricity for more than two million northern and central Californians from operation of its two 1,100 megawatt Westinghouse 4-loop pressurized water reactors fueled by uranium dioxide. Diablo Canyon began commercial operation in 1985 and is currently licensed by the U.S. Nuclear Regulatory Commission ("NRC") to continue operating until 2025. The Committee members are assisted in their important work by technical consultants and legal counsel.

FORMATION OF THE INDEPENDENT SAFETY COMMITTEE

The DCISC was established as part of a settlement agreement entered into in June 1988 between the Division of Ratepayer Advocates ("DRA") of the PUC, the California Attorney General and PG&E concerning the operation of Diablo Canyon. The settlement agreement was approved in PUC Decision 88-12-083 and provided that:

> "An Independent Safety Committee shall be established consisting of three members, one each appointed by the Governor of the State of California, the Attorney General and the Chairperson of the California Energy Commission, respectively, serving staggered three-year terms. The Committee shall review Diablo Canyon operations for the purpose of assessing the safety of operations and suggesting any recommendations for safe operations. Neither the Committee nor its members shall have any responsibility or authority for plant operations, and they shall have no authority to direct PG&E personnel. The Committee shall conform in all respects to applicable federal laws, regulations and Nuclear Regulatory Commission policies."

The DCISC publishes an extensive Annual Report for the fiscal year ending June 30. In addition to summarizing the Committee's activities and its review of Diablo Canyon operations, the Annual Report documents the members' conclusions, concerns and recommendations regarding Diablo Canyon's operational safety. In twenty-one Annual Reports through 2010-2011, the DCISC has made 216 formal recommendations to PG&E for improving the safety of Diablo Canyon operations. PG&E's response to each becomes a part of the annual report. All the DCISC Annual Reports are available for review by any interested members of the public at the Reference Department at the R.E. Kennedy Library, located on the campus of California Polytechnic State University at San Luis Obispo and the latest Annual Reports are provided to local public libraries and published on the DCISC website, www.dcisc.org.

In May of 1997, in response to electric utility rate deregulation, the PUC issued Decision 97-05-088 which, while setting aside the 1988 settlement agreement, found that the DCISC remained a key element of monitoring safety of operations at Diablo Canyon. In May of 2004, in Decision 04-05-055, the PUC concluded the DCISC should retain discretion to determine how best to accomplish its mission and modified requirements for DCISC membership and nomination procedures and added a requirement that the DCISC undertake public outreach in the local San Luis Obispo community. In January 2007, in Decision 07-01-028, the PUC granted the DCISC's application for a Restated Charter.

DCISC OPERATION: PUBLIC MEETINGS & FACT FINDINGS

The DCISC typically conducts three public meetings each year in the San Luis Obispo area. Each meeting usually occurs in four or five separate sessions during two days. Dates, times and locations for these meetings are posted on the Committee's website, advertised in local newspapers and notices are sent to state agencies, the news media and those persons who have requested advanced notice of the public meetings. Public meetings may also include a tour of the Diablo Canyon Power Plant which is open to a limited number of members of the public along with members of the media. All meetings include an opportunity for the public to address comments and provide information to the Committe Members. PG&E representatives are present to make informational presentations to the Committee on topics requested by the Members. The meeting agenda and supporting documents, as well as a transcript of discussion at the public meetings, are filed and available to members of the public at the Reference Department of the Cal-Poly Library, minutes of each public meeting are prepared and approved by the DCISC and included in the annual report, and the public meetings are webcast in real-time, as well as webcast and archived, on www.slospan.org and are videotaped for broadcast on the local public access television station.

The DCISC also conducts frequent fact-finding visits by individual Members and consultants to the plant site and to other locations as necessary to assess issues, review plant programs and activities, interview and meet with PG&E management and employees, follow-up on current items on the DCISC's Open Items List and to identify agenda items for future public meetings. These fact-finding visits generally occupy one or two intensive days of research and investigation concerning PG&E's current activities and programs. Committee representatives also frequently observe meetings of PG&E's internal safety review organizations and committees.

A detailed written report, summarizing their activities, is prepared for each fact-finding visit by the participants. Comments concerning these reports are sought from each of the other Members and consultants, oral reports are presented during public meetings and, when approved by the Committee at a public meeting, the fact-finding reports are provided to PG&E. All fact-finding reports are included as a part of the Committee's Annual Report.

APPOINTMENT OF DCISC MEMBERS

A request for applications is publicly noticed by the PUC. After receipt of the applications and an opportunity for public comment on the applicants, a short list of candidates is selected by the PUC. This list is provided to the nominating Agency which then appoints a member. As required by PUC decisions which created and continued the Committee, the PUC proposes as candidates only persons with knowledge, background and experience in the field of nuclear power facilities and nuclear safety issues. In July 1989, when PUC President G. Mitchell Wilk announced the initial list of nine candidates nominated for appointment to the DCISC, he noted that "an independent safety committee clearly requires members who could demonstrate objectivity and independence. For this reason, none of the nominees has testified for PG&E or any other party before the PUC or the Nuclear Regulatory Commission in any proceeding regarding Diablo Canyon." These restrictions have applied to all subsequent nominees, who are required to file annual conflict of interest reports in accordance with California's Fair Political Practices Act and the implementing provisions of the PUC decision which created the Committee.

PUBLIC OUTREACH, COMMENT, INFORMATION AND COMMUNICATION

The Committee's public outreach activities included conducting three noticed public meetings in the San Luis Obispo area each year, pubic tours of Diablo Canyon Power Plant, conducting advertised informal open houses, meeting with concerned citizens and groups, broadcast of its public meetings on the local public access television channel and on the internet and responding to questions and requests for information received by letter, telephone and email. The DCISC welcomes comment and communication from members of the public and provides an opportunity for such dialogue during every session of its public meetings. The DCISC provides extensive, publicly available information concerning the safety of Diablo Canyon operations. The office of the DCISC Legal Counsel also maintains a toll-free within-California 800 telephone number as well as the DCISC website, including a link to the DCISC's email address, to respond to the questions or requests for information from members of the public. On request, the DCISC will consider arranging a meeting with one or more members of the public and a Committe member.

Written comments or questions may also be directed to the DCISC Members by contacting the office of the DCISC Legal Counsel:

Diablo Canyon Independent Safety Committee
Office of the Legal Counsel
857 Cass Street, Suite D
Monterey, California 93940
(800) 439-4688 (In California)
(831) 647-1044 (Outside California)
Worldwide Web Page: www.dcisc.org
E-mail: dcsafety@dcisc.org

CURRENT COMMITTEE MEMBERS

Robert J. Budnitz

On October 10, 2007, Robert J. Budnitz, PhD., was appointed by California Attorney General Edmund G. Brown Jr. to a term on the Committee expiring June 30, 2010. On April 15, 2010, the Attorney General reappointed Dr. Budnitz to a second term on the Committee for the period July 1, 2010 through June 30, 2013.

Dr. Robert J. Budnitz has been involved with nuclear-reactor safety and radioactive-waste safety for many years. He is on the scientific staff at the University of California's Lawrence Berkeley National Laboratory, where he works on nuclear power safety and security and radioactive waste management. From 2002 to 2007 he was at UC's Lawrence Livermore National Laboratory, during which period he worked on a two-year special assignment (late 2002 to late 2004) in Washington to assist the Director of DOE's Office of Civilian Radioactive Waste Management to develop a new Science & Technology Program. Prior to joining LLNL in 2002, he ran a one-person consulting practice in Berkeley CA for over two decades. In 1978 -1980, he was a senior officer on the staff of the U.S. Nuclear Regulatory Commission, serving as Deputy Director and then Director of the NRC Office of Nuclear Regulatory Research. In this two-year period, Dr. Budnitz was responsible for formulating and guiding the large NRC research program, that constituted over $200 million/year at that time. His responsibilities included assuring that all major areas of reactor-safety research , waste-management research, and fuel-cycle-safety research necessary to serve the mission of NRC were adequately supported. From 1967-1978, he was on the staff of the Lawrence Berkeley National Laboratory, serving in 1975-1978 as Associate Director of LBL and Head of LBNL's Energy & Environment Division. During this period, the programs under his direction were in a large mix of diverse areas relevant to DOE, including energy-efficiency, deep-geologic radioactive waste disposal, solar energy, geothermal energy, fusion energy, transportation technology, chemical-engineering for alternate fuels, environmental instrumentation, air-pollution phenomena, and energy policy analysis. He earned a Ph.D. in experimental physics from Harvard in 1968.

Peter Lam

On June 2, 2009, Chair Karen Douglas, J.D., of the California Energy Commission announced the appointment of Peter Lam, Ph.D., to a term on the Committee expiring June 30, 2012.

Dr. Peter Lam, Administrative Judge Emeritus of the U.S. Nuclear Regulatory Commission, is an international authority on nuclear reactor operating experience, and a leading expert of nuclear reactor safety and risk assessment. Dr. Lam is now the principal of EMM International, a consulting company with a group of experts in the nuclear industry. In his 18 years of public service as an Administrative Judge, Dr. Lam has presided over numerous public proceedings to decide technical issues of national and international significance involving the use of nuclear energy and materials. Judge Lam's jurisdiction covered all 104 nuclear power plants, some 21,000 medical and material licensees, and nuclear waste storage in the United States. The ultimate resolution of these significant technical issues has contributed to the enhancement of nuclear reactor safety.

Prior to his judicial appointment 18 years ago, Dr. Lam had extensive technical and managerial experience in the nuclear energy business over a period of 20 years. He was a nuclear engineer at General Electric Company, participating in the design and analysis of BWR advanced fuels. Dr. Lam served as a program manager at Argonne National Laboratory, managing the research and development of advanced fast reactor metal fuels. He was a manager at Science Applications, Inc., and a consultant at NUS Corporation, both major consulting firms in the nuclear industry. Dr. Lam's responsibilities there involved the management of probabilistic risk

CURRENT COMMITTEE MEMBERS (CON'D)

assessments of operating nuclear reactors. He managed a group of technical specialists in the U.S. Nuclear Regulatory Commission in the analysis and evaluation of nuclear reactor operating experience. Dr. Lam was also a visiting faculty member at California State University at San Jose, and at George Washington University.

Dr. Lam has published 71 technical papers and reports in national and international journals and in proprietary company publications, which focus on major issues in nuclear transport theory, nuclear reactor fuel design, nuclear reactor operating experience, and nuclear reactor safety. Judge Lam has also issued over 110 published judicial decisions related to some 50 cases of litigations. These judicial decisions resolve a wide range of technical and legal issues regarding nuclear reactor safety, nuclear waste disposal, and other civilian use of nuclear technology.

Dr. Lam has presented lectures at IAEA international conferences in Austria, Korea, and Spain, on significant results in comprehensive analyses of nuclear reactor operating experience. He has chaired an IAEA working group to develop a technical treatise for the analysis and evaluation of operating experience of the world's nuclear reactors.These activities contribute to the international exchange of important information to improve nuclear reactor safety.

Dr. Lam earned a Ph.D. and a M.S., both in nuclear engineering, from Stanford University in 1971, and 1968, respectively. He earned a B.S., in mechanical engineering, from Oregon State University in 1967. His 4-year undergraduate study at Oregon State University and his 4-year graduate study at Stanford University were fully funded by eight consecutive scholarships and fellowships.

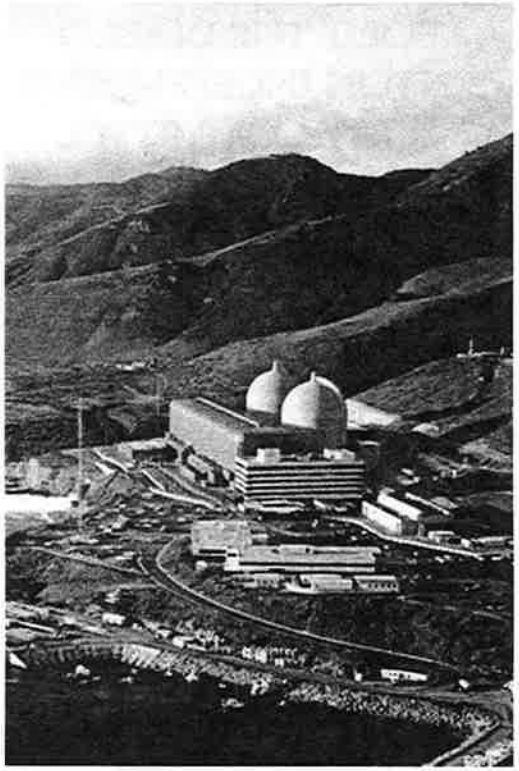
Per F. Peterson

On March 22, 2012, Governor Edmund G. Brown Jr. appointed Per F. Peterson, Ph.D., P.E., to a term on the Committee expiring June 30, 2014. Dr. Peterson previously served previous terms as a member of the Committee from July 1, 2008 to March 21, 2012, and from September 2, 2004 to October 9, 2007.

Per F. Peterson is a Professor and current Chair of the Department in the Department of Nuclear Engineering at the University of California, Berkeley. He received his BS in Mechanical Engineering at the University of Nevada, Reno, in 1982. After working at Bechtel on high-level radioactive waste processing from 1982 to 1985, he received a MS degree in Mechanical Engineering at the University of California, Berkeley in 1986 and a Ph.D. in 1988. He was a JSPS Fellow at the Tokyo Institute of Technology from 1989 to 1990 and a National Science Foundation Presidential Young Investigator from 1990 to 1995. He is past chairman of the Thermal Hydraulics Division (1996-1997) and a Fellow (2002) of the American Nuclear Society, a recipient of the Fusion Power Associates Excellence in Fusion Engineering Award (1999), and has served as editor for three technical journals.

On January 29, 2010, U.S. Department of Energy Secretary Dr. Steven Chu announced Dr. Peterson's appointment as a member of the Blue Ribbon Commission on America's Nuclear Future, established by President Obama to provide recommendations for developing a solution to managing the Nation's used nuclear fuel and nuclear waste.

Prof. Peterson's work focuses on problems in energy and environmental systems, including passive reactor safety systems, inertial fusion energy, and nuclear materials management. His research interests focus on thermal hydraulics, scaling, heat and mass transfer, fluid dynamics, and phase change. He is author of over 95 archival journal articles and over 110 conference publications on these topics.



DCISC

DIABLO CANYON
INDEPENDENT SAFETY COMMITTEE

22nd Annual Report, Volume 2, Exhibit J, Glossary of Terms and Definitions

Aging Management

is a program for monitoring and dispositioning materials and components whose characteristics change with time or use. PG&E defines aging management as "Engineering, operations, and maintenance activities to control age-related degradation and to mitigate failures of systems, structures, or components (SSC) that are due to aging mechanisms."

As Low As reasonably Achievable (ALARA)

refers to maintaining offsite radioactive releases and occupational radiation exposures as low as achievable in a reasonable, cost-effective manner.

Bank

as used in “main bank transformer” or “main transformer bank” references refers to a set of installed electric transformers.

Benchmarking

is the act of reviewing and evaluating practices at other nuclear plants, which are known for excellence in a specific area, for incorporation or improvement at one’s plant

Capacity Factor

is the fraction of power actually produced compared to the maximum which could be produced by operating at full power during a period of time (expressed in percent).

Civil Penalty

is a penalty in the form of a monetary fine levied by the Nuclear Regulatory Commission for a significant violation of its regulations.

Control Rods

are long slender metal-clad rods which move into or out-of nuclear fuel assemblies in the reactor core to control the rate of the nuclear fission process. The rods contain a neutron absorbing material which, when inserted into the fuel, absorb neutrons, slowing down the fission rate and thus the heat generation rate and reducing the power level of the reactor.

Cross-cutting Aspect

is a nuclear plant activity that affects most or all of NRC’s safety cornerstones, which include the plant's corrective action program, human performance, and "safety-conscious work environment." A Substantive Cross-cutting Issue refers to a performance deficiency characteristic that compromises more areas than just the specific situation in which it occurred.

Design Bases

are the current features and criteria upon which the nuclear plant is designed and are also the bases for Nuclear Regulatory Commission review and approval.

Diesel Generator (DG)

is a standby source of emergency electrical power needed to power pumps and valves to provide cooling water to the fuel in the reactor to prevent its overheating and possible melting. The diesel generator is designed to start up and provide power automatically if normal power is lost.

Emergency Operations Center (EOC)

is the facility away from the immediate vicinity of the plant which is used to direct the operations for mitigation of and recovery from an accident.

Emergency Preparedness (EP)

is the assurance that the plant and its personnel are practiced and prepared for postulated emergencies to be able to mitigate them and recover with a minimum of damage and health effects.

Engineered Safety Features (ESF)

are the features (systems and equipment) engineered into the plant to mitigate the effects of anticipated and postulated accidents.

Erosion/Corrosion

is a phenomenon which takes place in carbon steel power plant water systems. The inside metal pipe will continually corrode due to galvanic action, forming a magnetite coating as erosion (due to high water velocity and/or changes in flow direction) continually wears away the magnetite layer, permitting the corrosion layer to reform, etc. The continual combination of effects wears away and thins the pipe wall.

Escalated Enforcement Action

is action taken by NRC beyond a notice of violation of its requirements for a single severe violation or recurring violations. Examples include a civil penalty, suspension of operations, and modification or revocation of a license to operate a nuclear plant.

Final Safety Analysis Report (FSAR)

is the document which describes the plant design, safety analysis, and operations for Nuclear Regulatory Commission review and approval for licensing for plant operation.

Fitness for Duty (FFD)

describes the state of an employee (cleared to access the nuclear plant) being in sound enough physical and mental condition to adequately and safely carry out his or her duties without adverse effects.

High Impact Team (HIT)

is a term denoting a multi-disciplinary or multi-functional team of people put together to focus on solving a particular problem or perform a particular task. The disciplines included are those necessary to effectively accomplish the task.

High Level Waste (HLW)

is highly radioactive waste, usually in the form of spent fuel (or fuel which has been discharged from the reactor as waste) containing a high level (as defined by NRC regulations) of radioactive fission products. HLW is handled remotely, using water or a thick container as a radiation shield.

Individual Plant Examination (IPE)

is a level 2 Probabilistic Risk Assessment (PRA) analysis of plant accident sequences. The analysis includes core damage progression through the release of radioactive material to the containment and the subsequent containment failure but stops short of determining potential impact on the public or property. The NRC requested all nuclear plants be analyzed in this way to get a better understanding of severe accident behavior. An IPEEE is an IPE which is initiated by External Events to the plant.

INPO, the Institute of Nuclear Power Operators

is a nuclear industry group formed after the Three Mile Island accident to help improve nuclear plant operations through regular assessments of each nuclear plant, evaluations, best practices, and nuclear operator training accreditation.

ISFSI, or Independent Spent Fuel Storage Installation,

is the term for DCPP's on-site storage facility for the dry cask storage of spent nuclear fuel.

Inservice Inspection (ISI) and Inservice Testing (IST)

are the practices of inspecting and testing certain selected components periodically during their service lives to determine degradation patterns and to repair, if necessary, any degradation beyond acceptable limits.

Leg

with reference to the Hot Leg or Cold Leg refers to piping trains leading to or from the reactor vessel. The Hot Leg removes heat and the Cold Leg provides cooling water to the vessel and nuclear core.

Licensee Event Reports (LERs)

are reports from the plant operator to the Nuclear Regulatory Commission describing off-normal events or conditions outside established limits at a nuclear plant.

Line Organization

refers to the direct reporting supervisory chain in an organization through which orders and information flow. It is also known as the "chain of command."

Loss of Offsite Power (LOOP)

is an occurrence whereby the normal supply of electrical power from offsite is interrupted. Nuclear reactors need power from offsite when shutdown for spent fuel cooling and residual heat removal. There are usually several sources of offsite power; however, loss of all sources would result in the automatic start-up of the diesel generators to supply power.

Low Level Waste (LLW)

is waste containing a low level of radioactivity as defined by NRC regulations. LLW is usually in the form of scrap paper, plastic, tape, tubing, filters, scrap parts, dewatered resins, etc. LLW requires packaging to prevent the spread of contamination but little radiation shielding.

Maintenance Rule

is the NRC proposed rule which requires that nuclear power plant licensees monitor the performance or condition, or provide effective preventative maintenance of certain structures, systems and components against licensee-established goals. The Rule becomes effective July 10, 1996.

Microbiologically-Influenced (or Induced) Corrosion (MIC)

is corrosion, usually in the form of pitting, on steel piping systems containing stagnant or low-flow water conditions. The corrosion is caused by surface-attached microbe-produced chemicals which attack the piping surface. Depending on severity, MIC is controlled by mechanical and chemical cleaning combined with biocides.

Mid-Loop Operation

is an infrequently-used refueling outage procedure in which, after shutdown and a cooling period, reactor coolant is lowered below the hot and cold legs, permitting work to be performed in a relatively dry environment. The operation is a relatively high-risk condition due to the potential for loss of cooling.

Misposition

means a positionable component, such as a valve, placed or left out of the required position for existing plant conditions when the component's required position is tracked by a station status control tool, such as a procedure, drawing, or valve list.

Motor-Operated Valves

are valves opened or closed by remotely-or locally-operated integral electric motors. The valves are used in power plant piping systems to divert, block or control the flow of steam or water.

Notification

formerly known as an "Action Request" or "AR" is a document, which is used to identify and track resolution of a problem and incorporate it into the Corrective Action Program.

Nuclear Excellence Team (NET)

is a organization of several well-qualified senior people whose mission is "To improve plant performance through the use of performance-based self-assessments within the NPG (Nuclear Power Generation) organization." The Team is augmented by at least one other PG&E and one outside individual with expertise appropriate to the particular investigation.

Nuclear Regulatory Commission (NRC)

is the Federal agency which regulates and licenses the peaceful uses of domestic nuclear and radioactive applications such as nuclear power plants, experimental nuclear reactors, medical and industrial radioisotope applications, radioactive waste, etc.

Nuclear Steam Supply System (NSSS)

is the nuclear reactor and its closely associated heat removal systems which produce steam for the turbine. The NSSS usually includes the nuclear reactor, nuclear fuel, reactor coolant pumps, pressurizer, steam generators, and connected piping.

Operational Capacity Factor

is the capacity factor as measured between, but not including, refueling outages.

Primary Side and Secondary Side

refer, respectively, to the Reactor Coolant System, which is used to remove heat from the nuclear reactor and the Main Steam and Feedwater Systems which provide cooling to the Steam Generators and generate and provide steam to the Turbines.

Probabilistic Risk Assessment (PRA)

is a formal process for quantifying the frequencies and consequences of accidents to predict public health risk.

Protected Area

is the outermost area of the nuclear plant which is protected by physical means, a security system, and security force to prevent unauthorized entry (see also Vital Area).

Quality Assurance (QA)

comprises all those planned and systematic actions necessary to provide confidence that a structure, system or component will perform satisfactorily is service.

Reactor Coolant System (RCS)

is the collection of piping, reactor vessel, steam generators, pumps, pressurizer, and associated valves which function to circulate water through the reactor to remove heat.

Reactor Oversight Process

is the process by which the NRC monitors and evaluates the performance of commercial nuclear power plants. Designed to focus on those plant activities that are most important to safety, the process uses inspection findings and performance indicators to assess each plant's safety performance.

Refueling Outage

is a normal shutdown of a nuclear power unit to permit refueling of the reactor, along with maintenance, inspections and modifications. Typical DCPP refueling outages occur about every 18 months and last for about two months. The outages are numbered by unit number (1 or 2), "R", and the consecutive outage number. For example, "1R5" is the fifth refueling outage for Unit 1 since start-up.

Reliability Centered Maintenance (RCM)

is the practice of maintaining equipment on the basis of the logical application of reliability data and expert knowledge of the equipment, i.e., a systems approach. Normal preventive maintenance (PM) is performed on the basis of time, i.e., maintenance operations are performed on a schedule to prevent poor performance or failure.

Residual Heat Removal (RHR)

is the removal of the residual heat generated in the reactor fuel after reactor shutdown to prevent the fuel overheating and possibly melting. The heat removal is performed by a set of pumps, piping, valves and heat exchange equipment circulating water by the fuel while the reactor is shut down.

Safety System Functional Audit and Review (SSFAR)

is an investigation of a single plant safety system from all perspectives such as design basis, operations, maintenance, engineering, testing, materials, problems and resolutions, quality control, etc. The review is performed by a multi-functional team and can last several months.

Simulator

is a simulated nuclear power reactor control room with gauges, instruments and controls connected to a computer. The computer is programmed to behave like a nuclear reactor and respond to operator actions and commands. The simulator is used in training nuclear operators in controlling the reactor and responding to simulated transients and accidents.

Single Point Vulnerability (SPV)

is an individual component, which does not have a significant level of component redundancy and whose failure alone could adversely impact the system or plant performance. DCPP defines a SPV as "a High-Critical component whose failure results in a plant trip or derate ›2%".

Spent Fuel Pool (SFP)

is an in-plant stainless-steel-lined concrete pool of water into which highly radioactive spent nuclear fuel is stored when it has been discharged from the reactor. The spent fuel is maintained in the pool until its ultimate disposal is determined.

Steam Dump Valve

is a device to discharge (dump) steam from the power plant piping to lower its pressure and reduce the energy in the line. This is done to permit faster shutdowns.

Steam Generator

is a large, vertical, inverted-U-tube-and-shell heat exchanger with hot reactor coolant on its tube side transferring heat to and boiling the non-nuclear feedwater to form steam on the shell side. Besides transferring heat, the steam generator is important as a barrier between the nuclear and non-nuclear coolants.

Surveillance

is the process of testing, inspecting, or calibrating components and systems to assure that the necessary quality is maintained, operation is within safety limits, and operation will be maintained within limiting conditions.

Technical Specifications (TS)

are the rules and limitations by which the plant is operated. They consist of safety limits, limiting safety system and control settings, limiting conditions for operation, surveillance requirements, description of important design features, administrative controls, and required periodic and

special notifications and reports.

Technical Support Center (TSC)

is the in-plant facility which directs plant activities in mitigating accidents and minimizing their effects.

Trains

refers to individual functional lines of system piping, components, or wiring which are usually independent of other parallel lines, which have the same redundant function.

Trip (or scram)

is the shutting down of the nuclear reactor by inserting control rods which shut down the nuclear fission process. An automatic trip is initiated by plant monitoring systems when one or more parameters differ from preset limits. A manual trip is initiated by plant operators in an off-normal event to prevent preset limits from being exceeded or as a backup to the automatic system.

Vital Area

is an area inside the plant within the Protected Area which contains equipment vital for safe operation.

22nd Annual Report, Volume 1, Section 1.1, Formation of the Diablo Canyon Independent Safety Committee

The Diablo Canyon Independent Safety Committee (DCISC) was established as one of the terms of a settlement agreement entered into by the Division of Ratepayer Advocates ("DRA") of the California Public Utilities Commission ("CPUC"), the Attorney General ("AG") for the State of California, and Pacific Gas and Electric Company (PG&E). The settlement agreement, dated June 24, 1988, was intended to cover the operation and revenue requirements associated with the two units of PG&E's Diablo Canyon Nuclear Power Plant ("Diablo Canyon") for the 30-year period following the commercial operation date of each unit. The agreement arose out of rate proceedings that had been pending before the CPUC for four years, and which included numerous hearings and pre-trial depositions. Just prior to the commencement of trial, the DRA, the AG and PG&E prepared and entered into the settlement agreement and submitted it to the CPUC for approval.

The agreement provided that:

"An Independent Safety Committee shall be established consisting of three members, one each appointed by the Governor of the State of California, the Attorney General and the Chairperson of the California Energy Commission ("CEC"), respectively, serving staggered three-year terms. The Committee shall review Diablo Canyon operations for the purpose of assessing the safety of operations and suggesting any recommendations for safe operations. Neither the Committee nor its members shall have any responsibility or authority for plant operations, and they shall have no authority to direct PG&E personnel. The Committee shall conform in all respects to applicable federal laws, regulations and Nuclear Regulatory Commission (" NRC") policies."

The agreement further provided that the DCISC shall have the right to receive certain operating reports and records of Diablo Canyon, and that the DCISC shall have the right to conduct an annual examination of the Diablo Canyon site and such other supplementary visits to the plant site as it may deem appropriate. The DCISC is to prepare an annual report and such interim reports as may be appropriate, which shall include any recommendations of the Committee.

The settlement agreement and its supplemental implementing agreement were referred to the CPUC for review and approval. Following hearings before a CPUC Administrative Law Judge and the Commission itself, the CPUC, in December 1988, approved the settlement agreement, finding that it was reasonable and "in the public interest" and that the "Safety Committee will be a useful monitor of safe operation at Diablo Canyon".

As required by the provisions of CPUC decisions and of Assembly Bill 1890 enacted by the California Legislature, which mandated electric utility rate restructuring and deregulation, PG&E filed an

application which proposed a rate-making treatment for Diablo Canyon which would have priced the plant's output at market rates by the end of 2001. On May 21, 1997, the CPUC issued Decision 97-05-088, which found that the DCISC remains a key element of monitoring the safe operation of Diablo Canyon. The Decision ordered that the DCISC remain in existence under the terms and conditions of the settlement agreement (Decision 88-12-083, Appendix C, Attachment A) until further order of the Commission.

On May 27, 2004, the CPUC issued Decision 04-05-055, the Test Year 2003 General Rate Case, setting the Utility's revenue requirements for its electric generation operations. In Decision 04-05-055 the CPUC also: 1) adopted a Stipulation between the DCISC, PG&E, the Office of Ratepayer Advocates (formerly the "DRA"), The Utility Reform Network, the CEC and the San Luis Obispo Mothers for Peace which provided for the DCISC's continued existence and funding through PG&E's cost-of-service rates, at the funding levels established by Decision 97-05-088; 2) changed the nomination procedures for DCISC membership to eliminate from the process the participation of PG&E and the Dean of Engineering at the University of California at Berkeley; 3) modified qualification requirements for DCISC membership; and 4) added a new requirement for public outreach in the San Luis Obispo community to the DCISC's mandate.

On January 25, 2007, the CPUC issued Decision 07-01-028. The CPUC had previously adopted new practices and expectations for the DCISC without concurrently restating the Committee's charter to reflect the changes. In its Decision, the CPUC granted the DCISC application for authority to restate its charter including the incorporation into the Restated Charter of several terms, conditions, changes, and clarifications necessitated by, and previously authorized by, the CPUC which govern the composition, responsibilities and operations of the Committee. In its Decision, the CPUC found the Restated Charter to be in the public's interest as it reflects the latest authority and obligations of the DCISC. The Committee's application was unopposed.

The first "Interim Report on Safety of Diablo Canyon Operations," covering the period of January 1 through June 30, 1990, was adopted by the DCISC on June 6, 1991, and there have been twenty-one annual reports since then. This twenty-second annual report covers the period July 1, 2011 - June 30, 2012, and was adopted by the DCISC at a public meeting on October 10, 2012.

22nd Annual Report, Volume 1, Section 1.2, Appointment of Committee Members

A request for applications is publicly noticed by the CPUC. After receipt of the applications, a list of candidates is selected by the CPUC and provided to the appointing agencies. In accordance with the Restated Charter:

"The President of the CPCU shall review each application to assess the applicant's qualifications, experience and background, including any conflict of interest and comment received from the public, and shall propose as candidates only persons with knowledge, background and experience in the field of nuclear power facilities and nuclear safety issues who demonstrate they have no conflict of interest."

In July 1989, when CPUC President G. Mitchell Wilk announced the initial list of nine candidates nominated for appointment to the DCISC, he noted that

"…an independent safety committee clearly requires members who could demonstrate objectivity and independence. For this reason, none of the nominees has testified for PG&E or any other party before the CPUC or the Nuclear Regulatory Commission in any proceeding regarding Diablo Canyon."

The Restated Charter provides:

"No person shall serve as a member of the Committee if he or she has a prior history of supporting or opposing PG&E as a witness or intervener in nuclear licensing or CPUC proceedings associated with Diablo Canyon."

1.2.1 Robert J. Budnitz

1.2.2 Peter Lam

1.2.3 Per F. Peterson

22nd Annual Report, Volume 1, Section 1.3, DCISC public meetings and Plant Tours

The DCISC held three public meetings in the vicinity of the Diablo Canyon Power Plant (DCPP) on the following dates:

Otober 5–6, 2011, Public Meeting and Public Plant Tour

February 8–9 2012, 2011, Public Meeting and Public Plant Tour

June 19–20, 2012 Public Meeting and Public Plant Tour

These are described in Section 2.0.

22nd Annual Report, Volume 1, Section 1.4, Committee Member Site Inspection Tours and Fact-finding Meetings

The DCISC Members and Consultants visit DCPP regularly to conduct fact-finding meetings and tour areas of the plant to review operational activities and inspect systems, equipment or structures which the Committee has under review or has interest. A record of these Fact-finding meetings is contained in Volume 2, Exhibits D.1 – D.9, and plant tours and inspections are listed in Exhibit E.

1.4.1 Inspections and Fact-finding meetings by Robert J. Budnitz

To DCPP on August 16–17, 2011 with Consultant Wardell to receive an update on tsunami and seismic issues; observe meetings of the Plant Health and Training Oversight Committees; meet with Santa Barbara County officials concerning emergency planning; and review progress with implementation of the National Fire Protection Association's 805 standards, licensed operator training, equipment reliability, the 2010 Annual Radiological Release and Environmental Monitoring and the Second Quarter 2011 Quality Verification Site Status Reports, the Premier Survey, operator "no solo" status, and reactivity management.

To DCPP on September 7–8, 2011 with Consultant Linnen to review Operations use of probabilistic risk assessment and the Safety Monitor System, critical equipment clock resets, DCPP's benchmarking activities, the Auxiliary Feedwater and Emergency Diesel Generator Systems, the Quality Verification Department's Assessment of Primary Equipment and Support Load Combinations regarding seismicity, the status of the Performance Improvement Action Plan, the Problem Evaluation Action Plan and Engineering staffing, and to receive updates on DCPP's large transformers, the inspection of Unit 1 Containment concrete, and actions in response to the events at the Fukushima Dai-ichi plant in Japan.

To DCPP on April 3 – 4, 2012 with Consultant Linnen to review the Emergency Preparedness organization's support to external organizations, the NRC-identified P.1(c) substantive cross-cutting issue in problem evaluation, the non outage human error rate, the loose hold-down nut issue with the Independent Spent Fuel Installation, the Performance Improvement station initiative, the Differing Professional Opinion Program, and receive updates on the Probabilistic Risk Assessment Group, the National Fire Protection Association's 805 standards, and Operations "Block and tackle" initiative, and to observe a meeting of the Plant Health Committee.

1.4.2 Inspections and Fact-finding meetings by Peter Lam

To DCPP on November 15 –1 6, 2011 with Consultant Wardell to meet with the NRC Senior Resident Inspector; to review Maintenance Services, the Self Assessment Program, the Licensing Basis Verification Project, stranded plant procedures, the auxiliary feedwater pumps, and nuclear fuel issues.

To DCPP on January 10 – 11, 2012 with Consultant Linnen to review the status of backlogs/trends for revisions to Operations, Maintenance, and Engineering procedures, Nuclear Safety Culture, the Quality Verification organization's assessment of station operation and the most recent Quality Performance Assessment Report, to meet with the NRC Resident Inspector, review issues and trends with the Foreign Materials Exclusion Program, operation of the turbine driven auxiliary feedwater pump during station blackout conditions, the results of operator licensing examinations in 2011, the 2012 DCPP Operating Plan and the performance of the 2011 Operating Plan, and on-line maintenance and risk management.

To DCPP on March 13 – 14, 2012 with Consultant Wardell to review trends of NRC non cited violations and allegations, Unified Dose Assessment Center interface process weakness, the 1R17 Outage Safety Plan, the vital DC power crosstie, to meet with the NRC Resident Inspector, Operational Decision Making, the Eagle 21 Replacement Project, the performance of the anti-rotation modification to the Containment Fan Cooler Units, the Control Room ventilation system, the Human Performance Line Ownership Action Plan, and Emergency Response Organization drill performance.

1.4.3 Inspections and Fact-finding meetings by Per F. Peterson

To DCPP on July 12–13, 2011 with Consultant Linnen to review outage clearance performance, the concerns of the NRC Senior Resident Inspector, implementation of the NRC Fatigue Management Rule, annual radiological release reports, single-point vulnerabilities, time-critical operator actions, the manual reactor trip of Unit 2, the Component Cooling Water System, and component mispositioning.

To DCPP on December 13 – 14, 2011 with Consultant Wardell to review machine vibration monitoring, three losses of 230kV power during Outage 2R16, the Compressed Air System, an update on DCPP's response and actions following the Fukushima accident, the status of the Engineering Rigor Action Plan, the Observation and Coaching Program, the Troubleshooting Program, an update on EPA closed cooling, DCPP's progress in addressing INPO evaluation items, DCPP's experience with the new reactor vessel head assemblies, and the safety-security interface process.

To DCPP on May 22 – 23, 2012 with Consultant Wardell to review an update on MIDAS, the Apparent Cause Evaluation for electrical clearance issues, health of the DCPP steam generators, the High Pressure Injection System, an update on office seismic safety, an update on the Fukushima accident, the DCISC Open Items List, to meet with the Component Misposition Prevention Team, and to tour DCPP during refueling outage 1R17 and observe a meeting at the Outage Coordination Center.

1.4.4 Tours of DCPP by DCISC Members and Members of the Public During the Period July 1, 2011 – June 30, 2012

The DCISC had historically performed a public tour of Diablo Canyon Power Plant each year with members of the public in conjunction with its January/February Public Meeting (except for two years following the terrorist activities of September 11, 2001 because of tightened security at

nuclear power plants, including DCPP). With its June 2004 public meeting, the Committee resumed conducting tours of DCPP with members of the public, offering a tour in conjunction with each of its public meetings since that time, unless precluded by security concerns. The tours are noticed in advance in the local newspapers, and members of the public sign up in advance. During the tours members of the public and the Committee Members and Consultants hold individual discussions concerning the DCISC, Diablo Canyon and nuclear power. The tours have proven to be very popular with the local residents and are considered by the DCISC as an important aspect of its public outreach activities. Public tours were conducted at the October 5, 2011, February 8, 2012, and June 20, 2012 Public Meetings, with the DCISC Members, and DCISC Consultants. Each of the tours was well attended with 43, 37 and 29 members of the public attending each of the tours, respectively. These tours are described in Volume II, Exhibit E. While public interest remains, the DCISC will continue to host public tours at each of its public meetings.

22nd Annual Report, Volume 1, Section 1.5, Tours by DCISC Members to California State Agencies

On February 7, 2012, DCISC Member Per F. Peterson met in Sacramento with Special Advisor to the Governor of California Nettie Sablelhaus and Deputy Appointments Secretary Veronica Ortiz-Torres to discuss matters related to Dr. Peterson's reappointment to the Committee, DCPP's current operational status, and recent events and the activities of the DCISC.

On March 3, 2012, DCISC Member Peter Lam and Assistant Legal Counsel Robert Rathie met in Sacramento with California Energy Commission Chair Robert B. Weisenmiller, Ph.D., his advisor Mr. Kevin Barker, and Senior Nuclear Policy Advisor Barbara Byron and discussed matters concerning the events at the Fukushima Daiichi Nuclear Plant in Japan following the March 11 earthquake and tsunami, beyond design basis events and DCPP emergency planning, stranded plant procedures, the operation of the steam-driven driven auxiliary feedwater pump during periods of station blackout, to deliver a copy of the Committee's 21st Annual Report and to discuss matters related to DCPP's current operational status and recent events and the activities of the DCISC.

The attorneys general expressed interest in why there isn't a safety committee similar to the DCISC for the San Onofre Generating Station and discussed with Dr. Budnitz the potential benefit of forming such a committee.

On March 14, 2012, DCISC Member Robert J. Budnitz and Assistant Legal Counsel Robert Rathie met in Sacramento with Chief Assistant Attorney General for Public Rights Mark Breckler, Senior Assistant Attorney General for the Environmental Section Sally Magnani and Deputy Attorney General Susan Durbin and discussed matters concerning the events at the Fukushima Daiichi Nuclear Plant in Japan following the March 11 earthquake and tsunami, spent fuel storage at DCPP and the NRC's update of its Waste Confidence Rule, seismic studies of the Hosgri, Shoreline and other faults in the vicinity of DCPP, to deliver a copy of the Committee's 21st Annual Report and to discuss matters related to DCPP's current operational status and recent events and the role and activities of the DCISC.

The DCISC has plans to schedule annual meetings between its Members and the appointing entities and with the Commissioners or representatives of the California Public Utilities Commission to provide background on and information regarding current activities of the Committee.

22nd Annual Report, Volume 1, Section 1.6, Documents Provided to the DCISC

The Restated Charter provides that the DCISC shall have the right to receive on a regular basis specified operating reports and records of Diablo Canyon, as well as such other reports pertinent to safety as may be produced in the course of operations and may be requested by the Committee. Thousands of PG&E and Nuclear Regulatory Commission documents (relating to both historical and current operations) have been provided to the DCISC. Document lists are shown in Volume 2, Exhibit A.

22nd Annual Report, Volume 1, Section 1.7, Documentation of DCISC Activities

DCISC Activities and meetings are documented for public information in several ways as described below. Documents are available at the Reference Department at the California Polytechnic University (Cal Poly) R.F. Kennedy Library in San Luis Obispo, CA.

The DCISC's Annual Report, covering the period July 1 through June 30, is a comprehensive description of Committee activities throughout the period. The report is published in two volumes and in a compact disk format and is made available on the Committee website and is provided to local San Luis Obispo City and County public libraries and interested persons.

Minutes of each public meeting are contained in the Annual Report in Exhibits B.3, B.6, and B.9.

Reports of DCISC visits to the Diablo Canyon Power Plant (DCPP) are contained in the Annual Report.

DCISC public meetings are webcast in real time and cablecast over the San Luis Obispo local public access television channel and are available through indexed, archived streaming video through the link on the Committee's website to County Meetings on www.slospan.org.

The DCISC issues press releases before and after its public meetings concerning topics it believes to be of particular interest within the community.

22nd Annual Report, Volume 1, Section 4.1, Conduct of Operations

4.1.1 Overview and Previous Activities

The following are operations-related items the DCISC reviewed in the previous reporting period:

- Operational Focus
- Operations Revitalization Action Plan
- Status of Component Mispositioning
- Chemistry Program
- Operator Burdens
- Union Operator Concern

DCPP Operations performed satisfactorily in the normal operation of the plant. Actions to address component mispositionings, steam generator iron and sulfate concentrations, and operator burdens appeared to be appropriate. The Operational Focus Action Plan was well conceived and appeared to be getting good results. Implementation of the Operations Revitalization Action Plan appeared to be obtaining good overall results with respect to improving the relationship between Operations managers and workers. One worker concern was addressed by DCPP management and appeared to have no impact on nuclear safety.

4.1.2 Current Period Activities

During the current period, the DCISC had presentations on conduct of operations at nine Fact-finding meetings. The following topics were reviewed:

- Outage Clearance Performance
- Component Mispositioning
- Operator "No Solo" Status
- Reactivity Management
- Backlogs for Procedure Revisions
- Operational Decision Making
- Operations "Block and Tackle" Update
- Electrical Clearance Problems

Outage Clearance Performance (Volume II, Exhibit D.1, Section 3.1)

A "clearance" system is used to isolate complete systems or portions of systems so that components within the isolated section(s) can be worked on without posing a risk to station personnel or to plant operation. The Electronic Shift Operations Management System (eSOMS) clearance and tagging software is one component of the new Nuclear Excellence Information System (NEXIS), which replaced the COBOL based Plant Information Management System (PIMS).

As a computer based system, it is easier to use and is more efficient than completely manual systems and it also displays applicable Technical Specifications. When one electronic tagout is being cleared, eSOMS notes the components that have other tagouts applying to them. Therefore, the physical tags are not removed from those particular components.

Overall, the DCISC's review of the station's Operations Protective Tagging Index in the monthly Plant Performance Improvement Report (PPIR) indicated that the use of eSOMS in implementing the clearance process during refueling outage 1R16 was good. However, the same report indicated that during outage 2R16 a worker received an electrical shock. This was not due to a problem with eSOMS, but rather involved a lack of clarity in station drawings related to that particular work and the failure of the worker to verify that the component was deenergized prior to working on the component. Since then a cross reference was developed to identify pertinent station drawings component by component for all Diablo Canyon Power Plant (DCPP) 4kv and 12kv circuit breaker cubicles. There was also a human performance aspect in this event in that the same activity had been performed about four years earlier without experiencing a similar problem. A lesson learned in this instance was that complex clearance operations need to have more layers of review such as provided by the above-mentioned cross reference.

The Electronic Shift Operations Management System (eSOMS) appeared to be functional and supportive of DCPP's clearance program. Nevertheless, one worker experienced an electrical shock during refueling outage 2R16 due to a lack of clarity in station drawings that were pertinent to that activity rather than due to an inadequacy in eSOMS. The station appeared to have taken appropriate actions to address this issue.

Component Mispositioning (Volume II, Exhibit D.1, Section 3.9)

A "Mispositioned Plant Component" is any positionable component placed or left out of the required position due to inadequate or incorrect status controls. This includes situations where a lack of process exists that should have controlled the configuration of the component.

DCPP tracks and records its performance with regard to the number mispositions that occur over time, and the general trend over the past 5 years was good. Some fluctuation did occur within various years, but the station's monitoring program revealed such variances, and the station responded with corrective actions.

In particular, during the period from July 31, 2010 through February 2011, there was a repeat of an adverse trend in mispositioning of plant components, with the majority of the mispositionings occurring during normal operations. These events involved cross-discipline personnel, comprised of the following departments: Operations, Maintenance, and Engineering. A common cause analysis

was performed to review and analyze the events. All of these events had minimal impact on plant operations, safety, and station personnel. Common causes were identified and associated recommendations for corrective actions were implemented. The station planned to benchmark similar programs at other stations to identify effective practices.

A DCPP Component Misposition Prevention Team (CMPT) is mentioned in the DCPP Procedure OP1.ID6, but the CMPT charter had not been completed. In the meantime it is a cross-functional team headed by an I&C Foreman and owned by DCPP's Operations Director. The CMPT's principle role is to develop prevention techniques to minimize or eliminate mispositionings much like human error prevention tools. DCPP had benchmarked several other plants and was developing the CMPT's charter.

As of May 23, 2012, there were no outage-related mispositionings. The Plant Status Control Program was in Green (excellent) health. The Plant Misposition Component Performance Indicator (PI) had steadily improved since early 2011 and its most recent rating was Green (excellent) performance.

DCPP routinely tracks and analyzes performance with regard to component mispositionings. Although the general performance trend was good during the past five years, a setback was experienced beginning in the second half of 2010. The station's evaluation of these problems appeared to be thorough. DCPP's intention to benchmark other similar programs in the industry was appropriate. The DCPP Component Misposition Performance Indicator had steadily improved since early 2011 and its most current rating was Green (excellent).

Operator "No Solo" Status (Volume II, Exhibit D.2, Section 3.11)

Operator "no solo" limitations (i.e., operators not being able to work alone due to health reasons [mostly fitness-related cardiovascular]) have the potential to adversely affect the capability of the operations crew. "No solo" status is a factor mainly for control operators who go out into the plant as a normal part of their duties, rather than licensed operators who work in the Control Room.

The DCISC has been following this subject at DCPP and its concern centers around having enough "solo" operators during emergency situations. DCPP has never approached having a significant problem with its numbers of "no solos". The trend in numbers of "no solo" DCPP operators for all five shifts was as follows:

Time Period	No. of "no solos"
Year-end 2001	18
Year-end 2003	14
September 2005	10
November 2007	7
August 2011	6

This was a positive trend. Also, the station had no concerns regarding the number of "fit" operators

to handle any plant situation, including emergencies.

The number of DCPP "no solo" operators (i.e., operators who cannot work alone on shift due to health limitations) has steadily declined in the last ten years, which is a positive trend. The number at the time of this Fact-finding visit in August 2011 was six, which would not adversely the operating crews' ability to handle normal or emergency situations.

Reactivity Management (Volume II, Exhibit D.2, Section 3.12)

Reactivity is defined as "the fractional change in neutron population from one neutron generation cycle to the next, or the measure of departure from criticality" in the nuclear reactor core. In general, it is a measure of the potential for a nuclear core to increase or decrease in its chain reaction rate or power level. It is important to control reactivity in order to maintain safe control of the nuclear reactor. The goal of the Reactivity Management Program is to prevent reactivity events. The station procedure for controlling reactivity appeared to be appropriate for an effective reactivity management program at DCPP.

The Operations Manager is responsible for plant reactivity management, including the direct control of reactivity, and for ensuring conservative actions with regard to nuclear fuel integrity during operations, fuel handling, and storage and for the management of the Reactivity Management Leadership Team (RMLT). The RMLT is a team of individuals representing Operations Services, Maintenance Services, Engineering Services, Learning Services, and the Corrective Action Program. The team reviews reactivity events and adverse trends to identify needed corrective actions and recommend additional training or qualification for groups that can affect reactivity.

Reactor Operators (ROs) and Senior Reactor Operators (SROs) are responsible for implementing the Reactivity Management Program, including (1) ensuring that expected responses to a reactivity change are identified and fully understood prior to initiating any action that affects reactivity, (2) closely monitoring appropriate indications for reactivity changes to verify the expected magnitude, direction, and effects, (3) remaining alert for situations that could affect reactivity, and initiating appropriate conservative corrective actions, (4) reducing reactor power or tripping the reactor without the concurrence of the unit Shift Foreman or reactivity SRO when the reactor operator deems that the action is immediately necessary to protect the reactor core, and (5) maintaining the reactor core parameters within established limits.

Reactor Engineering provides technical support for the RMP and a Reactor Engineering representative to the RMLT. Reactor Engineering is responsible for providing reactivity management recommendations to Operations with the greatest emphasis on reactor safety, based on the most accurate core information available.

Reactivity manipulations for the operation of Control Rods, Reactor makeup control, and Main Turbine control are described and controlled by procedure. Other system operations, surveillance test procedures or maintenance activities that may affect reactivity are required to be preceded by an operating crew reactivity brief to ensure that the reactivity impact is understood and managed.

The Shift Foreman conducts reactivity briefs at the beginning of each operating shift, prior to

planned plant evolutions, and following plant transients. Reactivity briefs include a review by the operator at the controls of expected control rod movement, Reactor Coolant System boron level dilutions and increases and turbine load changes anticipated to maintain or establish desired plant conditions. The beginning of shift reactivity brief includes all control room licensed operators for the unit and a review of the Reactor Engineering Reactivity Briefing Sheet. Reactivity manipulations require oversight by an active SRO, normally the unit Shift Foreman. The operator at the controls must obtain SRO approval and oversight for each reactivity manipulation during normal operation. Activities that might distract the operator at the controls are suspended during reactivity manipulations.

The DCPP RM Program appeared to be healthy and effective, although the Unit 1 RM Performance Indictor was rated by the station as White (satisfactory) but almost Green (89.2 vs. 90.0 for Green) due to some 2010 events. Unit 2 was just Green (90.0). An action plan was in effect to improve those indicators. There had been no recent significant reactivity events, the performance indicators had been stable for Unit 1 and slightly declining for Unit 2, and the program had no negative reviews by NRC or internally by audits or self-assessments.

The DCPP Reactivity Management (RM) Program was generally satisfactory; however, Unit 1's performance indicator was White (satisfactory) but almost Green, and Unit 2 was just Green (good) but almost White. An action plan was in effect to improve the indicators.

Backlogs of Procedure Revisions (Volume II, Exhibit D.6, Section 3.1)

On a monthly basis, DCPP tracks and reports the backlogs of requested revisions to each of three types of procedures for: Outage - High Priority; Non Outage - High Priority; and Low Priority. These backlogs are separately tracked for the Operations, Maintenance, and Engineering disciplines. Also tracked are the numbers of backlogged procedures that are revised each month. However, these performance metrics do not address the procedure backlogs associated with modifications, license changes, or upgrade projects, which are separately tracked through the station's corrective action system.

The most recent tabulation available to the Fact-finding team was for January through October 2011. All of the monthly ratings were Green for High Priority, Outage procedure changes for all three disciplines. Conversely, all of the monthly ratings were Red for Low Priority procedure changes for all three disciplines.

The monthly procedure change performance ratings varied among all three disciplines regarding changes to High Priority, Non Outage procedures. For both Operations and Maintenance, the trend moved somewhat toward Red in the latter part of the year, while Engineering started the year Green, moved to Yellow and briefly to Red, and then returned to Green in September and October.

Contract personnel have been employed to assist the ten procedure writers in addressing the backlogs of low priority change requests. Manpower support from these contract personnel averages between the equivalent of a half-time and a full-time contractor throughout the year. Input was provided by the line organization with respect to prioritizing individual change requests.

The highest priority at the time of the Fact-finding visit was on Operations procedures. In Maintenance, the priority has been shifted from I&C toward Electrical.

The procedure writing group was aging and could experience some attrition during the coming years.

DCPP maintained an effective system for monitoring station performance with regard to updating procedures in Operations, Maintenance, and Engineering. Increased focus was needed on the timeliness of updating High Priority, Non-Outage procedures, especially in Operations and Maintenance. The potential retirements of a portion of the procedure writing staff could have the potential to impact the capabilities of this group.

Operational Decision Making (Volume II, Exhibit D.7, Section 3.6)

Operational Decision Making (ODM) is a structured, rigorous decision-making process used primarily by Operations for intermediate-term decisions made on a time frame of hours or days, not short-term (seconds or minutes) or long-term (months or years). Its purpose is to provide a systematic method for evaluating technical and operational issues at the station and making effective decisions that affect plant operations, safety, reliability, and material condition when faced with degraded conditions. Examples of degraded conditions include:

- Increased primary system or containment leakage that remains below operational or licensed limits
- Step changes in vibrations that remain at alert levels
- Numerous or long-term valve or pump leaks
- Fuel defects or increased corrosion rates
- Chronic or aggregate equipment material deficiencies
- Degraded conditions requiring a Prompt Operability Assessment
- Potential challenges to Technical Specification equipment

The DCISC Fact-finding Team reviewed the following ODMs:

- Unit 2 Condenser DP [differential pressure] Increasing – dp was trending upward and expected to exceed the 10 psid action limit prior to the next scheduled tunnel cleaning operation. A multi-discipline ODM Team was assembled and used the ODM process to evaluate available options before deciding to move up the tunnel cleaning.
- Unit 2 Rod Control Switch – while inserting Shutdown Bank A, the rods continued to step in when the control room operator released the switch. The operator had to manually pull the handle towards him to stop the inward rod motion. An ODM Team was assembled to review available options and decide on the best one. The Team decided to proceed with switch replacement. The replacement was performed under the procedure for "Infrequently Performed Tests or Evolutions" because of its infrequent nature and sensitivity to plant operation.

The DCISC Fact-finding Team concluded that these two ODMs were properly performed.

Regarding a previous DCISC recommendation, DCPP was cataloguing ODMs on the Operations internal website such that they can be searched by subject and other parameters. This satisfied the recommendation.

The DCPP Operational Decision Making process appeared sound and effective for solving problems, which affect plant operability and safety. Two example ODMs reviewed were performed satisfactorily.

Update on Operations Block and Tackle Action Plan (Volume II, Exhibit D.8, Section 3.7)

This was the DCISC's first review of this Plan. The stated purpose and desired results of the Plan are that Diablo Canyon's Operations Department is recognized as an Industry Leader in its ownership, operation, and monitoring of plant systems as evidenced by improved plant program performance. It involves Operations personnel using and reinforcing error prevention tools in all work and instructional settings. It also involves DCPP managers clearly defining and reinforcing industry leading behaviors, standards, and tools for preventing errors. The effectiveness of the improvement plan is monitored and assessed by monthly metrics provided in the Plant Performance Improvement Report.

An extensive Action Plan was being used to direct and track actions aimed at achieving the desired improvements. The Plan was composed of six sections, as follows, and was essentially complete:

- Power Plant Leak Management
- Emergency Plan Drill and Exercise Performance Failures
- Plant Status Control
- Inconsistencies in Crew Performance
- Reactivity Management
- Missed Surveillances

Performance was being tracked primarily through the Plant Performance Improvement Report. The general trend was one of improving performance. Nevertheless, DCPP continued to emphasize the tools for improvement and to reinforce the expected standards.

Activities associated with improving the six performance areas of the Operations Block and Tackle Action Plan appeared to be appropriate and to be achieving or approaching the desired results.

Electrical Clearance Apparent Cause Evaluation (Volume II, Exhibit D.9, Section 3.2)

DCPP, and all nuclear stations, use clearances to "clear" systems and equipment prior to work on them to assure all energy (electricity, pressure, heat, etc.) is removed to permit personnel to safely perform their work.

DCPP experienced four separate events in the last 3 years in which electrical energy was discovered after the clearance application. These were as follows:

In May 2011 an inadequate clearance boundary for an electrical cabinet hinge wire replacement was prepared and implemented; however, a worker encountered 120 volts alternating current during the work. An Apparent Cause Evaluation (ACE) identified the following apparent causes:

Clearance writers did not have the expertise to adequately write complex electrical clearances.

The electrical worker did not have adequate guidance for performing the appropriate checks for whether equipment is energized.

The Corrective Action Program (CAP) was not used to document clearance revisions to previous hinge wire work.

In May 2011 proper clearance boundaries were not established for work at a panel that contained two startup power relays. Maintenance workers found unexpected voltage. The clearance writers used the points recommended by planners. A revision to this clearance was requested and additional clearance points were added.

In October 2009 inappropriate clearance boundaries were established to replace annunciator sample valve position switches. During the Electrical Maintenance tailboard, it was noted that the assigned clearance did not remove power to the monitor light box contacts that were part of the circuit of the switched being replaced. The craft then modified the work order to lift leads to completely de-energize the switches.

In August 2011 operators assigned work orders to perform resistance checks of a pump at the hot shutdown panel to an approved clearance that did not provide adequate worker protection. The problem was identified and corrected during the independent review of the clearance. A misunderstanding of the procedural interaction with the clearance caused the preparers to purposely omit a required point. This latent error was embedded in the archive clearances that were previously used.

The ACE Team utilized the Common Cause Analysis Matrix Worksheet method to identify common causal factors, which indicated that “Inadequate Expertise in Print Reading” and “Inadequate Guidance or Standard” were each common to two or more of the events. Individual accountability was used to address the human performance issues that contributed to the three events listing human error causal factors.

DCPP Procedure OP2.ID1, “Clearances” identified many instructions regarding status control and a description of the clearance process but little instruction regarding how to remove energy from a device and no guidance was located describing acceptable energy isolation.

The apparent causes were identified as follows:

- OP2.ID1 does not provide sufficient guidance to create and review electrical clearances.
- Inadequate electrical print reading expertise.

Corrective actions included upgrading the governing procedure in areas such as generic and

specific guidance, checklists, documentation, and appropriate reviews, providing electrical print reading instruction, and requiring reviews of complex electrical clearances by subject matter experts.

One significant prior DCPP electrical clearance event was noted. In January 2009 during performance of a routine calibration of the Pressurizer Heater Group 1-2 wattmeter, an employee received an electric shock from energized 480-volt test leads. Corrective actions included substantial revisions to DCPP Procedure OM6.ID2, "Electrical Safety Procedure" and other related procedures and additional Maintenance Department training. The corrective actions did not prevent the four events initially listed above.

DCPP Senior Management instructed that industry benchmarking be performed on this issue. Plans for benchmarking included the following:

- Industry practices for performing observations of clearance preparation activities
- Protective tagging index to validate consistency with industry metrics
- Practices of copying historical or library clearances as standard practice
- Standard practices for clearance information expected to be provided by the clearance requesting organization
- Routine use of shift operations staff to perform clearance reviews
- Use of clearance removal checklists and qualification requirements for performing removal reviews and approval

The results of extensive benchmarking indicated that DCPP was in-line with best industry practices, except for the following areas:

- DCPP procedures place responsibility for independent verification of most workweek clearances on the operating crew. DCPP's Clearance Group is not sufficiently staffed to perform both preparation and verification of workweek clearances. A recommendation was made for additional staffing of the Clearance Group.
- DCPP post-task observations were not up to industry best practices, and they developed a new focused template, "Post-Task Clearance Preparation Observation," for observations by the Clearance Coordination Supervisor and Operations Planning Manager.

Management directed an ACE effectiveness review by July 2012 to achieve:

1. Zero electrical shocks due to failure of all clearance safety barriers, which include the following:
    a. Properly prepared and verified clearances in accordance with applicable procedures and properly implemented
    b. Maintenance Live-Dead-Live checks are performed per procedure prior to all work
2. The Protective Tagging six-month rolling average is Green monthly performance six-of-nine

months starting November 2011.

The Index has been continuously Green beginning in November 2011. There have been no clearance events during November and December 2011 nor since January 2012. From these data, it appears the changes to the DCPP Clearance Program have been effective to date. Outage 1R17 began April 22, 2012, and there have been two low-level clearance problems.

In communicating the importance of clearances and of the significant changes made, the Maintenance Services Director facilitated a February 8, 2012 site-wide safety stand-down with all supervisors. The message stressed the importance of the safety requirements for clearance holders to review that the clearance provides adequate protection for workers and that a clearance boundary check is always performed prior to performing work. DCPP has also developed "5 Minute Meeting" guidance for all employees involved in clearance work.

DCPP experienced three significant clearance events in the last three years. Because of a negative trend, DCPP performed an Apparent Cause Evaluation (ACE) to determine and correct the causes of the problems, which were that the governing procedure did not provide adequate guidance and that clearance-writing personnel did not have adequate electrical print reading expertise. Substantial corrective actions were taken to upgrade the procedure and personnel expertise, along with changes based on industry benchmarking. The actions appeared effective with excellent performance since November 2011.

4.1.3 Conclusions and Recommendations

Conclusion:

DCPP appeared to have an effective plant Operations function with an improved equipment clearance program which corrected procedural and personnel weaknesses, good performance in component mispositionings, few "no solo" operators (who cannot work alone on shift due to health limitations), effective reactivity management, and strong Operational Decision Making.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.2 Conduct of Maintenance

4.1.1 Overview and Previous Activities

The following are operations-related items the DCISC reviewed in the previous reporting period:

- Post-maintenance Testing Self-assessment
- Foreign Material Exclusion Program
- On-line Maintenance

The DCPP Maintenance Program appeared to be functioning satisfactorily. No concerns were identified pertaining to nuclear safety. However, a sharp decline was observed during the past five years with regard to personnel awareness of the elements of Post Maintenance Testing (PMT) and its importance. This was concluded to be due primarily to the attrition of key experienced personnel. Improvements to better support PMT were also found to be needed in a number of areas such as clarity of procedures and work packages, Operations Verification Testing, and the involvement of a Senior Reactor Operator early in the process. DCPP's Foreign Material Exclusion (FME) Program performance was noted to have degraded during refueling outages 2R15 and 1R16 but showed an improving trend after 1R16 in October 2010. DCPP was making improvements in the program to better address outage and non-outage FME performance. The DCPP On-Line Maintenance (OLM) Program continued to improve by adopting better risk analysis procedures and tools and by upgrading OLM to the station program level.

4.2.2 Current Period Activities

During the current period, the DCISC had presentations on conduct of maintenance at four Fact-finding meetings. The following topics were reviewed:

- Maintenance Services
- Trouble-shooting Program
- Foreign Material Exclusion (FME) Issues/Trends
- On-line Maintenance and Risk Management

Maintenance Services (Volume II, Exhibit D.4, Section 3.2)

The primary purpose of this Fact-finding Visit was to obtain the perspective of the station's new Maintenance Director regarding issues and plans for the Maintenance Department.

A significant concern emerged during Refueling Outage 2R16, when the station experienced three

separate losses of 230kv offsite power, which is designed to supply the plant with emergency power. All of these losses occurred in conjunction with maintenance activities and resulted in the submittal of three separate Licensee Event Reports to the Nuclear Regulatory Commission. Some of the problems related to a process in which separate individuals were concurrently verifying a condition rather than conducting the verifications independently. DCPP performed a Root Cause Evaluation (RCE) of the three events, and the DCISC reviewed these events separately in another Fact-finding trip. These events are discussed in more detail in Section 4.15 of this Annual Report.

A related area of emphasis was on the use of methods and techniques for minimizing human error. The station was experiencing a higher than desired volume of rework. The Maintenance Director noted that procedures needed to be upgraded and that too much dependence was being placed on the "skill of the craft." Also, maintenance personnel were felt to be engaging in too many informal work-arounds, i.e., job short-cuts and non-proceduralized steps in accomplishing repetitive tasks.

Regarding Maintenance Performance Indicators (PIs), a focus was being placed on Maintenance Rework, which had been "Yellow" (deficient) for five months. After analysis of the trends, data, and PI design, the metric was changed to better reflect actual conditions. Finally, the station's Quality Verification Group (QV) had escalated its focus on maintenance issues, particularly in electrical safety where a worker had received a non-fatal electrical shock.

The new Director of Maintenance Services had identified and was addressing Maintenance's most significant issues, i.e., less than adequate practices in procedure verification, high maintenance rework, less-than-desirable procedure quality, and inadequate electrical safety practices. He appeared to be taking appropriate actions based on sound information and data with a clear direction for improvement.

Trouble Shooting Program (Volume II, Exhibit D.5, Section 3.7)

Troubleshooting at DCPP is defined as "a systematic approach to data collection and failure analysis to determine the immediate cause of a system failure. Troubleshooting is a means of collecting information to determine equipment problems and the actions required to resolve them." Actions taken to correct a specific known problem are not considered to be troubleshooting. Also, troubleshooting is not meant to take the place of root cause evaluation and the corrective action program. Maintenance owns troubleshooting activities with the assistance, when required, of Engineering.

The procedures pertaining to troubleshooting were reviewed by the DCISC Fact-finding Team and were considered to be satisfactory.

A program health report is updated and issued quarterly based on the following metrics:

- Program Personnel – the correct personnel with the proper skills to manage the program
- Program Infrastructure – the quality of the infrastructure to support the program
- Program Implementation – how well the program is implemented

- Program Assessment/Oversight – the adequacy of oversight to maintain program standards/implementation current with the industry

The November 2011 Troubleshooting Health Report concluded that the program health was Green.

The Fact-finding Team received and reviewed the Troubleshooting Plan 50414813: Unit 1 Pressurized Heater Group 13. The troubleshooting activities were documented on a copy of the plan itself. Activities consisted of the following tests of the breaker and related switches and circuitry:

- Test 1: Isolate issue to switch section or breaker section of circuit and eliminate setup-related equipment failure modes (there were 12 steps in Test 1)
- Test 2: Test switch section of circuit (there were 13 steps in Test 2)
- Test 3: Final system validation (there were 6 steps in Test 3)

The result was that the circuit for the indicating light was degraded and there was poor electrical contact at the breaker-to-cubicle secondary contact. A Notification was initiated to add the corrective action to the Corrective Action Program. The repairs were made by Maintenance, and the validation tests resulted in satisfactory operation.

The Fact-finding Team concluded that this troubleshooting was thorough and effective.

The DCPP Troubleshooting Program was substantially improved since the DCISC reviewed it in April 2009. DCPP had developed a new comprehensive procedure, which appeared satisfactory. The troubleshooting example reviewed by the Fact-finding Team was thorough and successful.

Foreign Material Exclusion Issues/Trends (Volume II, Exhibit D.6, Section 3.5)

The purpose of the Foreign Material Exclusion (FME) Program is to prevent the undesired and potentially harmful intrusion of foreign materials into systems or other plant environments. Situations in which this intrusion can most likely occur are during maintenance when normally closed systems and environments are open or during inspections or tests under those same types of conditions. The vast majority of FME problems occur during plant outages when many system repairs, modifications, inspections, and tests are performed.

Station performance is reported and tracked in the monthly Plant Performance Improvement Report (PPIR). The indicator is based on the number and significance of FME events each month. Therefore, in order for the Key Performance Indicator (KPI) in any specific month to be Green, the station can experience no FME Significant Event; and if it experiences one FME threat, it can experience no FME conditions in that month. One FME Significant Event in a month drives that month's performance to Red.

Because such a large proportion of FME events occurs during outages, the industry reports performance for each month as well as the average performance over the most recent 6 month period. Each monthly FME report displays the six-month rolling average for the current month and for each of the prior two months. At the time of this Fact-finding Visit, the most recent PPIR

available was for October 2011. The rolling six-month indicators for August, September, and October were all Yellow, due to a determination in August that a fuel failure in Unit 2 had been due to debris in the reactor coolant system that had become entrained in that fuel bundle during power operation.

FME performance during plant outages improved considerably between Outages 1R16 and 2R16 through a reduction of the number of Threats/Vulnerabilities. Thirty four FME events were evaluated during this 1R16 period. As reported in the October 2010 Plant Performance Improvement Report, zero of the 34 were Significant Events, nine were Threats/Vulnerabilities, and 25 were FME Conditions.

The comparable FME performance for May 2011 during 2R16 was three Threats/Vulnerabilities and 24 FME Conditions. DCPP's review of the potential causes of these FME events determined that 16 of those 24 FME conditions were not caused in 2R16.

An FME Steering Committee was formed to examine performance looking back in time monthly to evaluate trends in the indicator and reported causes. DCPP found that the primary source of FME events is external contract workers during outages. Efforts have been increased to educate these workers on "what good performance looks like." These contract workers receive basic FME training at an on-site training facility as part of becoming part of the outage work force. The training is similar to that provided to DCPP's own employees.

Station performance appeared to be improving with respect to the Foreign Material Exclusion Program. Efforts to achieve this improvement had increased noticeably.

On-line Maintenance and Risk Management (Volume II, Exhibit D.6, Section 3.9)

The DCISC has been following this issue for a number of years as DCPP has been engaged in replacing its computerized ORAM (Outage Risk Analysis Maintenance) program, a qualitative on-line risk assessment program with Safety Monitor, a quantitative computer program for on-line risk assessment. At the time of this Fact-finding Visit Safety Monitor was fully functional and was being widely used in the plant.

About 20 to 25 people develop information that is input into Safety Monitor, and an even larger number are users of the output. Components planned to be taken out of service are input into the program, along with the desired time period during which the work is intended to be performed. The main benefit of Safety Monitor is that it not only provides an indication of risk (i.e. reactor core damage frequency) presented by taking specific equipment out of service, it also calculates the core damage frequency resulting from removing a number of different pieces of equipment at the same time. The computer program displays the aggregate risk presented by the postulated work plan. This calculated risk is also displayed in a color context of Green, Yellow, Orange, or Red, with Red being the greatest risk. Using this information, work planners are able to schedule equipment outages at times that will control risk to desired levels by keeping the individual and aggregate risks in the Green band.

The Fact-finding Team was given a demonstration of the capability of Safety Monitor in which a

component was hypothetically to be taken out of service, and therefore would be declared to be inoperable. When the related information was input into the computer, the program determined and displayed the core damage frequency on the screen.

The DCISC Fact-finding Team examined the station's last 12 monthly assessments of On-line Risk contained in DCPP's December 2011 Plant Performance Improvement Report (PPIR). This risk is graphed on one page showing the prior six-month rolling average risk for each month. The rolling average risk was Green for every month from December 2010 through November 2011. The same PPIR page on On-Line Risk Assessment also identified specific on-line risks that occurred during each of the prior twelve months. The only month of significance was May 2011 during which three events occurred, all resulting in loss of 230 kV start-up power for Unit 1 during Refueling Outage 2R16 (discussed in Section 4.15 of this Annual Report). The causes of these events were not due to improperly taking equipment out of service for on-line maintenance, but rather to problems created during maintenance activities that were being performed during Refueling Outage 2R16.

DCPP's Safety Monitor computer program for managing on line risk was fully functional and supportive of station activities by being able to determine the risk, measured by core damage frequency, that would result from removing different equipment from service at the same time during plant operation. DCPP effectively used Safety Monitor to manage online risk throughout 2011.

4.2.3 Conclusions and Recommendations:

Conclusion:

DCPP Maintenance has improved with an enhanced Troubleshooting Program, more effective Foreign Material Exclusion, good use of Safety Monitor to gauge the risk of station activities affecting components, and use of human performance tools. Maintenance challenges remain in procedure verification, maintenance rework, procedure quality, and electrical safety practices, which are all being addressed. The DCISC will continue to monitor these areas.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.3, Engineering Programs

4.3.1 Overview and Previous Activities

The following are engineering-related items the DCISC reviewed in the previous reporting period:

- Thoroughness of Problem Evaluations
- Air Operated Valve Program
- Environmental Qualification Program
- Licensing Basis Verification Program
- Margin Management
- System Engineering Program
- Engineering Evaluation Rigor Improvement Action Plan

The DCISC concluded that DCPP had developed an extensive action plan and had begun to utilize a wide array of performance indicators to track progress on problem evaluations, and many actions were well underway. The DCPP Air Operated Valve (AOV) Program appeared to be satisfactory. A June 2010 self-assessment identified no nuclear safety, programmatic, or regulatory violations by did reveal some gaps to excellence. The DCPP Environmental Qualification Program (EQP) for safety-related electrical appeared sound. The EQP appeared to be in a good position to assure applicable DCPP equipment is compliant with the 20-year plant life extension.

DCPP's Margin Management Program appeared to be functional and healthy. The Margin Management Committee appeared to be serving as a vehicle, not only for reviewing margin issues, but also for reinforcing margin concepts. Improvements in the System Engineering Program and the Plant Health Committee process appeared to have led to improved health of plant systems. DCPP had developed a detailed, comprehensive Evaluation Thoroughness Action Plan that appeared to have addressed the identified performance gaps. However, DCPP had not satisfactorily completed its first significant measure of corrective action: a self-assessment to have been performed in 2010.

The DCISC recommended in its 2010 – 2011 Annual Report that DCPP initiate and complete its first self-assessment of the significant gap in the thoroughness and rigor of its engineering evaluations, which was to have been completed by the end of 2010.

Basis for Recommendation R11-2:

The DCISC Fact-finding Team requested the Engineering Evaluation Rigor Improvement

Action Plan self-assessment (a self-assessment that was to have been conducted in late 2010 to verify that performance was improving); however, it had not been properly performed in accordance with management directions, was not complete at the time, and a definitive completion date was not provided.

DCPP responded to this recommendation as follows:

PG&E agrees with the DCISC regarding the continued monitoring and assessment of the corrective actions taken to improve the thoroughness and rigor of engineering (and other station) evaluations.

The self-assessment identified in the recommendation was cancelled at the direction of the Director, Engineering Services. The subject self-assessment was considered redundant to effectiveness evaluation required by the Corrective Action Program.

On November 17, 2011, PG&E completed and the Corrective Action Review Board approved, an interim effectiveness evaluation for the corrective actions to prevent recurrence for the Root Cause Evaluation associated with problem evaluation thoroughness in November 2011. This assessment was performed because one of the corrective actions to prevent recurrence will not be complete until the end of 2014 – The Licensing Basis Verification Project (LBVP). PG&E wanted to assure that the other actions taken were providing the desired result.

The assessment concluded, "… that significant progress has been made to date regarding station program improvements and ownership. However, inconsistencies in the application of the generic governance across station programs is preventing full achievement of the desired outcomes. Interim corrections to achieve the long-term outcomes defined by the RCE effectiveness criteria are necessary." Actions to address these observations are being tracked in the Corrective Action Program and as part of the Evaluation Thoroughness Action Plan. All tasks identified to date in the action plan, with the exception of the LBVP, will be complete by June 2012. PG&E will continue to monitor the effectiveness of actions taken and make adjustments as necessary.

The DCISC concluded that this response was satisfactory but will monitor DCPP's actions.

4.3.2 Current Period Activities

During the current period, the DCISC examined the following Engineering activities at four Fact-finding Meetings. The following topics were reviewed:

- Problem Evaluation Action Plan and Engineering Staffing
- Licensing Basis Verification Project
- Engineering Rigor Action Plan
- Differing Professional Opinions Program

Problem Evaluation and Engineering Staffing (Volume II, Exhibit D.3, Section 3.9)

The issue of problem evaluation dated back to 2009 and earlier. In its 2009 End-of-Cycle Letter of March 2010, NRC identified a significant cross-cutting aspect for the lack of thoroughness in engineering evaluations. In response to the NRC's concerns DCPP developed an extensive action plan, through which the DCISC tracked progress. Overall, at the time of the September 2011 DCISC Fact-finding Visit, progress continued to be satisfactory. Of the 94 action items, 17 remained to be completed, of which six pertained to the long-term Licensing Basis Verification Project, four pertained to training, and the remaining seven pertained to the last performance section of the report that entailed monitoring performance and providing feedback to fully ingrain the new methods and standards of performance into the way the Station does business. None of the incomplete action items was shown as overdue. The most challenging component of the Action Plan involve updating DCPP's Licensing Basis documents, which will be discussed as the next topic in this section of the Annual Report.

Actions taken to achieve further improvements included the use of Engineering Work Product Review Teams (EWPRT) to review a myriad of products (typically Apparent Cause Evaluations) before they are submitted for approval by DCPP's Corrective Action Review Board (CARB). During the prior six months, only one such document needed additional work prior to obtaining CARB approval. The EWPRT was also involved in addressing how to prepare technical evaluation documents and in examining how a template might be used for prescribing the approach to take for informal evaluations. DCPP had also benchmarked another nuclear station that has an excellent training program for engineers based on NASA's response to the space shuttle Challenger incident.

Regarding staffing of engineers, DCPP has been engaged in hiring and training engineers on a routine basis. Three classes of 10 engineers each had been hired in 2000, 2002, and 2004 to provide an avenue for knowledge transfer before experienced people retired. Hirings did not occur during 2006 through 2008 because attrition was less than predicted. They were resumed in 2009 during which an additional 7 engineers were hired. Five more were then hired in 2010, and plans for 2011 were to add 10 more. Engineering personnel have been hired up to two years before a person is assigned to a formal position in the engineering group in order to provide time for indoctrination and training. This two-year period can include rotational and outage assignments, depending on the individual's experience and qualifications. Some of the newly hired engineers are placed in technical positions outside the engineering division after their period of training and indoctrination is complete.

DCPP was also examining ways to retain employees who are approaching retirement. In this regard, DCPP benchmarked another nuclear station that was having some success with new methods to encourage personnel to defer retirement.

Lastly, the relationship between DCPP management and engineers in the bargaining unit appeared to have improved. Fewer concerns were being raised with management by members of the engineering staff. Also, the Fact-finding Team noted the number of recently hired engineers who represented DCPP for the various technical topics being reviewed in the Fact-finding meetings. The new engineers were knowledgeable and appeared enthusiastic.

Progress was continuing in the area of engineering related problem evaluations. The Engineering Work Product Review Team had success in increasing the approval rates of both engineering products and Corrective Action documents. DCPP appeared to have an active, ongoing program for hiring new engineers and preparing them to assume technical positions in the station. The relationship between DCPP management and engineers in the bargaining unit appeared to have improved. The station had provided opportunities for newly trained and indoctrinated engineers to assume responsible positions in the Engineering Division.

Licensing Basis Verification Project (Volume II, Exhibit D.4, Section 3.4)

The Licensing Basis Verification Project (LBVP) is designed to perform a review and evaluation of licensing, design, and analysis changes from the original Final Safety Analysis Report (FSAR) to the present. The ultimate goal of the project is an updated FSAR. Since completion of the original FSAR, many changes to DCPP licensing and design bases have been made. DCPP determined that some of these changes were inaccurate, inconsistent, inadequately evaluated (with the 10CFR50.59 process), or based on incorrect interpretations of NRC requirements. Based on this, DCPP management authorized the LBVP. The DCISC has reviewed many of these discrepancies and agrees that a broad study be undertaken to evaluate the problem and correct any deficiencies.

The LBVP has been carried out on a project basis with a dedicated Project Manager and some DCPP personnel, but with most work being done by contractors, including Shaw/Stone and Webster and Westinghouse, the Nuclear Steam Supply System supplier, all of whom are experienced in LBVP. The LBVP has utilized a Review Board, which consists of several Senior Consultants with previous NRC licensing, inspection, or enforcement experience and/or mechanical/electrical engineers with previous nuclear plant licensing, design, or operations experience.

The team has been performing system-by-system licensing basis reviews (LBRs) to identify the accompanying licensing bases and their source documents. Following the LBRs, some systems will be reviewed using an NRC-style component design basis review, which is a vertical "slice" of requirements/bases of the system. The following systems/areas were being reviewed:

System/Area	Percent Complete
230 kV LBR	100 (5/26/11)
230 kV System Review	100 (11/4/11)
Component Cooling Water LBR/System Review*	99
Auxiliary Saltwater (Ultimate Heat Sink) LBR	65
125 VDC LBR	55
Geology/Seismology LBR	45
Station Blackout LBR	70
Emergency Diesel Generators LBR	70
Solid State Protection LBR	70
Diesel Generator Dynamic Loading Analysis	50
Condition III/IV Fault LBR	40

* Combined Licensing Basis/System Review

There had been 281 Notifications initiated to-date documenting and tracking issues for resolution. Many were minor, such as procedure typographical errors, missing component tags, and document discrepancies. Some were more significant, requiring engineering evaluation. None has yet required a Licensee Amendment Request (LAR) to be submitted to NRC; however, three (feedline break issue, Class II inputs into Reactor trip system, and Emergency Diesel Generator dynamic loading analysis) were likely candidates for LARs. The following Prompt Operability Assessments (POAs) had been performed:

- CCW Relief valve backpressure impacts on CCW System
- CCW Relief valve flow capacity
- Feedline break issue
- Class II inputs in to Reactor trip system (Accident analysis)

The LVBP staff appeared to have been handling these issues appropriately.

The LBVP was 23% complete overall with the 230kV System LBR having been completed on May 26, 2011 and its System Review on November 4, 2011 as the first completions. Any discrepancies were handled with a Corrective Action Program Notification and, if necessary, a Prompt Operability Assessment, and/or a License Amendment Request to NRC. The Project had a "fit it" support team and maintained coordination with Operations and Engineering Staffs to enable the Project to deal with issues on a timely basis. The LBVP Review Board, the LBVP Executive Oversight Board, Quality Verification oversight, planned independent self-assessments, and communication with NRC by LBVP management assured the quality of each review. The Project scope had been expanded to include seismic building working models.

The DCPP Licensing Basis Verification Project (LBVP), a project to develop an updated Final Safety Analysis Report (FSAR) with verified licensing bases, was proceeding as planned with a scheduled completion date of December 31, 2015. The process of reviewing and verifying the licensing bases on a system basis appeared to be appropriate. Any problems or discrepancies were being tracked to resolution in the DCPP Corrective Action Program and, if necessary, resolved with a Prompt Operability Assessment and/or License Amendment Request to NRC.

Engineering Rigor Action Plan (Volume II, Exhibit D.5, Section 3.5)

The DCISC Fact-finding Team reviewed the status of DCPP's response to the following Recommendation from the DCISC's 2010-2011 Annual Report:

> *The DCISC recommends that DCPP initiate and promptly complete its first self-assessment of the significant gap in engineering evaluation thoroughness, which was to have been completed by the end of 2010.*

The Fact-finding team noted that this recommendation had been satisfied by DCPP's performance

of a new self-assessment as described below.

In response to the NRC's concerns regarding this issue and based upon the above mentioned self-assessment DCPP developed an action plan, through which the DCISC has tracked progress. This Action Plan has been focused on identifying and solving Engineering, Licensing, Technical, and Design Basis problems.

The DCISC Fact-finding Team reviewed the most recent Plan status report, dated December 2, 2011. The Plan contained 95 separate actions. Of these, 80 had been completed, including a quick-hit self-assessment for thoroughness for high-priority programs concluding that progress was on-track.

Actions that needed to be completed are listed below:

- Licensing Basis Verification Project (scheduled for completion in 2015)
- Deliver a seminar or training on the improved Design Change Process to appropriate population (scheduled for completion in mid-2012.)
- Develop a pilot program to maintain the Plant Performance Indicator Report (PPIR) Top 25 Nonconformance List (scheduled for completion mid-January 2012)
- Develop a change management plan and implement new engineering process (scheduled for completion mid-January 2012)
- Implement actions from DCPP configuration management self-assessment with emphasis on process to maintain fidelity between the plant, procedures, and the Updated Final Safety Analysis Report (UFSAR) – scheduled for completion December 31, 2011.
- Review Engineering Work Product Team (EWPRT) data, incorporate lessons learned into checklist (scheduled for completion January 31, 2012)
- Develop expectations and "scope" document to clarify when use of checklist is required (scheduled for completion January 31, 2012)
- Perform LPA for training evaluation for use of new checklist and scope document (scheduled for completion January 31, 2012)
- Implement change management plan (scheduled for completion January 31, 2012)
- Revise EWPRT procedure to incorporate lessons learned (scheduled for completion January 31, 2012)

DCPP made substantial progress in completing its Engineering Thoroughness Action Plan to resolve issues with engineering design and technical evaluation quality. Actions were scheduled to be completed in 2012 with the exception of the long-term Licensing Basis Verification Project, which was scheduled for completion in 2015.

Differing Professional Opinions Program (Volume II, Exhibit D.8, Section 3.11)

The last Differing Professional Opinion (DPO) submitted within DCPP was in 2007. The conclusion drawn by both the DCISC representative and the Fact-finding Team was that the need for employee

use of the DPO program has significantly diminished as a result of the nuclear industry's in-depth reviews of technical and operational issues.

The absence of employee submittals of Differing Professional Opinions (DPO) in recent years is most likely due to the extent and depth of technical and operational analyses that are performed in the nuclear industry and by the inputs that can be provided into those analyses through channels other than DPOs.

4.3.3 Conclusions and Recommendations

Conclusions:

DCPP's Engineering Program continued to be strong with substantial improvements in engineering evaluations (and NRC's removal of its Substantive Cross-cutting Issue), an effective new engineer hiring program, an improved relationship between engineers' union and plant management, good progress in the Licensing Basis Verification Project.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.4, Human Performance: Human Errors and Improving Safety and Efficiency of Plant Performance

4.4.1 Overview and Previous Activities

Human Performance is usually used to refer to "human error" and the term is used herein in that manner. The issues around plant safety and plant efficiency having to do with human error reduction are also included in this section.

The goal of the human performance program is to reduce the number of human errors to improve plant safety and plant efficiency by improving human performance.

During the previous period (2010-2011) the DCISC reviewed the following human performance-related item:

- DCPP Human Performance

The DCISC concluded that DCPP human performance (HP) is good and improving overall with plant-wide performance better than a progressively tightening goal and over 529 days without a clock reset, which is an indicator of outstanding performance. Most departments are within their goals with one, Operations, slightly better than their goals.

4.4.2 Current Period Activities

During the current period (2011-2011) the DCISC reviewed the following two human performance-related items:

Human Performance Line Ownership Action Plan (Volume II, Exhibit D.7, Section 3.10)

The DCISC met with the Maintenance Services Director, to discuss the DCPP Human Performance Line Ownership Action Plan. During Refueling Outage 2R16, DCPP experienced a number of Maintenance Human Performance (HP) events, which were primarily due to lapses in use of error prevention tools. This Action Plan was intended to raise the level of use of HP tools to "every job, every shift" by involving first line supervisors directly, i.e., ownership by the line organization. The Action Plan includes the following objectives:

- Communicate clearly to the Extended Leadership Team the implications of human performance errors and value of human performance tools – completed.
- Create a Dynamic Learning Activity (DLA) and designate first line supervisors and individual contributors to facilitate – completed.
- Implement a consistent accountability model for first line supervisors – completed.

- Communicate expectations regarding accountability for individual contributors – completed.
- Perform field observations referencing DCPP Site Standards Handbook to monitor personnel adherence to all site standards – completed.
- Establish clear and unambiguous standards and reinforcing expectations to ensure high levels of performance – nearly complete.
- Develop consistent station standards for what action should be taken for VERIFY, CHECK and ENSURE – nearly complete.
- Perform an assessment of the effectiveness of the overall plan – completed.

Effectiveness of the plan is measured by the following measures:

- Human Performance Error Rate (90-day event rate) ≤ 0.1 department events per 10,000 hours worked
- Plant Misposition Component Performance six month rolling summation is ≥ 95
- Both programs show an improving trend

These measures were at the following levels for the last three months:

Month	HU Error Rate	Misposition Performance
December	0.27	95.5
January	0.35	97.25
February	0.14	97.25

These data indicate improving trends for both measures, although the HU Error Rate is higher than the goal.

The DCPP Maintenance Line Ownership Action Plan appears to be appropriate for improving the use of human error prevention tools in Maintenance and thus lowering the human error rate. The human error rate and misposition performance measures both show improving trends, although the former is higher than its goal. The DCISC should continue to monitor these measures.

Human Performance Non-Outage Error Rate (Volume II, Exhibit D.8, Section 3.3)

The DCISC met with the Human Performance Supervisor, for a discussion on Human Performance at DCPP with a specific focus on a negative trend in the Non-Outage Human Performance Error rate. The basis of this discussion was the DCISC's review of the station's Performance Indicator Report for January 2012. The report tabulates and graphs monthly values for a station-wide roll-up of Human Performance error rates as well as separate similar tabulations and graphs for the various departments. The Human Performance Error Rate is expressed as the number of Human Performance Events per 10,000 hours worked. This error rate typically increases somewhat during outages due to higher workloads.

The 12-month error rate for the period February 2011 through January 2012 was 0.171 which was healthy and below (i.e. better than) the station's 2011 goal of 0.194. Nevertheless, a noticeable upward trend had been occurring in the non-outage error rate during the last half of 2011compared with prior six-month periods dating back to the beginning of 2009.

DCPP was aware of, and had evaluated, this increasing trend and initiated a Corrective Action Program (CAP) Notification to identify and evaluate the increased rate of Department Level Events in the second half of 2011 that contributed to the increasing trend in the station-wide rate.

This was the highest number of non-outage department level events since the last half of 2008. This increase was not due to an increase in working hours since the hours worked in the second halves of 2008 and 2011 were comparable. The increase was primarily due to an increase in the number of events reported by Security and, to a lesser extent, to minor increases in Operations and Maintenance.

The rate change of non-outage human performance events during the last half of 2011 was due to an increased focus on reporting and evaluation of performance events within the Security organization and did not represent an adverse trend. Rather, the rate change indicates that the increased focus is leading to more awareness of human performance issues and to the development of corrective actions that may not have been put in place if the noted organizational change had not occurred.

The monthly Station Human Performance Error Rate through March 2012 was as follows:

Month	Rate
January 2012	0.293
February 2012	0.179
March 2012	0.089

Clearly, the early 2012 trend is improving and back into the performance ranges experienced during 2009 through the first half of 2011 in which station performance was frequently in the range of 0.050 to 0.150 events per 10,000 hours worked. The station's human performance goal for 2012 has been set for 0.150 events per 10,000 hours compared to 0.194 for 2011.

Outages tend to be periods in which human errors increase due to the volume of work and the increased involvement of temporary workers under contract. DCPP has a facility for practical, physical training in Human Performance techniques, and contract workers are provided the same training as provided to station personnel. Two hours are devoted to taking each individual through various static displays and dynamic learning activities, which educate workers and reinforce behaviors that promote error free work.

The apparent negative trend in the station's non-outage human performance error rate experienced during the last half of 2011 was actually due to more emphasis on reporting errors. DCPP's human performance error rate during the first quarter of 2012 shows an improving trend compared to the last half of 2011, and the 2012 goal is set to a higher standard than for 2011. DCPP's

human performance training facility appears to be an effective environment for training individuals in proper human performance techniques and reinforcing the importance of error free work in a nuclear station. The DCISC should continue periodic reviews of human performance as dictated by station events and overall performance.

4.4.3 Conclusions and Recommendations

Conclusion:

DCPP continues to emphasize human error reporting, evaluation, and corrective action when warranted. Human Performance continues to improve at DCPP.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.5, Health, Nuclear Safety Culture, and Safety Conscious Work Environment

4.5.1 Overview and Previous Activities

The foci of Health, Nuclear Safety Culture, and Safety Conscious Work Environment are twofold: 1) the health of the individual employee, and 2) nuclear and personnel safety as the context and requirement for all DCPP Employees. Included in this area are all health related issues and actions. This section also focuses on safety as a contextual cultural requirement.

In the previous reviewing period (2009–2010) the DCISC reviewed the following:

- Premier Survey Action Plan
- Employees Concerns Program (ECP) Visibility Initiative

The Premier Survey, like other employee surveys conducted on a regular basis, remained effective both as a communication tool between management and employees and as a measure of employee thinking. To the extent that this company-wide survey communicates with company-wide management, it can play a special role. The results of the survey were reported to be similar to those of earlier DCPP surveys. The action plan resulting from the Premier Survey was under development. Regarding the station's Employee Concerns Program (ECP), the action plan to increase the visibility of the ECP appeared to be appropriate.

4.5.2 Current Period Activities

During the current period (2011-2012) the DCISC reviewed the following two Health, Nuclear Safety Culture, and Safety Conscious Work Environment topics:

- Premier Survey
- Nuclear Safety Culture

Premier Survey (Volume II, Exhibit D.2, Section 3.10)

Due to the sensitive nature and confidentiality of Premier Survey data/results, only an overview of the information is presented.

The Premier survey is conducted periodically by PG&E company-wide, meaning that it covers a far wider scope than just the Diablo Canyon Power Plant. The prior Premier Survey was conducted in October 2009. The 2009 survey received wide participation among the DCPP employees, with 71% participation, which is considered excellent by PG&E personnel conducting the survey. DCPP participation for the 2010 survey was 57%.

DCPP measures the results of the survey with an Employee Engagement Index (EEI), which is an overall measure of employee opinions on job satisfaction, opportunity for advancement, management, training, adequacy of job tools and instruction, safety, etc. The EEI improved by 6% from the previous survey in 2009. Based on the survey results, Employee Engagement Plans are developed for each department at DCPP, e.g., Operations, Engineering, Maintenance, Security, etc. Plan focus areas include the following examples:

- Learning and Career Development – succession planning, performance management, training, industry participation, career path discussions
- Systems, Processes and Policies – Continuous Simplification and Innovation (CSI) plans and actions, procedure improvement
- Leadership – improved communications, all hands meetings,
- Work Life Balance – reduce overtime, encourage more employee vacation vs. year-end vacation pay

A principal goal of the survey has been to enhance company-wide communication in both directions, both from senior management to the employees and from the employees to the management. An emphasis had been placed on Continuous Simplification and Innovation (CSI) using the latest computer-based communications tools to reach everyone.

The next Premier Survey was scheduled for September 2011.

The station used the PG&E Company-wide Premier Survey to gauge employee satisfaction in the areas of learning and career development, systems/processes/policies, leadership, and work life balance. Each DCPP department developed an Employee Engagement Plan based on the survey results to improve its Employee Engagement Index rating.

Nuclear Safety Culture (Volume II, Exhibit D.6, Section 3.2)

The DCISC examined DCPP's Safety Culture Improvement Plan (SCIP) and the make-up and functions of DCPP's Nuclear Safety Culture Monitoring Panel (NSCMP). The SCIP identified and summarized the status of over 200 specific, assigned actions for improving DCPP's safety culture and maintaining it a high level. One of the last sections of the SCIP was directed at implementing ongoing communications between station management and the plant staff. All actions in that section were shown as complete.

One of the action items in the SCIP noted the station's intent to "Perform a complete Safety Culture Assessment of the DCPP organization." In this regard, a Nuclear Safety Culture Assessment would be performed on site during February 2012 under the auspices of the Utility Services Alliance (USA). The team was to consist of personnel from about five nuclear stations and a process manager from USA.

The NSCMP provides a periodic examination of station safety culture by examining documentation for site events from the standpoint of nuclear safety characteristics. This examination involves

categorizing the items examined based on the applicable characteristics. This examination is then presented in a report that also provides the NSCMP's observations on DCPP's safety culture.

The NSCMP is headed by the station's Director, Quality Verification. Its membership consists of personnel at the supervisory level from the following station work groups: Corrective Action, Employee Concerns, Human Performance and Industrial Safety, Human Resources, Security, and Regulatory Services. These supervisory personnel are at the appropriate level and in the appropriate station work groups to be able to collectively assess the cultural aspects of various station events and conditions.

The most recent Nuclear Safety Culture Health Monitoring Report available to the DCISC (Third Quarter 2011, dated December 14, 2011), noted weaknesses in the quality and detail of some plant procedures and documentation, weaknesses in adherence to procedure guidelines by some personnel, the need for more management observations of personnel in the field, the need for an appropriate method to address the procedure change backlog, and it contained a recommendation to sample some Human Error Investigation Techniques that have been completed outside of the Apparent Cause Evaluation Process to determine if they are sufficiently complete to address underlying causes. The report also noted that the procedure related issues were continuations of issues identified in the first and second quarter of 2011. These quarterly reports, signed by DCPP's Site Vice President, were addressed to PG&E's Senior Vice President & Chief Nuclear Officer.

DCPP initiated a Root Cause Evaluation Report (RCE) on the March 26, 2011 Manual Reactor Trip of Unit 2 that was necessitated by a steam leak causing an automatic trip of Main Feedwater Pump 2-1. The purpose of this review was to ascertain the degree to which the RCE examined the ties of the causal factors of this event to aspects of Nuclear Safety Culture. After identifying causal factors for this event that were related to Nuclear Safety Culture, the DCPP RCE evaluators then reexamined the initial set of Corrective Actions that had been developed to determine whether these actions would address the identified Nuclear Safety Culture issues. In doing so, the DCPP RCE Team noted eight corrective actions to address the nuclear safety cultural issues in this event.

The station was adequately implementing and monitoring a Nuclear Safety Culture Health Program. The makeup and activities of the Nuclear Safety Culture Health Monitoring Panel (NSCHMP) appeared to be appropriate. Its reports were detailed and reflected considerable analysis. Also, its reports were submitted to the appropriate level in the corporate organization to effect change as needed. The Root Cause Analysis examined by the DCISC Fact-finding Team was detailed and thorough, and it identified and analyzed specific causal factors related to Nuclear Safety Culture. Weakness in station procedures was a continuing issue.

4.5.3 Conclusions and Recommendations

Conclusion:

DCPP's nuclear safety culture appeared to be continuing in a satisfactory manner utilizing employee surveys, Employee Engagement Plans, implementation of a Nuclear Safety Culture Health Program measured by a Nuclear Safety Culture

Monitoring Panel, and a reactor trip Root Cause Evaluation of nuclear safety culture causes, which resulted in corrective actions to help improve safety culture.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.6, Performance Improvement Programs

4.6.1 Overview and Previous Activities

Termed "Corrective Action Program" in previous reports, this section is now expanded to "Performance Improvement Programs" to include programs included in DCPP's Performance Improvement Initiatives, such as Corrective Action, Industry Operating Experience, Benchmarking, Self-Assessments, etc. Many consider these to be "learning" programs whereby the organization learns to improve from its and others' experience.

As have all nuclear plants, DCPP has implemented a Corrective Action Program (CAP). The CAP is a formal, controlled process used to identify and correct problems which occur. A key part of the CAP is root cause analysis which is utilized to ascertain the real cause of a problem or event such that corrective action can be taken to prevent its recurrence. During the previous reporting periods, the DCISC has reviewed the DCPP CAP and numerous events which were identified and resolved using the CAP. NRC refers to this type program as Problem Identification and Resolution (PI&R).

The events, analyses and corrective actions reviewed during the previous several reporting periods included the following:

Termed "Corrective Action Program" in previous reports, this section is now expanded to "Performance Improvement Programs" to include programs included in DCPP's Performance Improvement Initiatives, such as Corrective Action, Industry Operating Experience, Benchmarking, Self-Assessments, etc. Many consider these to be "learning" programs whereby the organization learns to improve from its and others' experience.

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The events, analyses, and corrective actions reviewed during the previous several reporting periods included the following:

- Line Use of Operational Experience
- Performance Improvement Action Plan
- Corrective Action Program
- Responses to Recent Industry Operational Experience Reports

- Performance Improvement Review Board

DCPP's Performance Improvement Program continues to be strengthened with the addition of the Performance Improvement Review Board, a management board which meets monthly to review the program and specific items, which are lagging, and the Performance Improvement Action Plan, a multi-faceted plan to integrate the results of several assessments and reviews of the program.

DCPP's Corrective Action Program (CAP) has continued to undergo significant reviews, assessments and audits by both internal and external organizations. Actions are being taken to respond to the reviews. The NRC has identified a substantive crosscutting issue in the DCPP Problem Identification and Resolution area, indicating unsolved problems with the CAP. The DCISC will continue to monitor the CAP.

DCPP's Operating Experience (OE) Program appears to be in jeopardy of becoming resource-limited if the function is reduced to just a single person performing OE duties. The DCISC will monitor this situation.

4.6.2 Current Period Activities

The DCISC reviewed the following in DCPP's Performance Improvement Program during the current reporting period:

- Benchmarking Activities
- Performance Improvement Action Plan
- Self-Assessment Program
- DCPP 2012 Operating Plan and 2011 Results

Benchmarking Activities (Volume II, Exhibit D.3, Section 3.3)

The DCISC met with the Performance Improvement Supervisor and the Performance Improvement Coordinator, in the Problem Prevention and Resolution Department to review DCPP's Key Benchmarking Activities during the past year.

The DCPP procedure "Self-Assessment and Benchmarking Procedure, OM15.ID4" defines benchmarking as "a study which first identifies best practices in one or more organizations and subsequently compare DCPP programs, processes, products, and services to identify gaps, develop recommendations, and set targets to improve performance." "Formal" benchmarking involves using a structured methodology, conducting a site visit, and following through with actions to achieve improvement. "Informal" benchmarking may consist of telephone interviews, surveys, resource sharing, attendance at industry meetings, querying site visitors, etc. Informal benchmarking may also include a site visit, but without the structure of a formal program. The purpose is to identify gaps between your station and the organization being benchmarked which can then be evaluated to identify and implement actions for improvement.

The station's Safety and Audit Review Board (SARB) is the governing and reviewing body for all formal benchmarking. Every six months station departments look ahead 18 months to determine the possible schedule for various Benchmarking and Self-Assessment activities. This involves examining NRC interactions as well as department needs. The departments then submit their desired activities to SARB, whose members review the department input and determine the overall schedule. Recently, department level Corrective Action Review Boards (CARBs) have been reviewing items that go to the higher review body.

Station departments have the latitude to conduct informal benchmarking without having to schedule them through SARB. These can be conducted by phone or e-mail. Also, effectiveness reviews are expected to be conducted at the department level for Benchmarking activities. However, Self-Assessments are tracked at the plant level.

The DCISC was provided with copies or summaries of some of the Benchmarking activities that were conducted during the past few years, as follows:

- Fluid Leak Management *
- Configuration Control Using the Electronic Shift Operations Management System (eSOMS)
- Outage Training Management
- Components of a Leadership Academy
- Refueling Outage Milestones
- Strategic Projects
- Feedwater Dispersant for Iron Transport *
- Work Planning; Work Package Quality *
- Fire Department Performance
- License Change Process

(Items above that are marked by an asterisk, *, were reviewed by the DCISC.)

Information in the reports reviewed appeared to be clear and focused, and would be expected to be of potential help to any station.

DCPP has an active Benchmarking Program that provides for examination of a broad range of station performance areas. Information in the reports appears to be clear and focused. The potential near-term loss of Instrumentation and Control (I&C) personnel, coupled with inadequacies in the information contained in I&C work packages, could hamper the ability of the I&C department to meet station needs.

Status of Performance Improvement (PI) Action Plan (Volume II, Exhibit D.2, Section 3.14 and Exhibit D.8, Section 3.9)

The DCISC Director, Site Services to discuss the status of the station's Performance Improvement (PI) Action Plan.

During the latter part of 2010, the framework of the Performance Improvement Action Plan was changed considerably. The plan was reorganized into seven focus areas:

1. Leadership
2. Corrective Action Program
3. Self-Assessments and Benchmarking
4. Operating Experience
5. Trending
6. Human Performance
7. Observations by Management

The total number of assigned actions in the Plan has increased significantly compared to those in last year's Action Plan. With the exception of Human Performance, which has its own action plan, actions on the above areas are being tracked through the main body of the Performance Improvement Action Plan. Oversight of the Corrective Action Program (CAP) improvement effort was transferred from the station's Problem Evaluation Action Plan into this Performance Improvement Initiative. The CAP section of the Action Plan is the largest section, comprising about one third of the Plan and stems from the Nuclear Regulatory Commission's (NRC) longstanding issues regarding the difficulty DCPP has had in recent years in identifying, reporting, and solving problems of a regulatory nature.

Performance Indicators and reports exist for each of the above listed segments of the Action Plan, except Leadership (which is understandable). Measured and reported performance of each of the remaining six focus areas of the Action Plan are summarized below. The Performance Indicator pages contain a summary of Actions that are underway to address ongoing issues. Performance is described as follows:

Green – Good

White – Moving Toward Green

Yellow – Needs Improvement but Moving Toward White and Green

Red – Needs Improvement and More Actions Need to be Taken

A performance area could have any of the above ratings and still be considered safe.

Corrective Action Program (CAP)

- Current month performance = Yellow; Prior month = Green; Two months prior = Yellow
- "Cause Analysis Program Health Implementation Cornerstone" focuses on whether problems are identified either internally or by external sources. It also evaluates trends in the cause

analysis program and product quality. Current month performance = Yellow; Prior month and Two months prior = Green

Self-Assessment and Benchmarking

- The listed Self-Assessments and Benchmarking Visits are assessed based on the timeliness/completeness of the report's development and on the quality of the report as assessed by the station's Safety and Audit Review Board (SARB). Of 12 listed reports, 11 were assessed as Green for timeliness and completeness, and one was listed as Red.
- Regarding report quality as determined by the SARB, the following grading system was used: 3 = Accepted, No revisions requires; 2 = Accepted, Minor revisions required; 1 = Not accepted, Required rewrite and resubmittal. Of the eleven reports: One was rated 3; Nine were rate 2; and One was rate 1.

Operating Experience

- An assessment of the program's effectiveness based on internal notifications, evaluations of external sources of information and the quality of the station's operating experience reports showed performance rated Green for the current month and for each of the prior two months.
- The Screening Cycle Time on incoming operating experience information from the industry, measured as the difference between time received and screening completion, rating was Green for the current month and prior two months.
- The timeliness for sharing DCPP's operating experience with the industry rating was Yellow for the current month and White for the prior two months.

Trending

- DCPP's implementation of the Trending Analysis Program, including grading based on internal and external examinations of the program and the generation and approval of the quarterly site trend report, for the current and prior month was White; the grade for the second month prior was Red.

Human Performance

- The **station composite** indicator for the total number of departmental-level events per 10,000 hours worked, based a **12-month average error rate looking back from and including the current month**, ratings are Green, Yellow, and Red. Current month rating was Yellow; ratings for each of the two prior months were Green.
- Various station departments were rated on the same basis and results are as follows:
    - Operations Section – Red for current month and each of two prior months
    - Chemistry – Green for current month and prior two months
    - Radiation Protection – Yellow for current month, Green for two prior months

- Engineering Services – Red for current month, Green for prior two months
- Maintenance Services – Green for current and prior two months
- Site Services – Green for current and prior two months
- Strategic Projects – Red for current and prior two months

Management Observations

- This performance indicator focuses on the number of monthly management observations that are conducted by each of thirty four station work units compared to their individual goals. A composite rating is also provided for the station. The composite station rating system is based on the percentage of work groups that have met their individual goals. Overall performance for the station was rated as Yellow for the current and two prior months.

Although there is no specific measure for "Leadership," the Performance Improvement Action Plan clearly focuses on using DCPP leadership to clarify management's vision of what success looks like and to employ appropriate methods to maintain applicable standards current with good industry practices.

The current Action Plan itself is also a reflection of the station's current approach. This Action Plan focuses on processes by which the station can identify and analyze areas in which performance can potentially be improved. These processes that are identified in the Action Plan are:

- Observing station activities
- Trending performance
- Self-assessing and benchmarking
- Examining information from the industry
- Analyzing the information and implementing the identified corrective actions as determined to be appropriate

DCPP has transformed its original Performance Improvement Action Plan into a workable system for tracking and addressing issues in which the station has determined that performance improvement is warranted. The vast majority of the assigned actions in the prior Plan have been completed. The DCISC need not continue to examine the status of DCPP's entire Performance Improvement Action Plan. Rather the DCISC should consider the various performance gaps being addressed by DCPP's Performance Improvement Program as sources of potential review topics.

Self-Assessment Program (Volume II, Exhibit D.4, Section 3.3 and Exhibit B.6)

The DCISC met with the Self-Assessment (S-A) and Benchmarking Coordinator and Performance Improvement Supervisor for an update on the DCPP Self-Assessment Program. The objective of the Self-Assessment Program is to promote continuous improvement by comparing performance to management expectations, industry standards of excellence, and regulatory requirements to

identify areas needing improvement. Self-assessments also identify strengths applicable to other station groups.

The DCPP S-A Program (S-AP) is described and controlled by Procedure OM15. ID4, "Self-Assessment and Benchmarking," which describes the various station responsibilities for performing, reviewing, reporting and approving S-As and outlines the process and requirements for all types of S-As, especially formal S-As. Formal S-As are subject to effectiveness reviews approximately six months after the final S-A recommendation is complete. The DCPP Self-Assessment Review Board (SARB) reviews each effectiveness review to determine if results have been achieved as expected.

The DCPP Self-Assessment Review Board (SARB), consisting of the Site Vice-President or Station Director and all Directors, sets the number of formal S-As for the upcoming calendar year. DCPP typically performs 10-to-15 formal self-assessments per year as well as typically 10 benchmarking trips to other nuclear facilities. The self-assessments are planned in advance for the year ahead and are carried out in accordance with the S-A procedure milestone schedule. The S-A Coordinator keeps track of the progress of each S-A with the milestone schedule.

Performance Improvement is one of DCPP's high-level 2011 Operating Plan Key Areas consisting of seven Performance Improvement measures, one of which is S-A Effectiveness of 75‰ success on improvements on formal S-A recommendations. The value though October 2011 was 74%, and the plant expects to meet the 75‰ goal by year-end.

The DCISC reviewed the S-AP procedure and determined it was comprehensive and effective. It reviewed the following S-As:

1. Surveillance Testing Implementation (Daily Work Control Group)
2. Licensed Operator Requalification Program and Simulator (Learning Svcs.)
3. Operability Determination Program (Operations)
4. Outage Work Control Program (Outage Management Group)
5. Performance Improvement and Corrective Action Program (Site Services/Problem Prevention & Resolution Group)
6. Oversight of Supplemental Personnel (Strategic Projects & Maintenance)
7. Security Performance and Criteria (Security Services)
8. Maintenance Rule Periodic Assessment (Tech. Support Engineering Group)
9. DCPP Electrical Safety Awareness (Maintenance Services)
10. Weaknesses in Operator Fundamentals (Operations & Learning Services)
11. Electrical Temporary Power (Electrical Maintenance)

These assessments were thorough and comprehensive. Overall, programs were determined to be satisfactorily implemented; however, a number of deficiencies and gaps-to-excellence were reported, which were to be corrected.

The DCISC reviewed the following S-A Effectiveness Reviews:

1. Command and Control (Operations)
2. On-Line Chemistry Data Management and Retrieval Capabilities (Chemistry)
3. On-Line Risk Management Maintenance Rule (a)(4)
4. Technical and Maintenance Training (Learning Services)
5. Initial License Training (Learning Services)
6. INPO Accredited Training Programs (Learning Services)
7. Human Performance Program (Problem Prevention and Resolution Group)
8. Controls for High Radiation Areas (Radiation Protection)
9. Foreign Material Exclusion (Maintenance)
10. Fire PRA Model Update (Problem Prevention & Resolution Group)
11. Emergency Planning Program (Emergency Planning Group)
12. Component Design Basis Inspection (Engineering)
13. Post-S-AP Implementation of CAP (Problem Prevention & Resolution Group)
14. ALARA Planning (Radiation Protection)
15. Plant Status Control (Operations)
16. On-Line Risk Management (Operations)
17. ALARA Program Implementation (Radiation Protection)
18. Radioactive Material Controls (Radiation Protection)

The effectiveness reviews were thorough and essentially all S-As reviewed were determined to be effective.

DCPP's program for performing (and reviewing the effectiveness of its) self-assessments appears to be effective.

2012 Operating Plan and 2011 Results (Volume II, Exhibit B.9)

At the June 2012 DCISC Public Meeting DCPP described the Operating Plan as a multi-year plan with the purpose of ensuring DCPP has alignment across the entire station in terms of results from the standpoints of safety, reliability, and financial goals in its effort to be an industry-leading plant. Each annual Operating Plan includes between four and eight initiatives which are selected either because vulnerabilities have been identified or because of the changing nature of the industry. In the 2012 Operating Plan there are five such initiatives. Before the end of each year an assessment is made of the plant's performance against the goals of the Operating Plan and the operating plan for the coming year is developed.

DCPP believed 2011 was a successful year overall as the plant operated well; had no lost time injuries, experienced only minimal recordable injuries, had the lowest radiation exposure in DCPP history, and improved equipment reliability. The only goal not met from the 2011 Operating Plan was outage duration.

The Operating Plan looks ahead over a five-year period as it includes an element of future forecast. The Operating Plan always includes a statement by PG&E's chief nuclear officer reflective of PG&E's commitment, as expressed by an officer at the highest levels of the company, to safety at the plant; the 2012 Operating Plan includes a reflection on the events at Fukushima and their meaning for the nuclear power industry. The performance measures from the 2012 Operating Plan are organized into categories of safety, reliability, cost, organizational effectiveness, and environmental leadership with performance metrics established in each category and with a goal assigned to each consistent with DCPP performing in the top quartile of the U.S. nuclear industry. In some cases, rather than assigning a goal in the top quartile, a glide path for plant performance is established which if met will bring the plant performance within the top quartile within a reasonable time. The Operating Pan's performance measures are used as part of the basis of the communication strategy at the plant and also in employee performance evaluations.

DCPP identified safety and collective radiation exposure, reliability and forced loss rate, and the equipment reliability operational focus indexes and industrial safety as measures, which focus on nuclear safety. PG&E is making a greater capital investment in DCPP than most other plants in the industry. The Institute of Nuclear Power Operations (INPO) Composite Index provides a broad index used to measure safety and reliability across the industry while the station clock reset rate is a measure of human performance which is related to good nuclear safety practices. DCPP considers the Corrective Action Program index a core program required to safely run nuclear power plant.

Regarding DCPP's excellent performance during 2011 on the Collective Radiation Exposure index, the source term on both units was lower, although U-2 was refueled during 2011 and 80-90‰ of exposure over any year occurs during a refueling outage. DCPP has improved its chemistry controls and the Collective Radiation Exposure index has benefited from the replacement of the steam generators and the reactor vessel heads. DCPP has recently completed a U-1 refueling outage and experienced similar results to those in the 2011 refueling outage for U-2.

The five station 2012 Operating Plan initiatives (each initiative has a detailed action plan and an owner or sponsor from the director level management team at the plant associated with the initiative):

1. **Employee Industrial Safety** – The focus for 2012 is to improve compliance with all safety requirements and to implement a focus on grass-roots safety efforts. DCPP plant management is aware of the issue of personnel seismic safety with respect to bracing of tall furniture and knows that attention to this issue was necessary and observed the issue regarding personnel seismic safety would also be addressed through the Operating Plan's modernization initiative.
2. **Event-Free Operations** – The focus for 2012 is to assess how well risk is analyzed at the plant on a daily basis and to further improve human performance, as well as to learn and improve

from the experiences at Fukushima. This is a fairly broad initiative focused on avoiding events in operating the plant.

3. **Performance Improvement** – The focus for 2012 is on DCPP learning programs including the Corrective Action Program, self-assessments, benchmarking, the use of operating experience, and the use of training programs. This has been an initiative in previous Operating Plans over the past few years and has led to formation of the Corrective Action Review Board and more rigor in the manner in which DCPP performs its self-assessments. This initiative is also fairly broad and one on which the plant has made good progress and, accordingly, performance improvement may be removed as an initiative for the 2013 Operating Plan.
4. **Regulatory Excellence** – It has been a focus for past Operating Plans and is closely tied to performance improvement. DCPP has made progress toward regulatory excellence as evidenced by the NRC's recent removal of the substantive cross-cutting issue in problem identification and the decrease in the numbers of violations received by the station.
5. **Modernization** – The 2012 focus is on improving and modernizing the conditions at the plant site overall, not just in the power block but in all areas where employees work. DCPP is located in a marine environment and considerable upkeep is required. This is a multi-year effort for upgrading DCPP facilities and to do away with the temporary facilities, many of which have been onsite for some time, and replace them with facilities with a higher level of safety and environmental friendliness.

4.6.3 Conclusions and Recommendations

Conclusion:

DCPP's Performance Improvement Program continues to be strengthened with the Performance Improvement Action Plan, a multi-faceted plan to integrate the results of several assessments and reviews of the program.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.7, Emergency Preparedness

4.7.1 Overview and Previous Activities

Emergency Preparedness (EP) Program has been in-place since the beginning of the nuclear power industry; however, the accident at Three Mile Island brought substantial changes. Prior to Three Mile Island, Emergency Operating Procedures (EOPs) were primarily event-based, requiring the operator to know which event was taking place. Afterward, the EOPs became symptom-based, making it easier for the operator to decide what actions to take. The four major facilities used in an actual emergency situation (and used for practice in an emergency drill) include (1) the Control Room (simulator in practice) where operators respond to the accident, (2) the station Technical Support Center (TSC) where engineering, computer, radiological assessment, NRC, and operations, as well as documents and procedures, are located, (3) the offsite Emergency Operations Facility (EOF) where the Recovery Manager and administrative and technical staff are located, and (4) a station Operations Support Center (OSC) provides a location to stage and dispatch operations, maintenance, firefighting and radiation protection personnel.

The DCISC reviews Emergency Preparedness (EP) at DCPP on a regular basis. Past Committee activities have included observations and reviews of drills and full, graded emergency exercises each year and related issues from the observations.

During the previous reporting period, the DCISC reviewed the following specific items:

- July 7, 2010 Emergency Preparedness Drill
- August 11, 2010 NRC-Evaluated Emergency Exercise
- August 11, 2010 NRC-Evaluated Emergency Exercise Critique
- Emergency Planning Dose Assessment Program

Responses to the July 7, 2010 simulated event by Control Room personnel were generally methodical and effective. However, improvements were needed in the performance of the Operational Support Facility with respect to on-site radiological controls. Media briefings in the Joint Information Center (JIC) appeared to have improved substantially.

The August 11, 2010 NRC-evaluated DCPP emergency exercise Joint Information Center performance observed by the DCISC was much improved from prior exercises/drills in that news releases, press conferences, and use of the Site Vice-President as public spokesperson combined for timely, accurate, and understandable information release. The plant operational response to the emergency was, as in previous exercises observed by the DCISC, professional and effective. The August 11, 2010 NRC-Evaluated Emergency Exercise was determined to be successful by DCPP

in its measurements of performance in meeting objectives. The critique appeared appropriately self-critical and comprehensive. DCISC concluded, from observations of the Control Room Simulator and Joint Information Center portions of the exercise, that the exercise was successful.

4.7.2 Current Period Activities

The DCISC reviewed the following in DCPP's Emergency Preparedness Program during the current period (2011-2012):

- Santa Barbara County Emergency Planning
- Stranded Plant Procedure
- Unified Dose Assessment Center (UDAC) Interface Weaknesses
- Emergency Response Organization Drill
- Emergency Preparedness Support to External Organizations
- Meteorological Information and Dose Assessment System (MIDAS) Update

Santa Barbara County Emergency Planning (Volume II. Exhibit D.2, Section 3.3)

The purpose of this meeting was to provide Santa Barbara County's Emergency Manager with the DCISC's independent evaluations on DCPP emergency planning and radiation release modeling in response to a request from the Santa Barbara Board of Supervisors, specifically:

1. How is the plume modeling that is used for response planning purposes validated by an independent source?
2. What independent body evaluates the seismic studies impacting the Diablo Canyon Power Plant (DCPP)?

The DCISC Fact-finding Team provided the following information to Mr. McAmis regarding Question 1:

- DCPP is the only reactor site in the nation that has an independent, state-appointed safety review committee, and as such, has historically undergone additional plant safety scrutiny since it was built.
- DCPP has complex terrain, which makes the dispersion patterns of any release complex. DCPP uses the most advanced plume modeling system used in the industry, MIDAS II, which incorporates nine different meteorological data sets that match DCPP's geographical location.
- DCPP has deployed 13 fixed Pressure Ionization Chambers (PICs) throughout San Luis Obispo County to capture real-time plume monitoring to use with existing plume models. These are in addition to the required Field Monitoring Teams. PICs are not standard at every power plant.
- Four distinct plume-modeling systems used by three separate agencies are part of an

elaborate peer review process in response planning.

- The DCISC has reviewed/observed all aspects of DCPP emergency planning for over 20 years and has found them satisfactory, including as recently as within this past year.
- Overall, DCPP's approach to plant safety is considered by the DCISC to be conservative.

The DCISC Fact-finding Team provided the following on Question 2:

- The lead agency in evaluating all seismic issues is the U.S. Geological Survey. For nuclear power plants, the Nuclear Regulatory Commission has regulatory responsibility for seismic acceptance/approval.
- Evaluation of all seismic data is a peer-reviewed collaborative process, which includes leading experts from public, private and academic organizations.
- Consensus on seismic hazards is primarily achieved by using what is called the Probabilistic Seismic Hazard Analysis (PSHA) methodology developed by the Senior Seismic Hazard Analysis Committee (SSHAC) in 1997. PSHA is a rigorous peer-review process and the so-called SSHAC methodology is now an international standard.
- USGS has been monitoring the Hosgri Fault zone with separate equipment and scientists since the original seismic study was conducted.
- The raw data for the Shoreline fault was captured by USGS at the same time as DCPP scientists and evaluated using the SSHAC methodology.
- Recent ground motion studies conducted with updated equipment and analysis methods show smaller ground motion values at the DCPP site than previously believed.
- Peer review of all seismic data is a rigorous program of study by research units within the University of California (UC) system, primarily at UC Berkeley and UC Los Angeles and is reviewed periodically by DCISC.
- Current seismic studies of the Hosgri/Shoreline fault zones, including the new 3D modeling, use the latest technology available and are due to be completed within a year.
- DCISC is confident that all DCPP seismic studies are part of the most rigorous and extensive peer-review system in the world.
- For over 20 years the DCISC has concluded that DCPP has operated safely, including its emergency planning and seismic capability.

The DCISC met with the Santa Barbara Emergency Manager to provide information about DCPP in two areas: (1) plume modeling for potential radiation releases, and (2) independent review of seismic studies. The DCISC provided information that appeared to be satisfactory to the Emergency Manager.

Stranded Plant Procedure (Volume II, Exhibit D.4, Section 3.5)

The Stranded Plant Procedure provided guidelines for actions to be taken in the case of an event

affecting DCPP, outside the power block, which may physically isolate the plant. Actions included the following:

- Ensuring adequate staffing
- Establishing an off-site muster area
- Establishing a County liaison
- Establishing and maintaining emergency communications

The stranded plant procedure was initiated in 1995 by a landslide blocking the main entrance road. The procedure is put into readiness in instances of high winds or severe winter conditions. A Fall 2006 drill started out with storms and tsunami resulting in a stranded plant. The resultant actions necessitated an upgrade to the procedure. It was used following the Japanese Fukushima event in March 2011 when a tsunami warning was issued for the California coast and Port San Luis was closed.

The DCISC FF Team found the procedure acceptable.

The DCPP Stranded Plant Procedure, implemented when the plant is inaccessible because of road blockage due to weather, landslides or other causes, appeared appropriate to assure the plant has adequate staffing to continue safe operations.

Unified Dose Assessment Center (UDAC) Process Interface Weaknesses (Volume II, Exhibit D.7, Section 3.2)

UDAC is a joint DCPP/County team established to take accident radiological release data and meteorological data from DCPP and process it to project radiation dose levels and dose plume location to determine protective action recommendations (PARs) (evacuation, sheltering, etc.) for use by the County. The County takes the recommendations and uses them as their basis for protective actions for the public. The intent of the UDAC is to present timely and accurate dose assessment and protective action recommendations.

A DCPP audit concluded that the then current UDAC process did not incorporate the county dose assessment personnel into the process for providing timely dose and PARs to the County Command Table. County personnel were providing independent dose assessment and PARs; however, they were provided after DCPP had already provided its information. This was observed in the March 2, 2011 and April 12, 2011 full-scale drills. The primary reason for this was that county personnel did not have the training and software tools to develop information as quickly as DCPP. The intent of UDAC is for both parties to provide timely, independent dose information at about the same time. The causes of the problems were misinterpretation of the procedure, ineffective training, and failure to follow the procedure specifics.

UDAC procedures EP RB-16, “Operating Instructions for the Emergency Assessment Response System (EARS) Computer Program,” and EP EF-3, “Activation and Operation of the Emergency Operations Facility (EOF),” were revised in a timely manner. Quality Verification review verified

appropriate changes had been made and closed the finding. Additionally, DCPP augmented training and added additional emergency drills for practice.

The corrective action appeared to be appropriate; however, future drill performance by UDAC would be the best measure of effectiveness.

The Unified Dose Assessment Center (UDAC) process was found to not have clearly defined and understood responsibilities regarding interfaces between DCPP and County dose assessment personnel. This was corrected satisfactorily.

Emergency Response Organization Drill (Volume II, Exhibit D.7, Exhibit 3.12)

This was a partial drill with a limited scope and duration. Participants included DCPP and San Luis Obispo County but not NRC.

The DCISC Fact-finding Team initially observed the Operations crew in the Control Room Simulator at the beginning of the drill. The crew performed well, reacting properly to each event, selecting the correct procedures, making the proper notifications, and correctly determining the correct emergency classification.

The Team next went to the offsite Emergency Operations Center, which housed the DCPP Recovery Manager and technical staff, the Unified Dose Assessment Center (UDAC), and the San Luis Obispo County Emergency Organization. These offices were fully staffed and operational. The EOC appeared to be operating smoothly.

The Team went to the Joint Information Center (JIC) where journalism students from Cal Poly were acting as members of the press. DCPP public spokespersons were giving a briefing regarding the plant condition, mitigating actions underway, and information on the radiation being released from the plant. As the DCISC has frequently observed in previous drills, the press wanted more information than DCPP was prepared to give, especially on radiation levels. This was discussed and listed as a concern in the DCPP post-drill critique.

The JIC critique was an honest, straightforward discussion of JIC performance. The JIC appeared to meet all of its drill objectives and brought up several items for improvement.

The March 14, 2012 DCPP emergency drill appeared to be designed well to challenge Operations, the Emergency Operations Center, the Unified Dose Assessment Center, and the Joint Information Center. It appeared that these organizations performed well and met drill objectives.

Station Interfaces with and Support for External Organizations Regarding Emergency Preparedness (EP) Activities (Volume II, Exhibit D.8, Exhibit 3.1)

The DCISC Fact-finding Team was provided DCPP's 2011 Report on "Radiological Emergency Preparedness Requisite Activities." This report is submitted annually to the Federal Emergency Management Agency. The report is divided into seven sections as follows:

1. Public Education and Information, which includes listings and or descriptions of distributed information and distribution mechanisms such as the following:
    - A summary of annual information disseminated to the public: this included information distributed through area phone directories.
    - Siren information stickers distributed to local businesses, parks, and recreational areas within the DCPP Emergency Planning Zone (EPZ).
    - Operation of an internet website.
    - Posters and or other educational and response oriented information hand delivered to local hotels, motels, grocery stores, parks, campgrounds, beaches, tourism information centers and the airport – to be available for use by transient personnel as well as local residents.
    - A DCPP toll-free number which could be activated to provide EP information during an emergency.
    - An operational EP telephone line for providing EP information to San Luis Obispo (SLO) Country residents.
    - A customer services general reference website, which could be activated and used during emergency response to a DCPP event. This information is aimed not only at permanent residents but also visitors to the area.
2. Emergency Facilities and Equipment (DCPP has the responsibility for equipment inspection and calibration.)
    - Radiation monitoring instruments are maintained in the SLO General Services Logistical Supply Building and in decontamination trailers adjacent to the SLO Emergency Operations Center (EOC).
    - PG&E supplies almost 1,500 Personnel Electronic Dosimeters (PEDs) and almost 3,000 Thermoluminescent Dosimeters (TLDs) for distribution by SLO County Office of Emergency Services (OES).
    - SLO County has been provided with approximately 3,000 doses of Potassium Iodide (KI) for emergency workers.
3. Federal Emergency Management Agency (FEMA)-evaluated exercises (Several took place during 2011 in the SLO area.)
4. Drills and tests involving SLO county and other state and local agencies (Examples are as follows):
    - Monthly tests from SLO County to the NRC and the US Coast Guard
    - Monthly communications tests to local governments within the Emergency Planning Zone (EPZ)
    - Monthly communications drills with SLO County Sheriff's Department and California State

Warning Center (CSWC)

- Drills involving, at various times, DCPP, SLO County, and Santa Maria Congregate Care

5. Radiological Emergency Response Training

   - Over 5,500 hours of training were provided in 2011 to various state and local government representatives in areas such as accident assessment decision making, emergency worker roles, local support services, public information, medical services, and radiological monitoring
   - Examples of training included: Introduction to DCPP, Emergency Preparedness, Onsite Course for fire responders, National Incident Management System, and Hazardous Materials First Responder Operational Training.
   - Participants included local safety agencies and emergency workers, and individuals from fire departments, law enforcement agencies, emergency medical services, hospitals and schools in SLO and Santa Barbara Counties

6. Updates of Plans and Letters of Agreement

   - This included DCPP staff reviewing all Letters of Agreement for accuracy and completeness and all SLO County/Cities Nuclear Power Plant Emergency Response Plan and standard operating procedures.
   - DCPP noted that state parks personnel performed effectively and plans were appropriate during the March 2011 tsunami warning.
   - The Tsunami Evacuation Plan was reviewed in August 2011.

7. Alerts and Notifications

   - All 2011 siren tests were completed in conjunction with SLO County and resulted in a 99.97‰ reliability Average.
   - The Early Warning System (EWS) was tested and was in accordance with federal guidelines.
   - The annual audible siren test was conducted on Saturday August 21, 2011. All 131 sirens were successfully sounded and tested.
   - Tone alert radios in all SLO County schools, home care facilities, hospitals, and other facilities were tested monthly.
   - Route Alerting maps, directions, and siren locations were updated in 2010 and continue to be distributed to applicable jurisdictions

A California Department of Public Health (CDPH) report discussed the management of emergency related equipment and instruments such as survey instruments, emergency response kits, plume survey kits, and dosimetry instruments. CDPH maintains records of calibration for all measuring instruments. The report also noted that field monitoring teams would consist of personnel from the utility and the county, as well as from the San Luis Obispo city fire department.

The Report documented the six DCPP drills during 2011 in which the California Emergency Management Branch (EMB), Radiological Health Branch (RHB), and the California Emergency Management Agency (CalEMA) and the Radiological Preparedness Unit were participants. Also, the Report noted the training provided by DCPP to health physicists and other individuals from CDPH, consisting of familiarization with plant systems, use of the computerized dose projection programs, Emergency Action Levels, and procedures and responsibilities pertaining to each applicable position on the team.

DCPP and PG&E involvement with agencies of the State of California and with local cities and counties was extensive and detailed with respect to Emergency Preparedness Activities.

Meteorological Information and Dose Assessment System (MIDAS) Update (Volume II, Exhibit D.9, Section 3.1)

MIDAS is used by PG&E to predict the path and intensity of radiation releases in the surrounding environment caused by an accident at the plant, such that protective action (sheltering, evacuation, etc.) recommendations can be made to protect the public. Inputs to MIDAS include the concentration and height of radioactive releases at the plant from EARS (Emergency Assessment Response System) and wind and temperature data from up to seven meteorological towers and several SODAR (Sonic Detection and Ranging) units. The predictions are corroborated by data from roving Field Monitoring Teams and by nine Pressurized Ionization Chambers (PIC) radiation detectors at fixed locations.

DCPP had reached agreement with the County staff, including the County Office of Emergency Services (OES) and the Air Pollution Control District (APCD), to proceed with the following, which was completed as scheduled by mid-July 2011:

1. Seven offsite meteorological towers, the original six plus an additional seventh tower. The wind speed and direction data from all towers serve as multiple inputs to the upgraded dose assessment system. The wind and temperature detectors were replaced with new ones. Also, DCPP will continue to have a primary tower and a backup tower on site.
2. Thirteen (compared to the original twelve) PICs are in fixed locations in the local area to measure radiation dose and feed the individual data from each location into the dose assessment system.
3. The system now has three SODAR installations: the original one on site at DCPP, plus two more in the surrounding area. All three installations were upgraded.
4. MIDAS dose assessment software was upgraded, including the capability of receiving and processing multiple inputs. Testing has been completed.

A consultant performed the required validation and verification (V&V) on the upgraded MIDAS software. The upgraded program had good correlation with the previous version of MIDAS and with a similar but simplified program, QUICKDOSE. ABS, the MIDAS developer, used prior DCPP tracer tests and the multiple meteorological inputs to verify the upgrade. MIDAS has been used

successfully in several drills in 2011 and 2012. DCPP personnel participate in the industry MIDAS Users' Group, which has provided valuable information and practices.

DCPP successfully completed the upgrade of its Meteorological Information and Dose Assessment System (MIDAS), along with seven offsite and two onsite upgraded meteorological towers, two offsite and one onsite Sonic Detection and Ranging (SODAR) units, and one onsite and eight offsite Pressurized Ion Chambers (PICs). The upgraded system should provide more accurate and timely predictions of the direction and intensity of radiological releases from plant accidents. This upgrade brings DCPP in line with the industry.

4.7.3 Conclusions and Recommendations

Conclusion:

DCPP has had a satisfactory Emergency Preparedness Program in the past and has been improving it by clarifying roles and responsibilities of the Unified Dose Assessment Center (UDAC) to better incorporate San Luis Obispo County personnel and input, performing challenging drills and exercises, upgrading the Meteorological Information and Dose Assessment System (MIDAS), and continuing its strong coordination and involvement with San Luis Obispo County stakeholders.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.8, Risk Assessment and Management

4.8.1 Overview and Previous Activities

PG&E has developed in-house capability to perform risk assessments and periodically updates its Probabilistic Risk Assessment (PRA) to incorporate changes in plant configuration and, if appropriate, operations. PG&E controls its risk from on-line maintenance procedurally. For On-Line Maintenance the PRA Group prepares a Risk Profile on a weekly, monthly and fuel cycle basis. The PRA Group works very closely with personnel performing the On-Line Maintenance risk assessment, and the program has been working well. The On-Line Maintenance (OLM) model has been used by Operations and Maintenance as an on-line planning tool for various operations and maintenance activities.

The DCISC reviewed the following item during this previous reporting period:

- PRA Overview
- PRA Group Plans

The DCISC concluded that DCPP's Probabalistic Risk Assessment (PRA) Group is being returned to a somewhat satisfactory staffing level, following several years of decline and use of contractors to accomplish its analyses. The decline came about due to loss of key personnel who have been difficult to replace. The Group is progressing well on several important PRA fronts, including a Fire PRA, updated Seismic PRA, and the performance-based PRA analysis to support the move to National Fire Protection Association (NFPA) Standard 805. DCPP has finally caught up with industry in its use of Safety Monitor, which is used to gauge the risk of removing components from service for on-line maintenance. The DCISC will continue to closely monitor PRA activities at DCPP.

4.8.2 Current Period Activities

The DCISC reviewed the following Probabilistic Risk Assessment (PRA) items during the current reporting period:

- Operations Group's Use of the Station Probabilistic Risk Assessment (PRA); Status of Converting to Safety Monitor
- Probabilistic Risk Assessment (PRA) Group Update

Operations Group's Use of the Station Probabilistic Risk Assessment (PRA); Status of Converting to Safety Monitor (Volume II, Exhibit D.3, Section 3.1)

The DCISC met with the Probabilistic Risk Assessment (PRA) Supervisor and a Senior Engineer on the topic of PRA use by the Operations Group.

DCPP Operations had been using a software system known as ORAM, Outage Risk Analysis Maintenance, for managing on-line and shutdown risk. Another software tool with a similar purpose is Safety Monitor. Both ORAM and Safety Monitor are proprietary software tools used widely in the industry to evaluate the risk to nuclear safety posed by various plant, system, and equipment configurations, with Safety Monitor being a more recent and more advanced tool. Although ORAM has been widely used within the industry for many years, the vendor has stopped providing support, essentially driving the system toward obsolescence.

Both Operations and Work Control personnel would be using Safety Monitor to assess risk. There are several main distinctions between Safety Monitor and ORAM. One major distinction is the number of specific components that can be loaded into the system. ORAM has a limitation of two components, which allows the user to make a simple input and get a quick, simple output. In comparison, many specific components can be input into Safety Monitor because it provides a representative model of the system; however, the large amount of input can lead to information overload and confusion for the user. Therefore, DCPP purchased, and modified, an additional program called Risk Man to reflect how specific components would affect plant risk by being declared inoperable. Another distinction is that Safety Monitor has "remain in service" and "return to service" capabilities that allow assessment of these conditions from a risk perspective. While planning and executing the transition process, DCPP has used other plants as benchmarks for its activities, not only with regard to assessing risk, but also with regard to communicating the assessment of risk appropriately within the station. (See the section below for an update on Safety Monitor from a subsequent meeting between the DCISC and DCPP).

Although the transition from Outage Risk Analysis Maintenance (ORAM) to Safety Monitor has been a prolonged one, DCPP appears to been on the threshold of final conversion. DCPP has appropriately and effectively used other plants as benchmarks for its activities, not only with regard to assessing risk, but also with regard to communicating the assessment of risk appropriately within the station.

Probabilistic Risk Assessment (PRA) Group Status (Volume II, Exhibit D.8, Section 3.5)

The DCISC met with the Supervisor, PRA/Appendix R, to discuss the current status of the DCPP group, under his supervision, that is responsible for maintaining the station's PRA (probabilistic risk assessment) and applying it to address safety and reliability issues affecting the plant. The principal topics discussed were the status of the several major PRA-development and PRA-enhancement projects now underway, and the status of the PRA group itself, which is now growing.

The PRA Group is now up to four full time employees and has a goal of about doubling that over the next few years. PRA groups at other nuclear plants around the country differ in size, but DCPP's is now on the "small side" compared to broad industry practice, relying instead today on outside contractor support. The long-term goal, supported strongly by plant senior management, is to

remedy that through some growth.

A major project that has consumed a large fraction of the PRA group's time and effort during the last year or more has been the transition to the use of the analysis tool "Safety Monitor" for risk-informed planning and analysis of outages. The "Safety Monitor" tool, which replaces the earlier "ORAM Sentinel" analysis tool, is now fully operational and was, in fact, being used for the outage safety plan for the 1R17 Outage, which commenced in April 2012.

The experience so far with "Safety Monitor" has been entirely successful. The advantage of "Safety Monitor" is that it is capable of a much more faithful model of the entire system configuration of the plant using advanced software and hardware, whereas the earlier analysis method had several compromises in fidelity to the plant configuration, having been developed many years ago when computer technology was more limited. The operating staff has now been trained in using "Safety Monitor" and finds it much more useful. Its main use is in analyzing the numerous different safety-system configurations encountered by the plant during an outage, so as to assure that none of them represents an unusual risk to the plant's safety.

A major aspect of the PRA group's work in the last couple of years has been developing a Fire PRA that meets the requirements of the ASME-ANS Standard RA-Sa-2009, as endorsed by the NRC in Regulatory Guide 1.200. The principal early application to the Fire PRA is supporting DCPP's transition of its fire-regulatory program from the earlier NRC regulations to new regulations linked to NFPA 805. This Fire PRA work continues, and will do so for the next year or more.

However, the major new PRA work is in two other important areas: The enhancements of the main Internal-Events PRA model and of the Seismic PRA model.

The Internal-Events PRA model: The station embarked over a year ago on bringing its long-standing Internal-Events PRA up to date, with the objective of fully meeting the ASME-ANS Standard (as endorsed by NRC Regulatory Guide 1.200). This work continues, and is expected to be complete by the end of calendar year 2012. Outside contractors with strong expertise in the PRA field have been working on this effort for over a year. The scope includes both the internal-events model and the internal-flooding PRA model. The main work is to assure that the plant's current configuration is represented properly in the PRA, to assure that the PRA meets the ASME-ANS Standard and RG 1.200, and to bring into use certain advanced analysis methods now current in the industry. DCPP believed that this work was going well.

The Seismic PRA model: The DCPP seismic PRA model was, when developed in the late 1980s, the finest that had ever been developed worldwide, and for many years was used by the entire seismic-PRA community as its model for excellence. Its level of detail, scope, realism, and use of extensive site-specific data remain exemplary – almost no other seismic PRAs worldwide even today approach its quality. However, it is out of date in a few areas, both in terms of a realistic modeling of the plant and when compared to the most modern practice. There is new information about the seismic hazard at the DCPP site, and new approaches to analyzing seismic fragilities of equipment, that have not been integrated into the PRA model. Work began within the last year to remedy these issues and to bring the DCPP model back into the forefront. Reliance on expert outside contractors

for this work is essential, because the narrow expertise required is available in only a few places worldwide. Fortunately, DCPP has engaged a team of contractors judged by the DCISC to be among the strongest available, and some parts of that team actually worked on the earlier DCPP seismic PRA in the 1980s, so they have the long view and the relevant experience.

The seismic fragilities work has begun, including training of the DCPP internal staff on the technology of fragilities analysis. This work consists of analyzing the seismic capacity of the major DCPP structures and components, so as to understand how strong they are and at what point a very large earthquake might compromise their ability to perform their safety function. A new seismic hazard to be used in the PRA has been under development for a more than couple of years, motivated by the discovery of the new Shoreline Fault systems offshore. This work will also result in a seismic PRA hazard model that will meet the ASME-ANS Standard and RG 1.200.

A new major driving force for this seismic PRA upgrade work is the recent NRC 50.54(f) letter (12 March 2012) that implements Recommendations 2.1 and 2.3 of the post-Fukushima NRC Near Term Task Force. This letter, containing requirements for re-evaluations in the seismic area for every operating US nuclear plant, will require DCPP to have an up to date seismic PRA by 2016. The current seismic PRA work, which was launched even before last year's Fukushima accident in Japan, will achieve that goal at DCPP well ahead of the 50.54(f) schedule. DCPP expects to have completed the entire model except for the new seismic-hazard information by early 2013, and then to integrate the new hazard information into the model as it is finalized about year after that.

Conclusion:

The PRA group's work today is focusing principally on developing new PRA models in the internal-events, fire, and seismic areas. The work is proceeding well, and the new leadership has taken hold. The group is also growing, which is necessary to support several major DCPP needs. The seismic PRA effort in particular will restore the DCPP seismic PRA to its long-held place as one of the US industry's models for excellence. The DCISC should undertake a further review of this PRA area about a year hence, when the plant will have achieved additional major milestones in its PRA development effort.

4.8.3 Conclusions and Recommendations

Conclusion:

DCPP's Probabalistic Risk Assessment (PRA) Group is returning to full strength but still relies somewhat on outside contractors. The Group has successfully implemented Safety Monitor for risk-informed planning and analysis of outages. Its main effort now is the updating of the original DCPP Internal Events Probabilistic Risk Analysis (PRA), the Seismic PRA, and the Fire PRA. The DCISC will continue to closely monitor PRA activities at DCPP.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.9, Nuclear Safety Oversight and Review

4.9.1 Overview and Previous Activities

Note: because of the confidentiality agreement between the Institute of Nuclear Power Operations (INPO) and its member nuclear plants, and a similar policy about DCPP's internal Nuclear Safety Oversight Committee (NSOC), only limited information can be presented in this public document.)

Nuclear Safety Oversight and Review is an important function in the safe operation of nuclear power plants. This oversight represents an independent, higher and/or broader level of review of operations, events, occurrences, etc. than can be obtained from the organizations performing the day-to-day plant, technical and quality functions. The Nuclear Regulatory Commission (NRC) is charged by law to regulate the nuclear industry. In carrying out this responsibility the NRC issues regulations and guides for nuclear safety and performs inspections at facilities to assure regulations are met. NRC's role at DCPP is discussed in Chapter 3.0 NRC Assessments and Issues. NRC regulations require, and DCPP Technical Specifications (TS) provide for, a high level of oversight in the form of the Nuclear Safety Oversight Committee (NSOC).

Additionally, the nuclear industry seeks operational safety and excellence with the Institute of Nuclear Power Operations (INPO) and the World Association of Nuclear Power Operators (WANO) which perform periodic performance evaluations of each operating nuclear plant; coordinates the collection, review and dissemination of operating event information; issues good practice guidelines; provides specific event, technical and functional reviews; and issues and monitors performance goals for the industry. PG&E is a member of INPO and participates in their programs.

The Diablo Canyon Independent Safety Committee (DCISC) provides an additional level of nuclear safety review and oversight. As stated in Chapter 1.0, DCISC is charged to "…review Diablo Canyon operations for the purpose of assessing the safety of operations and suggesting any recommendations for safe operations". In carrying out its responsibilities DCISC receives and reviews DCPP operating and technical and NRC documents; performs fact-findings at DCPP and holds several public meetings and public plant tours each year to hear PG&E reports on plant operational safety and receive public input.

The DCISC observed the following oversight meetings/items during the previous reporting period (2009–2010):

- WANO/INPO-Type Mid-Cycle Assessment
- Observe January 19, 2011 NSOC Meeting
- INPO Update

- NSOC Updates

In the previous reporting period the DCISC concluded that DCPP performed a mid-cycle assessment of its progress in satisfying the Areas for Improvement (AFIs) from the 2009 Institute of Nuclear Power Operations (INPO) evaluation. Four additional AFIs were identified. DCPP was preparing for its August 2011 evaluation. The DCPP Nuclear Safety Oversight Committee (NSOC) is satisfactorily staffed with strong external members and their review of issues is appropriately intrusive, focusing on the most important safety issues.

4.9.2 Current Period Activities

The DCISC reviewed the following oversight items during the period:

- Status of INPO Areas for Improvement

DCPP Progress in Addressing INPO Evaluation Items

Note: Due to the confidentiality of information associated with the Institute of Nuclear Power Operations (INPO) reviews of DCPP, this report contains only general information.

The DCISC reviewed DCPP's progress in addressing the August 2011 INPO evaluation items, specifically the INPO Evaluation Report on DCPP, which discussed the plant's strengths, good practices, and areas needing improvement. DCPP has a satisfactory formal plan for addressing and tracking areas needing improvement. The plan involves periodic management review.

DCPP has developed a satisfactory plan for addressing areas needing improvements identified in the Institute for Nuclear Power Operations August 2011 evaluation.

NSOC Meetings

There were no reviews of Nuclear Safety Oversight Committee Meetings during this reporting period.

4.9.3 Conclusions and Recommendations

Conclusion:

DCPP has developed a satisfactory plan for addressing areas needing improvements identified in the Institute for Nuclear Power Operations August 2011 evaluation.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.10, Radiation Protection

4.10.1 Overview and Previous Activities

DCPP Technical Specifications contain requirements on Radiation Protection (RP), and DCPP has corresponding programs, and procedures to specify the details of their radiation protection programs. Although numerical limits are specified, plant operators are also required to use the philosophy of As Low As Reasonably Achievable (ALARA) to minimize excess radiation exposures and releases. DCPP has a formal ALARA program; the program applies to personnel exposure in the plant as well as normal releases to the environment. PG&E files reports semi-annually regarding personnel exposures, releases outside DCPP and regular soil, vegetation, water and air samples taken around the plant.

The DCISC regularly monitors DCPP personnel exposure. Collective radiation exposure is one of DCPP's and INPO's performance indicators. DCPP also reviews any radiation protection events or incidents in the industry that are reported in LERs or NRC violations. DCPP performance in radiation protection has been satisfactory; however, PG&E collective doses have not been in the lowest quartile of the industry.

The majority of personnel exposure occurs during refueling outages when most of the work in the Radiation Control Area (RCA) is performed. DCPP sets outage and annual goals for exposure, and reports these at each DCISC Public Meeting. DCPP also submits a semi-annual report to NRC on any planned, normal radioactive releases from the plant; DCISC reviews this report. Any abnormal releases are reported in special reports, typically LERs, although there have been none since the DCISC began in 1990.

The DCISC reviewed the following specific RP item during the previous reporting period:

- 2009 Annual Radiological Releases
- Outage 1R16 Radiation Protection Performance

In the previous reporting period DCPP radiation releases, as in previous periods, were very small fractions of Technical Specification and regulatory limits. The DCPP Radiation Protection (RP) Group performed successfully in Outage 1R16 in working to keep the plant Collective Radiation Exposure of 118.8 Person-Rem below the plant goal of 126 Person-Rem. The installation of a new Reactor Vessel Closure Head and Integrated Head Assembly contributed 36.2 Person-Rem to this total, compared to a planned exposure of 32.6 Person-Rem for the project. The total exposure in 2010, however, placed DCPP in the industry fourth quartile, a position RP is working to improve. Performance in Outage 2R16 was significantly improved with total radiation dose of 29.7 person-Rem due primarily to reduced in-containment major equipment work. RP is taking a forward-

looking approach to the next sets of outages to keep lowering the exposures. The DCISC will continue to monitor DCPP's progress in radiation protection.

4.10.2 Current Period Activities

The DCISC reviewed the following DCPP radiation protection items during the current reporting period:

- 2010 Annual Radioactive Effluent Release Report
- 2010 Radiological Environmental Monitoring Report

2010 Annual Radioactive Effluent Release Report (Volume II, Exhibit 3.1, Section 3.4)

The DCISC reviewed DCPP's 2010 Annual Radioactive Effluent Release Report and its 2010 Annual Radiological Environmental Operating Report.

DCPP submitted its 2010 Annual Radioactive Effluent Release Report and its 2010 Annual Radiological Environmental Operating Report to the Nuclear Regulatory Commission (NRC) on April 28, 2011. The former report described the quantities of radioactive gaseous and liquid effluents released from the plant and the solid radioactive waste shipments during the year 2010. In all cases the releases were well below Technical Specifications limits for the year. The latter report provided the results of the radiological monitoring and sampling performed on and around the plant site in 2010.

Based on radioactive releases, the following whole body radiation doses to a theoretical "maximum exposed individual" at the site boundary approximately 800 yards from the plant and their corresponding percent of Technical Specifications limits for the year 2010 were calculated to be as follows:

Effluent Type	Calculated Radiation Dose	Percent of Tech. Spec. Limit
Liquid	0.0003 milliRem	0.011‰
Gaseous	0.0021 milliRad	0.018‰

Direct radiation is continuously measured at 31 locations surrounding DCPP using thermo-luminescent dosimeters (TLD). These 31 locations are made up of 29 indicator stations and 2 control stations. The dosimeters are collected and read every calendar quarter. The results are trended with preoperational and historical operating values for adverse trends. No adverse trends were noted in 2010.

Beginning in October 2010, the DCPP Unit One (U-1) Reactor Head was replaced and the old U-1 Reactor Head was stored onsite within the Old Steam Generator Storage Facility (OSGSF). As of December 31, 2010, the OSGSF contained eight old SGs and two old Reactor Heads. The OSGSF did not cause any changes to the ambient direct radiation levels in the DCPP environment during 2010.

The OSGSF sumps were inspected quarterly as part of the Radiological Environmental Monitoring

Program (REMP). Rainwater was found in the U-2 Old SG vault # 30 sump. This rain water had tritium concentrations consistent with rain water washout concentrations. As a conservative measure, the rainwater from the sump was removed and processed via an approved radwaste discharge pathway.

Beginning in June 2009, DCPP began loading of the Independent Spent Fuel Storage Installation (ISFSI). Eight casks were loaded into the ISFSI by August 2009, and eight additional casks were loaded during 2010. In addition to the 31 TLD locations mentioned above, direct radiation is also continuously measured at eight locations surrounding the ISFSI using TLDs that are all well within the site boundary. Specifically, two TLDs are located on each of the four sides of the ISFSI pad. No adverse trends were noted in 2010 at this ISFSI inner ring of 8 TLDs due to the installation of the ISFSI casks.

Tritium levels in three monitoring wells beneath the power block were all below the Environmental Protection Agency (EPA) drinking water standard of 0.02 microCuries per liter. Groundwater at the site all flows into the Pacific Ocean and is not a source of drinking water.

DCPP's 2010 total liquid and gaseous radiological releases were very small fractions of amounts permitted by regulations and Technical Specifications.

2010 Radiological Environmental Monitoring Report (Volume II, Exhibit D.2, Section 3.8)

The DCISC reviewed the DCPP Radiological Environmental Monitoring Program (REMP), to discuss the 2010 REMP Report to NRC. The REMP monitors/samples the following pathways:

- Direct radiation – 31 measuring stations using thermo-luminescent dosimeters (TLDs)
- Airborne radioactivity
- Waterborne radioactivity
- Marine biological, beach sand, and ocean sediment
- Food crops
- Milk
- Meat

The 2010 Annual Radiological Environmental Operating Report was approved on April 18, 2011 and submitted to NRC soon thereafter. The report stated, "The results of the 2010 REMP showed no unusual findings from site operations. These results were also compared to preoperational data and showed no unusual trends." The report further stated the following:

- Site operations had no significant impact on:
    - Airborne radioactivity in the environment
    - Surface water radioactivity
    - Drinking water radioactivity

    - Marine life radioactivity
    - Aquatic or terrestrial vegetation radioactivity

- The ambient direct radiation levels in the DCPP environs did not change and were within the preoperational range
- Food crops, milk, and meat samples detected only naturally occurring radioactivity, and therefore had no impact from site operation
- Concentrations of Tritium were detected in three monitoring wells beneath the DCPP power block. The Tritium is attributed to rain washout of gaseous Tritium exiting the plant vent system (via an approved discharge path). [The groundwater at DCPP is not currently used as a source of drinking water but flows into the Pacific Ocean.]

The above report conclusions apply to the power station proper as well as the Independent Spent Fuel Storage Installation (ISFSI) and Old Steam Generator Storage Facility.

DCPP's Radiological Environmental Monitoring Program (REMP), a comprehensive system of radiological monitoring and sampling, concluded that DCPP operations showed no unusual trends compared to preoperational data and had no significant radiological impact on the environment.

4.10.3 Conclusions and Recommendations

Conclusion:

DCPP radioactivity releases this period, as in previous periods, were very small fractions of Technical Specification and regulatory limits. The DCISC will continue to monitor DCPP's progress in radiation protection.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.11, Quality Programs

4.11.1 Overview and Previous Activities

The DCISC has followed PG&E's quality programs continuously since 1990. The DCISC looked at the following aspects of the quality programs in Fact-finding meetings and public meetings in the previous period (2010-2011):

- Quality Verification (QV) DCPP Site Status Report & QV Activities
- QV Perspective on Plant Performance
- Software QA Program

QV continued to identify items that need correction, in particular gaps in the DCPP Corrective Action Program evaluation thoroughness, which was also identified by the NRC as a substantive cross-cutting issue. The Key Gaps that were listed were clear and well supported. The process of highlighting continuing Key Gaps and escalating issues as deemed necessary appeared sound and effective.

4.11.2 Current Period Activities

During the current period (2011-2012) the DCISC reviewed the following two DCPP quality-related topics:

- Second Quarter 2011 Quality Verification Site Status Report
- Quality Verification's Assessment of Station Operation and Most Recent Quality Performance Assessment Report

Second Quarter 2011 Quality Verification Site Status Report (Volume II, Exhibit D.2, Section 3.9)

The Second Quarter 2011 Quality Verification Site Status Report (QVSSR) reported the following:

1. QV Director Top Three Concerns
    a. Maintenance – untimely and inadequately documented responses to QV audits related to rework, issues pertaining to Seismically Induced System Interactions (SISI), performance of supplemental personnel, and issues pertaining to the Foreign Material Exclusion (FME) program. Maintenance Services had developed action plans to address these items. The plans were satisfactory to QV; however, QV planned to follow up.

b. Human Performance (HU) – three losses of start-up power occurred during Outage 2R16 due to human error (refer to Volume I, Section 4.4.2 and Volume II, Exhibit D.5, Section 3.2 of this Annual Report). Operations and Strategic Projects had not met their Human Performance goals for the past six months. The number of component mispositionings had been higher than desirable for nearly a year. Three of the four aspects in the HU area were Red in the NRC crosscutting aspect dashboard. QV planned to follow up on the corrective actions specified in a DCPP root cause evaluation.

c. Security Programs – a QV audit determined that Security training was not being conducted in accordance with the systematic approach to training (SAT) process. Initial training of Security instructors had not been completed. Security management needed to better manage the procedure upgrade project. QV identified a gap in guidance on configuration control of security barriers during outages. Security holding areas had longstanding uncorrected deficiencies, including ventilation, sinks, drains, air-conditioning units and windows.

2. QV Issues in Elevation/Escalation

   a. First Level Escalation – untimely resolution of internal independent oversight findings in Maintenance Services, which had been outstanding for two years.

3. QV Issues and Trends

   a. Engineering Programs – adverse trends in training attendance, leadership/accountability, and untimely closure of Corrective Action Program (CAP) items.

   b. Operations – outage schedule delays caused by delayed equipment clearances. Several long-standing equipment issues presented challenges (Plant Process Computer, fire computer).

   c. Outage Management – numerous schedule deficiencies in 2R16, excessive number of outage safety schedule changes made, and inadequate outage testing contingency planning.

   d. Problem Prevention and Resolution – untimely root cause evaluations (RCEs) and apparent cause evaluations (ACEs) due to the limited number of analysts. Outage trend data not effectively communicated during 2R16.

   e. Radiological Contamination Management – adverse trend in radiological worker practices due to lack of awareness and enforcement of radioactive materials tagging and handling.

   f. Chemistry – weaknesses in the use of the Corrective Action Program by the technical staff.

Cause evaluations and/or corrective actions were in place for the above issues and trends.

DCPP Quality Verification (QV) has been aggressive in identifying quality problems and adverse trends and following up on corrective actions. The Site Status Report has been an effective tool for communicating the major quality issues to management in a concise manner.

Quality Verification's Assessment of Station Operation and Most Recent Quality Performance Assessment Report (Volume II, Exhibit D.6, Section 3.3)

QV Director Concerns *(Concerns, insights, order of significance, status)*:

Maintenance Services (MS)

With the exception of the Human Performance (HU) gap originally identified in the Maintenance Performance Indicator Report (PIR) and Performance Improvement Integrated Matrix (PIIM), MS had completed its action plan to address weaknesses in worker practices. The remaining actions, when implemented, were expected to satisfactorily address QV's concerns.

QV concluded that increased supervisory involvement and the application of HU tools had improved work package quality.

During Refueling Outage 2R16, QV identified a deficiency that insufficient job preparation measures and coaching to safety standards by peers and supervisors had led to inadequate safety measures being set prior to starting work.

Engineering

Fire Water: During final preparations to implement the Fire Water piping work associated with the Fire Water Storage Tank (FWST) repairs, the station could not adequately respond to appropriate Equipment Control Guidelines (ECG) compliance questions raised during the readiness reviews supporting the project. Parts Holds: Engineering is challenged with competing priorities to commit additional resources to work down the backlog of parts on hold. Appropriate priorities need to be established,

Corrective Action Program (CAP): During QV's audit of the fuel management program, QV noted that the recent fuel leak had not been re-evaluated after the Westinghouse Root Cause Evaluation (RCE) determined the cause of the fuel leak was from foreign material.

During the special processes audit, QV identified a programmatic weakness in Engineering's control and use of design specifications.

QV Issues & Trends *(including indications of line sensitivity or defensiveness to issues, isolationism, arrogance or complacency)*:

Operations

Equipment Status Control: QV noted actions being taken to reduce Component Mispositionings.

Technical Specifications: During QV's audit of DCPP management of Technical Specifications, QV issued an audit finding for untimely primary reviews.

Confined Space: QV identified a misalignment between DCPP and PG&E standards for the confined

space management program.

Radiation Protection

Personnel Contamination Event (PCE): Two PCE's were incurred when workers obtained a contaminated vacuum hose and erroneously used it in the FWST during repair work.

Radioactive Materials: During a recent walkdown, QV identified improperly packaged and stored radiological materials.

Radiation Worker Practices: Good progress was being made on the action plan to address the adverse trend in radiological work practices.

Emergency Planning

Two audit findings remain open, including issues related to an ill-defined Unified Dose Assessment Center interface with DCPP and county personnel, and Public Address (PA) system inadequacies.

Nuclear Work Management

Tech Specs: During QV's audit of DCPP management of Technical Specifications, QV issued audit findings for missed and untimely completion of surveillances, for untimely primary reviews, and for not evaluating the use of surveillance grace periods.

Problem Prevention & Resolution

Performance Improvement Review Boards (PIRBs): PIRBs were noted to be providing an effective tool for site leadership to review department performance gaps.

Department Corrective Action Review Boards (CARB): Effective D-CARB reviews were noted to have improved the quality of products being provided to the various plant review boards.

In addition, the DCISC reviewed QV's Quality Performance Assessment Report (QPAR) for the period June 7, 2011 to November 6, 2011. During the period QV audited Chemistry, Fuel Management, the Independent Fuel Storage Installation, the Environmental Protection Plan, Applied Technical Services, and Technical Specifications. The document identified weaknesses that detract from overall effectiveness of performance that include Licensed Operator Training, Industrial Safety Measures, Radiological Work Practices, and Equipment Status Control. Positive behaviors observed by QV during this period included coordination of the Performance Review Board meeting and efforts to improve the Foreign Material Exclusion Program.

The Quality Verification (QV) Department's reviews of station performance were detailed and thorough. QV's follow-up and communication of the status of station corrective actions appeared to be appropriate.

4.11.3 Conclusions and Recommendations

Conclusion:

DCPP Quality Verification (QV) has been aggressive in identifying quality problems and adverse trends and following up on corrective actions. The department's reviews of station performance were detailed and thorough. QV's follow-up and communication of the status of station corrective actions appeared to be appropriate. The Site Status Report has been an effective tool for communicating the major quality issues to management in a concise manner.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.12, Nuclear Fuel Performance

4.12.1 Overview and Previous Activities

The DCISC has been following performance of nuclear fuel and fuel-related matters at DCPP since its beginning in 1990. The Committee receives regular reports on nuclear fuel performance and any problems from PG&E both in fact-finding and public meetings and as input to the annual report. DCISC follows-up on problems and activities in its Fact-finding meetings at DCPP and PG&E Headquarters.

DCPP fuel reliability is the most important fuel attribute monitored during operation. It is important to assure that the fuel integrity is preserved to avoid fission product leakage into the reactor coolant system (RCS) and ultimately into RCS cleanup and support systems resulting in increased personnel dose, radioactive waste and potential off-site releases.

Since the DCISC was formed in 1990, fuel reliability had been excellent until November 1994 when Unit 2 fuel began to show signs of leakage and experienced localized fuel damage. Unit 2 has had several additional fuel leaks since then. Leakage is measured by the amount of radioactivity in RCS samples, with a current goal of less than 5.0×10^{-4} microCuries (Ci) of Iodine-131 per gram of coolant. The following depicts the RCS radioactivity trend for a five-year period:

Reactor Coolant System Radioactivity (microCuries/gram of coolant Iodine-131)

Period	Goal	Unit 1 Actual (Ci/gm)	Unit 2 Actual (Ci/gm)
07-08	5.0×10^{-4}	1.0×10^{-6}	4.2×10^{-4}
08-09	5.0×10^{-4}	1.0×10^{-6}	4.2×10^{-4}
09-10	5.0×10^{-4}	1.0×10^{-6}	4.2×10^{-4}
10-11	5.0×10^{-4}	1.0×10^{-6}	4.2×10^{-4}
11-12*	5.0×10^{-4}	1.0×10^{-6}	4.2×10^{-4}

* Through June 2012

In addition to regular fuel performance updates, DCISC investigated the following fuel-related topic during the previous reporting period:

- Nuclear Fuel Performance

The DCISC concluded in the previous reporting period that DCPP nuclear fuel performed well, especially Unit 1 fuel, which has had 12 cycles of defect-free fuel. Unit 2 fuel is improving, having

had three cycles defect-free, preceded by three clean cycles followed by a debris-caused leak. DCPP has experienced fuel assembly thimble tube wear in some instrumented assemblies due to flow-induced vibration. This is becoming an industry problem, which is being closely monitored by DCPP and its fuel vendor, Westinghouse. DCPP is also evaluating a transition to a 24-month refueling outage interval, which would avoid the need to have more than one refueling outage per year and would simplify outage planning. The DCISC will follow these issues.

4.12.2 Current Period Activities

The DCISC reviewed the following fuel performance area, which showed both Units 1 and 2 to be problem-free with relatively clean reactor coolant.

- Nuclear Fuel Performance

Nuclear Fuel Performance (Volume II, Exhibit D.4, Section 3.7)

The DCISC met with the Reactor Engineering Group Supervisor, for an update on DCPP's nuclear fuel.

DCPP Unit 1 has run without any fuel defects since Cycle 4 and is currently in Cycle 16. Unit 2 has run without fuel defects since Cycle 14, when it had a debris-caused single rod failure. Prior to that, it had run defect-free since Cycle 11. DCPP identified a fuel leak in one of its Unit 2 assemblies prior to Outage 2R16 in which it replaced the leaking rod with a stainless steel rod. The affected assembly had been unknowingly leaking during a previous cycle and removed from the core for other reasons. It had been re-inserted in Outage 2R15 and began leaking following a reactor trip. The cause was determined to be a debris fretting failure caused by a piece of an eddy current testing probe from a previous outage. The leak had been undetectable in the prior outage because DCPP's radiochemistry techniques were less sophisticated than now, though, looking back, there had been traces of fission products in the coolant.

DCPP performed an Apparent Cause Evaluation (ACE), which determined the apparent cause as "the industry standard for failed fuel identification in Cycle 12 was less sophisticated and could not detect a very small tight fuel defect." A contributing cause was a missed opportunity to perform additional exams when debris was found. Corrective actions included:

1. Review Unit 2 Cycle 12 fuel for radiochemistry data for fuel defects.
2. Perform ultrasonic tests on the eight fuel assemblies from Cycle 12, which had been inserted into the Core 17 core.
3. Enhance radiochemistry procedures to better detect fuel defects based on reactor coolant radiochemistry analysis.

DCPP updated its Failed Fuel Prevention and Mitigation Procedure to accomplish the following:

- Prevent the "intentional reinsertion of failed fuel into a core"

Incorporate the latest industry (Electric Power Research Institute and Institute of Nuclear Power Operations) guidance

- With or without failed fuel, perform a video camera examination of all core assemblies during offload or prior to reload
- Augment the radiochemistry sampling and analysis of reactor coolant

These enhancements appear appropriate.

DCPP is considering moving from its current 19-to-21-month fuel cycles to 24-month cycles. This would permit more precision in scheduling refueling outages to target the spring and fall low demand periods more precisely. The increased cycle periods would mean higher burnups and larger diameter fuel rods containing more U-235 at the same current 5‰ maximum enrichment. The larger rods mean a seismic, structural question to be studied. Currently DCPP burnup is approximately 60,000 MWD/MTU (megawatt days per metric ton of uranium). The increased cycle length would mean 72,000 MWD/MTU burnup. DCPP and Westinghouse are performing analyses to determine whether it is advantageous to move to the 24-month cycle. The 24-month cycle could begin as early as 2016. The DCISC will follow this issue.

4.12.3 Conclusions and Recommendations

Conclusion:

With the exception of a small leak in a fuel assembly (not identified in a previous cycle) DCPP's Unit 2 fuel has been performing defect-free since Cycle 14. DCPP's failed fuel procedure has been satisfactorily enhanced to better detect failed fuel. Unit 1 had been defect-free since Cycle 4. DCPP continues to study the feasibility of going to 24-month fuel cycles from the current 19-21-month cycles. The DCISC will follow this issue.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.13, Equipment Reliability

4.13.1 Overview and Previous Activities

Aging-related degradation is the gradual degradation in the physical characteristics of a system, structure, or component (SSC) which occurs over time and use, and which could impair the ability to perform its design functions. The purpose of the Equipment Reliability (ER) Program is to ensure that the plant continues to operate safely and within its design and licensing bases throughout its life through the process of involving engineering, operation, and maintenance in activities to control age-related degradations or failures of SSCs to within acceptable limits. The scope of the SSCs to be covered by the program continues to evolve and expand. As a part of Equipment Reliability (ER), the plant has developed System Long Term Plans (SLTP) which specify needs and actions for systems for the next five years. DCPP has established an Equipment Reliability Program with a dedicated Program Manager.

The DCISC reviewed the following ER items during the previous reporting period:

- Equipment Reliability Process

DCPP appeared to be managing the Equipment Reliability (ER) Program well. ER at DCPP had improved as a result of the Preventive Maintenance (PM) Program and PM Optimization.

4.13.2 Current Period Activities

During the current period (2011-2012) the DCISC reviewed the following two topics related to equipment reliability:

- Equipment Reliability
- Critical Equipment Clock Resets

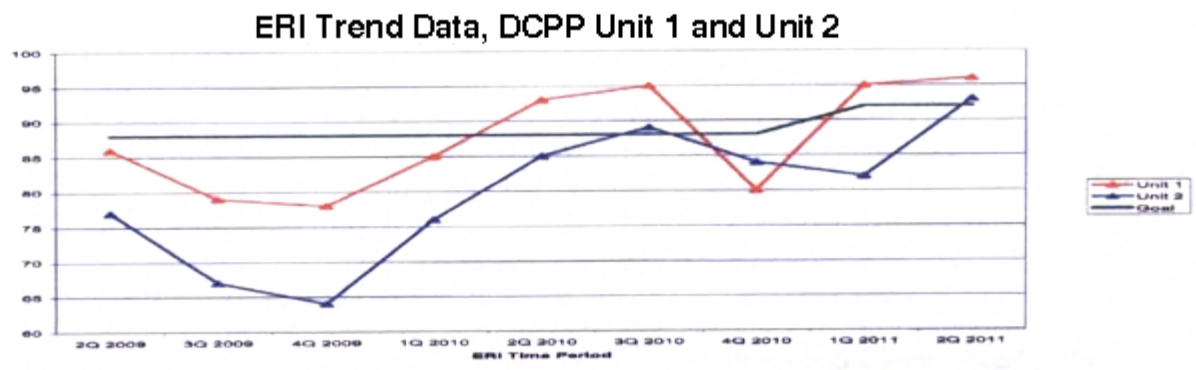
Equipment Reliability (Volume II, Exhibit D.2, Section 3.6)

The DCPP Equipment Reliability (ER) Program Health Report showed the program to be in White (satisfactory) health. The program was not in Green health due to the following White program cornerstone issues:

- Outage performance was greater than 50‰ over original goals for scope, dose, budget, or duration.
- Operating Experience Implementation – a corrective action implementation plan was not in place.

- The ER Index was White.
- Adverse trends

The ER Index for the Second Quarter 2011 is shown below.



This ER Index measured 19 leading and lagging indicators in the following areas with various weighting factors:

- Electric Generation – Forced Loss Rate, Unplanned Power Changes per 7000 Hours Critical, and Post Refueling Outage Performance
- Challenges to Operations – Unplanned Limited Conditions for Operation (LCO) Entries, Operator Workarounds, and High Critical Component Failures
- System Health – Safety System Unavailability – Mitigating System Performance Indicator (MSPI), System Health Action Effectiveness
- Maintenance – Corrective Critical Work Backlog (Non-outage), Deficient Critical Work Backlog (Non-outage), Deferral of Preventive Maintenance (PM), Maintenance Feedback, and Timely Completion of Critical PMs
- Work Management – Work Week Scope Survival and Work Week Schedule Completion
- Long-Term Planning – Long-Term Plan Implementation Effectiveness and Age of Red and Yellow Systems
- Monitoring and Trending – Chemistry Effectiveness
- ER Process – PM Program Bases

The ER Index had been White for both units through the Fourth Quarter 2010, when Unit 1 became Green in the First Quarter 2011 and Unit 2 Green in the Second Quarter.

Of the 19 indicators, the following were White, along with dates to re-gain a green rating:

Indicator	Estimated Date for Green
Unit 2 Forced Loss Rate	3Q2012 (3rd quarter 2012)
Unit 1 Unplanned Power Changes Per 7000 hours critical	4Q2011

Unit 2 High Critical Component Failures	3Q2011
Unit 2 Deferral of PMs	3Q2011

Three primary Action Plans had been initiated:

1. Evaluate the adverse trend in critical equipment failures and Clock Resets – this had been completed, and the Corrective Action Review Board (CARB) had approved an Action Plan.
2. Evaluate the adverse trend in the Balance of Plant (BOP) System Performance – this had been completed, and the CARB had approved an Action Plan. A Phase II evaluation was in progress.
3. Evaluate the ERI sub-indicator PM Deferral, updated to include the First Quarter 2011 Unit 2 performance – complete.

The DCISC reviewed the Action Plan for the Adverse Trend in the BOP Systems. The Action Plan was the result of a STARS (Strategic Teaming and Resource Sharing) assessment. The Plan consisted of 14 recommendations to reduce system leaks:

1. Improve the procedure for torquing/re-torquing bolted connections
2. Revise piping specifications to require Engineering approval when changing gasket material
3. Use hardened washers more widely on bolted connections
4. Revise the procedure specifying bolting torque values to require checking against manufacturer specifications to assure proper gasket compression
5. Add thread sealant specifications to the piping specification
6. Evaluate hot re-torquing for newly installed bolting to help reduce the number of leaks by eliminating gasket creep
7. Provide added specification of gasket types/materials
8. Perform a training needs assessment for Engineering and Maintenance on gasket and packing practices
9. Evaluate the purchase of the EPRI Flange Bolting Performance Demonstration Unit to demonstrate bolting good practices
10. Revise the valve packing procedure to include additional steps and rigor in the valve packing process
11. Re-evaluate delayed or previously rejected Single Point Vulnerabilities (SPVs) – other plants have found that using modifications to eliminate SPVs works best, whereas DCPP has implemented fewer modifications than most
12. Perform a multi-discipline team review of two BOP systems which have contributed to plant scrams
13. Request an INPO assist visit for BOP systems
14. Evaluate a potential adverse trend in non-leakage Air-Operated Valve issues

These actions appeared appropriate to reduce the number of BOP flanged joint leaks.

DCPP had an aggressive Equipment Reliability Program, which had been producing good results. DCPP had effective measures and had corrective actions to correct problem areas.

Critical Equipment Clock Resets (Volume II, Exhibit D.3, Section 3.2)

A Critical Equipment Event is defined by the occurrence of any the following as the result of equipment failure:

- Automatic or manual unit trip
- Submittal of a Licensee Event Report to the Nuclear Regulatory Commission (NRC), i.e. the equipment failure results in an NRC reportable condition under 10CFR50.72 or 10CFR50.73
- Unplanned Entry into a Limiting Condition of Operation (LCO), i.e. the equipment failure directly results in an unplanned entry into a short (less than or equal to 24 hours) shutdown or derate Technical Specification Action Statement
- Unplanned Down-power, i.e. the equipment failure directly results in either an unplanned reduction in power greater than 2 percent or a forced unit outage.

DCPP records, evaluates, tracks, and trends all Critical Equipment Events at the station. Information regarding station performance in this area is also shared within a group of seven utilities known as the STARS Group (Strategic Teaming and Resource Sharing), although the reporting systems are not identical. DCPP's monthly Performance Indicator report shows the number of Events for each month on a Bar Graph. Since, these types of events typically occur infrequently, performance is assessed based on the number of events occurring on a rolling 12-month basis, i.e. the most recent 12 months. This assessment is graded as follows (where Green is considered Good, White is acceptable but improvement is desired, Yellow is deficient, and Red is unacceptable):

Green: Less than or equal to 6 events in most recent 12 months

White: Less than or equal to 8 events

Yellow: Less than or equal to 10

Red: Greater than or equal to 11

Station performance reported in July 2011 was rated White due to the fact that 8 Critical Event Clock Resets had occurred during the most recent 12 months. However, during the most recent 3 months of May, June, July there had been zero clock resets, which demonstrated that sustained performance is required in order to show improvement in the rating scale.

Therefore, the DCISC examined clock resets over the prior two years to try to ascertain any possible pattern of events or commonalities among the various clock resets. Also, the station's Plant Performance Improvement Report (PPIR) refers to the Corrective Program documents that analyze the causal factors for each Event Clock reset, and the DCISC reviewed a number of these documents

as well. No sustained trend was found in the two years of Event Clock Resets. Rather, the station experienced alternating periods of great success and periods where performance declined to some degree. Specifically, the grouping of Resets is shown below:

March 2009 – August 2009	(6 months)	8 resets
September 2009 – August 2010	(12 months)	2 resets
September 2010 – April 2011	(8 months)	8 resets
May 2011 – July 2011	(15 months)	zero resets

The DCISC Fact-finding Team noted that during the period September 2010 through April 2011 fluid leaks appeared to be associated with a number of the Event Clock Reset conditions. The Team learned that this condition had been self-identified earlier by DCPP. In particular, Notification 50380944, "Adverse Trend – BOP System Performance" had addressed the increase in the number of consequential leaks that had occurred at DCPP. Corrective actions that were identified included more effective inspections, improvements in bolt torquing requirements for flanges and fasteners, and more effective use of packing, gaskets, washers, and sealants.

The DCPP Equipment Failure Trend Report for the second Quarter of 2011 reported five Clock Resets had occurred in 2011 up to the time of that report, and three of those were leaks. Corrective actions had been taken on all five.

DCPP's performance with respect to Critical Equipment Event Clock Resets had varied during the period from mid-2009 to mid-2011. In the first half of 2011 the number of such events was higher than desired, with system leaks being associated with many of them. The station evaluated the events, determined causes, and implemented corrective actions on an ongoing basis to minimize the future occurrence of similar problems.

4.13.3 Conclusions and Recommendations

Conclusion:

DCPP has an aggressive Equipment Reliability Program, producing good results. DCPP maintained effective measures and took action to correct problem areas. DCPP's performance with respect to Critical Equipment Event Clock Resets had varied during the period from mid-2009 to mid-2011. In the first half of 2011 the number of such events was higher than desired, with system leaks being associated with many of them. In response, the station evaluated the events, determined causes, and implemented corrective actions on an ongoing basis to minimize the future occurrence of similar problems.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.14, Organizational Effectiveness and Development

4.14.1 Overview and Previous Activities

The focus of Organizational Effectiveness and Development is centered upon the prior process transformation and process structure and organizational effectiveness initiatives. DCPP's cultural change efforts, leadership initiatives and activities, strategic change efforts, etc, are intended to function as interrelated efforts. This focus also supports an INPO initiative to review cultural change, leadership issues, and even human performance, under the area of "organizational effectiveness."

PG&E developed a DCPP Five Year Business Plan to be sure all departments' goals and plant goals have total alignment. Prior to the business plan, the plant and department goals and objectives did not have total alignment.

PG&E began discussions in July 1999 with four other similar, well-run nuclear stations (Callaway, Wolf Creek, South Texas and Comanche Peak) to explore shared cost savings and increased industry influence through alliances and to ultimately decide whether to form a joint nuclear operating organization called the Strategic Teaming and Resource Sharing (STARS) initiative. A STARS management structure was established and implementation teams created to begin on approved initiatives.

In previous reporting periods the DCISC reviewed the following Organizational Effectiveness topics:

- Status of STARS Program and Recent Activities

In the past period the DCISC concluded that DCPP received important support from the STARS association of nuclear plants in a number of important areas such as cross-cutting issues, corrective action, self-assessment, and licensing basis verification. DCPP's overall composite performance indicator for the first three quarters of 2010 compared favorably within the STARS group and within the nuclear industry as a whole. DCISC's next review of DCPP's participation in STARS need not be until about two years hence.

4.14.2 Current Period Activities

During the current period, the DCISC reviewed the following Organizational Effectiveness and Development items:

- NRC Fatigue Management Rule

- Observation and Coaching Program

Status of DCPP Implementation of the NRC Work Hour Rule Regarding Fatigue Management (Volume II, Exhibit D.1, Section 3.3)

The DCISC reviewed the status of DCPP's implementation of the NRC Work Hour Rule Regarding Fatigue Management. The objective of the Fatigue Management Rule (FMR) is to reduce the likelihood of on-the-job fatigue by managing the amount of overtime worked, primarily by those employees who physically perform work (e.g. operators and workers in maintenance, chemistry, radiation protection, and security) and by the immediate supervisors of such employees.

The FMR provides for a 6-week work cycle averaging 54-hours per week during non outage periods and requires that work does not exceed 16 hours in any 24-hour period; 26 hours in any 48-hour period; and 72 hours in any 7-day period. Minimum time off has been established between successive work periods. This minimum consists of a 10-hour break, with an exception allowing an 8-hour break between successive work periods when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts. Also a minimum 34-hour continuous break is required in any 9-day period.

Initial implementation by DCPP and the industry appeared to be going well, but as time progressed, it became more apparent to both DCPP and the industry that the administrative complexities of the rule were creating a burden for nuclear utilities. In particular, the rule prescribed rolling reporting periods, with each new day ending as well as beginning a new reporting period. Hours worked had to be calculated daily for each of these rolling reporting periods. This issue, along with the difficulties in determining and applying the actual "hours worked" in conformance with the Rule, led to a number of problems in the industry. Examples are as follows:

- Taking time off could actually result in a violation of the NRC rule because of complications created by the rolling reporting aspect.
- Reporting of hours worked was affected by the unique definitions of "work hours" associated with turnover periods between shifts.
- Definitions of how meetings were or were not considered to be "hours worked" for reporting purposes of the Rule became a complication.
- Hours worked, as reported during outages, were not clearly understood with regard to turnovers between incoming and outgoing shifts
- Average shift length calculations could also affect specific compliance with the Rule.
- Union contract issues resulted from the above difficulties.

The industry as a whole endorsed the objectives of the Rule, but widespread concern grew regarding the complexities and implications of various aspects of the Rule. Since the workers themselves recorded not just their total hours worked for pay purposes, but also the "hours worked" for reporting purposes under the Rule, the industry felt it important that the elements of the Rule be understandable to the workers. These complications led the Professional Reactor

Operator Society to submit a change request regarding the Rule. The Nuclear Energy Institute also expressed a desire for the NRC and the industry to examine the issues and try to simplify elements of the Rule.

The NRC and the industry have engaged in this activity, and the outcome appears to provide more clarity and flexibility in how to comply with the Rule, while achieving the desired objective of minimizing worker fatigue on the job. Along with this, DCPP has also striven to achieve greater worker understanding of the reporting definitions and requirements. DCPP believes that the elements of the Rule are achievable by DCPP and are now better understood by workers.

DCPP's implementation of the NRC's Fatigue Management Rule became a complicated process due to the details and complexities of the Rule and the need to obtain clear understanding by workers of the Rule's reporting requirements. During the past year, the industry has collaborated with the NRC to modify and/or clarify needed reporting aspects of the Rule and to obtain greater worker understanding. DCPP is now encountering considerably fewer problems with regard to worker reporting of hours worked. The DCISC should review DCPP status on this topic again by the third quarter of 2012.

Observation and Coaching Program (Volume II, Exhibit D.5, Section 3.6)

The DCISC received an update on the DCPP Observation and Coaching Program.

The DCPP Observation and Coaching Program, is controlled by DCPP Procedure OM15.ID3, "Observation and Coaching" April 4, 2011, which describes it as a "robust, effective program consist[ing] of three fundamental sub-processes…":

1. Monitor Performance
2. Analyze Trends and determine Action
3. Implement Improvement

The program is a leadership program intended to provide an opportunity to observe, learn from, and coach someone in how they go about doing their job. The program is considered a low-level reporting tool, providing real time documentation and indications used to identify and correct latent weaknesses that exist in the organization. Among others, the observations are intended to:

- Identify organizational and human performance issues and provide insight into behaviors, tools, and resources needed to help workers accomplish their jobs
- Foster two-way communication between management and their employees and provide management interaction with personnel as they do their work
- Solve problems and remove barriers for more efficient work
- Communicate management performance standard expectations
- Provide a forum to monitor and improve human performance

The procedure provides guidance and expectations on quality and quantity of observations,

feedback and coaching, analysis and trending of observations, and attributes of a good observation with "dos" and "don'ts." It is not intended to be used for "positive discipline." The DCISC Fact-finding Team believes that the procedure is comprehensive. Observations are routinely reviewed by the next-higher level of management and at periodic Management Observation Meetings.

The November 2011 Station-Level Management Observation Health (Metric) Report showed the performance level as "Yellow" (not meeting expectations) due to 32 of 34 sections meeting their observations for a station percentage of 94‰ (number of "Green" sections divided by total number of sections), whereas "Green" performance is > 95‰.

The DCISC concluded that the DCPP Observation and Coaching Program is comprehensive, appropriately developed to meet station needs, and implemented satisfactorily.

4.14.3 Conclusions and Recommendations

Conclusion:

DCPP's organizational effectiveness continues to be strong with effective implementation of the NRC Fatigue Management Rule and station Observation and Coaching Program.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.15, System and Equipment Performance/Problems

4.15.1 Overview and Previous Activities

During past periods, the DCISC had reviewed the performance and problems of DCPP equipment and systems as well as the actions taken by PG&E to resolve them.

During the previous period (July 1, 2010 – June 30, 2011), the DCISC reviewed the following items:

- ECCS Recirculation Valve Interlocks
- Boric Acid Corrosion Control Program
- 230 kV System Capability
- Plant Cranes Maintenance and Operation
- Plant Health Committee
- Potential Containment Debris Blockage
- Reactor Head Replacement
- RHR Check Valve Testing
- Auxiliary Building Control Board Replacement
- Unexpected Control Rod Movement

The DCISC performed the following system/component reviews and/or walk downs with DCPP System/Component Engineers in the previous period:

- Containment System
- Reactor Coolant Pumps
- Digital Control Systems
- DC Power System
- Spent Fuel Cooling System

In the previous period (2010 – 2011) the DCISC concluded that DCPP has dealt effectively with most equipment and system problems and is focused on improving system health. DCPP's System Engineer Program has benefited from improvements based on good system health.

4.15.2 Current Period Activities

The DCISC reviewed the following system and equipment areas during the current reporting period:

- Single Point Vulnerabilities
- Reactor Trip TCOAs
- Containment Inspections
- Large Transformer Update
- Auxiliary Feedwater Pumps
- Machine Vibration Monitoring
- New Reactor Vessel Head Experience
- Containment Fan Cooler Units
- Containment Debris Blockage

The DCISC performed the following system/component reviews and walk downs with DCPP System Engineers:

- Component Cooling Water
- Plant Health Committee
- Auxiliary Feedwater System
- Emergency Diesel Generator
- Vital DC System Crosstie
- Three Losses of 230 kV
- Compressed Air System
- Eagle 21 Replacement Project
- Control Room Ventilation System
- High Pressure Injection System
- DCPP Electrical Power System Capability

DCISC Reviews Of System And Equipment Performance And Problems

Single Point Vulnerabilities (Volume II, Exhibit D.1, Section 3.5)

A component is considered a Single Point Vulnerability (SPV) component if its failure can result in a reactor trip or turbine trip, or a plant decrease of greater than 2% power. An SPV failure must create the plant impact by itself.

DCPP first performed an SPV study in 2002 to identify single points of failure in the plant that could potentially adversely affect plant safety or reliability. That study was performed at a system and

component level. Then in 2006, using external contractor engineers working with DCPP System Engineers and Operations, DCPP performed a more extensive SPV study and completed it in 2008. DCPP has completed the SPV study on all systems (about 20) that have an impact on generation or reliability. This has been a collaborative effort including support from industry organizations such as the Electric Power Research Institute (EPRI) and the Nuclear Energy Institute (NEI).

As a result of the studies, DCPP made changes to preventive maintenance (PM) on some of the systems. They have also revised a substantial number of procedures to remove SPVs. In addition, the Preventive Maintenance (PM) Optimization review was complete and PM activities were revised as necessary.

Safety equipment is not included in any of these studies as all Safety Equipment is covered by the NRC Maintenance Rule, and thus has already been reviewed for SPV. DCPP also worked with the Industry Working Group to review nuclear plant trips in order to determine what caused the trips and what was done to prevent future trips (most trips were caused by failed circuit cards). The SPV Project included 20 plant systems and identified a total of 1,574 SPVs for evaluation for the two units (over 750 for each individual unit). These evaluations focused on whether changes were needed to a component's design and/or preventive maintenance requirements. Changes were then implemented as needed.

The DCISC examined DCPP's monthly Plant Performance Improvement Report (PPIR) to determine whether incidents regarding SPV Failures are tracked for reporting purposes and found that this specific performance category is not contained in the PPIR. However, given the definition of an SPV component (i.e. one whose failure can result in a reactor trip or turbine trip, or a plant decrease of greater than 2‰), each such failure would certainly have great visibility on its own.

Nevertheless, because PMs on these components would have a high priority, the station should consider tracking the number of overdue PMs on SPV components as part of the Operational Focus Index, in the same manner that this index tracks indicators such as Operator Burdens, Control Room Deficiencies, Main Annunciators Defeated, and Deficient Critical Components.

The Single Point Vulnerability (SPV) program appears to be comprehensive and fully functional. No overall indicators of performance appear to be tracked. Issues appear to be addressed on a case basis within the various affected systems. DCISC future reviews will be dictated by performance issues.

Unit 2 Reactor Manual Trip (Volume II, Exhibit 3.1, Section 3.6)

The DCISC met with the Operations Performance Manager, for a briefing of the events that led to a manual trip of the Unit 2 reactor on March 26, 2011.

The Unit 2 reactor manual trip stemmed from a steam leak from the gasket on a steam relief valve on the shell (steam) side of a feedwater heater. This leak grew to the point where it wetted nearby control/annunciator loops for Main Feed Pump 2-1, causing that pump to trip. Since Unit 2 was operating above 80 percent power at that time, the Unit 2 reactor was tripped manually in compliance with station operating procedures that required such a trip due to the loss of a Main

Feed Pump above 80 percent power. The reason for this required manual reactor trip was that an analysis of Unit 2 performance had determined that the loss of one Main Feed Pump would lead to a continuing decrease in Steam Generator water levels to below 15 percent, which would then result in an automatic reactor trip. The deliberate manual trip, therefore, maintains a larger water inventory in the steam generators during the shutdown transient and allows the operators to exercise direct control of reactor and plant status.

DCPP identified the following Root and Contributing Causes to this event:

Root Causes

1. The maintenance procedure used to replace the leaking gasket did not require the proper gasket material and did not specify the proper method for tensioning the installed gasket.
2. The electronic components that were wetted by the spray from the leaking valve were not designed to be water resistant. (However, it was recognized that it is unrealistic to have all such components in a Turbine Building impervious to spray. The need is to control fluid leakage.)
3. The plant secondary systems (e.g. steam generators, steam, feedwater) were not designed to support a Main Feed Pump trip at or above 80‰ power without leading to an automatic reactor trip.

Contributing Causes

1. Corrective actions from a previous gasket failure had specified the proper gasket to use in the applicable Preventive Maintenance Work Instructions and also included proper torquing requirements. However, these changes were not sustained in those instructions.
2. Clear roles and responsibilities had not been established for monitoring and tracking secondary system and equipment leaks.
3. Unclear standards allowed completion of corrective maintenance using a preventive maintenance order without including standard elements of corrective maintenance work instructions.
4. There was no standard requiring operators and Operations to communicate and track the status of active plant equipment leaks.

The report also identified and discussed various human and organizational factors that were embedded in the above causes, and it examined the impact of "cultural" aspects such as Problem Identification and Resolution, Human Performance, and a Safety Conscious Work Environment on the causes. The overall conclusion with regard to these factors and aspects was that the DCPP organization was not sufficiently aligned to the importance of fluid leak management in secondary systems, compared to the strong focus that exists in the boric acid program and in safety related systems.

The DCPP root cause team (RCT) noted "DCPP leadership was aware of this culture and was very

responsive in addressing the RCT's recommendations for corrective actions prior to Unit 2's refueling outage which was ongoing at the conclusion of the RCE."

The automatic trip of Main Feed Pump 2-1 and subsequent manual trip of the Unit 2 Reactor were the results of an easily avoidable steam leak that was precipitated by the improper installation of the wrong type of gasket on the flange of a small steam relief valve on a feedwater heater. DCPP's evaluation of this event was penetrating, detailed, logical, and self-critical. Corrective actions to prevent recurrence and planned future actions to assess the sustainability of the improvements appear to be sound and appropriate.

Unit 1 Containment Concrete Inspection Results (Volume II, Exhibit D.3, Section 3.6)

The DCISC met with DCPP Civil Engineering to review the results of the concrete inspection of the Unit 1 Containment Structure that was conducted during June, July, and October 2010.

The Unit 1 Containment Structure consists of approximately 98,800 ft^2 of concrete surface area. Some portions of this area are not included in this inspection, being exempt for one or another reason. These exempt portions include areas that are covered by the metal liner (including penetration sleeves), foundation material or backfill, or are otherwise obstructed by adjacent structures, components or parts. The total area obstructed and inaccessible for examination on Unit 1 is 9,230 ft^2. Therefore, 90.7‰ of Unit 1 Containment's total surface area can be, and was, examined. The previous examination of the Unit 1 Containment was conducted in November 2000. The requirement is that this examination be conducted every 10 years.

The examination was performed to meet inservice inspection requirements and to evaluate the properties of the concrete. It consisted of a visual examination of 100‰ of the accessible exterior concrete surface of the Containment Structure for cracks, areas of distressed concrete, and previously repaired areas. Examiners are trained and certified to specific requirements of the American Concrete Institute. The location of deteriorated or distressed concrete is recorded with an accuracy of 6 inches in elevation and 0.5^{o} in azimuth. The lengths of the cracks are determined within an accuracy of 1 inch and crack widths within 0.002 inches. The sizes of other indications are determined to an accuracy of 2 inches.

For the predominant types of indications above, their proportions of the total number of indications are about the same for both the 2010 and the 2000 inspections.

The inspection report provided the following conclusions: "The condition of the Unit 1 Containment concrete appears structurally sound. There is no apparent loss of structural capacity; however, Civil Design Engineering (EDC) shall assess the results of the examination for acceptance and evaluation. From the results of this examination, it appears that no repairs are required at this time. This will have to be confirmed by EDC."

The initial inspection results were then provided to an individual referred to in the Report as the Responsible Professional Engineer (RPE) who is certified to conduct a more in-depth evaluation of the identified indications. The results of this in-depth evaluation were that none of the evaluated

indications require repair at this time.

The examination of the Unit 1 containment concrete was a carefully constructed and thoroughly implemented process. The indications that were identified were subjected to several levels of review culminating in a review by a certified Responsible Professional Engineer. The results of this in-depth evaluation were that none of the evaluated indications require repair at this time.

Status of Large Station Transformers (Volume II, Exhibit D.3, Section 3.7)

The DCISC Fact-finding Team met with the Electrical Systems/Components Engineering Supervisor, to review the status of completed and planned upgrades to the large station transformers. DCPP has been continuing to implement the Action Plan that grew out of the 2008 failure of Unit 2's phase C transformer as follows:

- The Unit 2 C phase GE transformer that was installed after the 2008 failure will be replaced by an Elin transformer during refueling outage 2R17. This will make it compatible with Unit 2's A and B phase transformers that are also Elin.
- Various reliability enhancements have been implemented regarding cooler replacements for main bank transformer B, and startup and auxiliary transformers for Units 1 and 2.
- Replacement of Unit 2 transformer yard porcelain insulators (main bank transformer high voltage bushings, lightning arresters, capacitance coupled voltage transformer) with polymer insulators is now scheduled for refueling outage 2R18.
- Porcelain bushings for the Unit 1 main transformer, startup transformers, and lightning arresters are being planned for replacement by polymer bushings.
- The preventive maintenance instructions for acoustic monitoring of large oil filled transformers are scheduled to be complete by the end of 2011.
- Upgrades to the Dissolved Gas Monitors for oil filled transformers are scheduled for completion during refueling outages 1R18 and 2R18, with the potential for completion during the 17th refueling outages.
- Preventive maintenance to perform acoustic monitoring of large oil filled transformers is scheduled to be implemented by the end of 2011.

The Station Transformer System Health Reports are rated Green (healthy) for both units.

DCPP continues to progress in upgrading its large transformers and supporting equipment. The current System Health of the large station transformer systems is commendable, especially considering the improvements that were needed several years ago. Throughout 2011 the station has experienced no forced outages or power reductions due to problems with large transformers. The DCISC will review the status again in early 2013, after the seventeenth refueling outages have been completed for both Units.

Auxiliary Feedwater Pumps (Volume II, Exhibit D.4, Section 3.6)

The AFW System (AFWS) is a safety-related system that serves as a backup to the Main Feedwater (MFW) System. During unit startup and shutdown, the AFW System provides feedwater to the Steam Generators (SGs) below and above a pre-determined power level, respectively. During normal power operation the MFW System supplies feedwater to the secondary side of the steam generators, where water is pumped to the Steam Generators (SGs) in which the water is boiled into high-pressure steam. This steam is then supplied to and spins a turbine generator to produce electricity, after which it is condensed back into water that is pumped back to the secondary side of the SGs.

The AFWS is relied upon to prevent damage to the nuclear reactor fuel and to prevent overpressurization of the Reactor Coolant System (RCS) in the event of transients such as a loss of Main Feedwater or a pipe rupture on the secondary side. During normal plant shutdown the AFWS replaces the MFWS and serves as a cooldown system to maintain hot standby and to proceed further through cooldown to a point where the Residual Heat Removal (RHR) System can be placed in operation, which can be accomplished when Reactor Coolant System temperature goes below 350 degrees.

The AFWS consists of three feedwater supply trains with diverse means of powering the pumps. One train consists of a 100‰-capacity steam-turbine-driven pump (TDAFWP), aligned to all four of the SGs. The other two supply trains consist of 50‰-capacity electric-motor-driven pumps, each supplying flow to two of the four SGs, with the capability to be aligned to any of the four SGs. The system can be started and operated from the Main Control Room, the Hot Shutdown Panel, and at the pumps themselves.

The TDAFWP is rated at 880 gallons per minute (gpm) at a pressure of 1400 pounds per square inch (psi). These pumps are tested quarterly and consistently pass their test acceptance criteria. The DCISC reviewed the test performed on May 26, 2011 and found it satisfactory. The pump test verifies the operability of the pump, the manual start capability from the Control Room, and the stroking of selected key valves, the speed control governor, the turbine and pump lubricating oil levels.

The DCISC was particularly interested in the steam-turbine-driven AFW Pump (TDAFWP) because it is the means of providing feedwater to the SGs (and thus heat removal for the reactor core decay heat) if electric power is lost, such as in the case of the Japanese Fukushima nuclear plant tsunami event in March 2011.

The DCISC toured the major components of the AFW System, focusing on the TDAFWP. The pump can be operated manually at the pump without AC or DC power to provide feedwater to the SGs. If needed for long-term cooling, when the suction water source from the normally aligned Condensate Storage Tank is exhausted, alternate sources of water can be manually aligned to the pump suction. These include, in priority order the following:

- Fire Water Storage Tank (safety-related)
- Raw Water Reservoir (non-safety-related, gravity feed)
- Condenser Hotwell (make-up to CST)

- Makeup Water Transfer Tank (non-safety-related)
- Fire Water Storage Tank using Diesel-driven Long-Term Cooling Water Pump

DCPP has procedures covering operation in this manner.

The System Health Reports reported the Unit 1 AFW System in Yellow (unacceptable but operable) Health and Unit 2 in Green (excellent) Health. Neither unit had significant problems with its pumps.

In the event of a station blackout situation, i.e., loss of all AC and DC electric power, the Steam-Turbine-Driven Auxiliary Feedwater Pump can be relied on to provide the necessary cooling water to the Steam Generators to remove heat from the secondary system and ultimately decay heat from the reactor core to maintain hot shutdown conditions. The pumps are tested quarterly and are in reliable operating condition.

Machine Vibration Monitoring (Volume II, Exhibit D.5, Section 3.1)

The DCISC met with the Senior Advising Engineer for Predictive Maintenance, to review the DCPP Machine Vibration Monitoring, which is part of Reliability Centered Maintenance.

As part of its Reliability Centered Maintenance Program DCPP has a Predictive Maintenance Program (PMP) controlled by Procedure MA1.DC52, "Predictive Maintenance Program." The stated purpose is to enhance plant safety and reliability through early detection and diagnosis of equipment degradation prior to equipment failure. The Predictive Maintenance Organization does this through use of installed and portable diagnostic tools, which monitor selected equipment parameters. The organization maintains a database of identified equipment and parameters for which they establish base lines, set alert points and coordinate predictive maintenance activities. The Engineering Director has overall responsibility for the PMP. The PMP utilizes the following techniques:

- Vibration Monitoring
- Lubrication Analysis
- Control and Monitoring of Motor Operated Valve Diagnostic Information
- Infrared Thermography

DCPP has permanent vibration sensors with remote Control Room readouts on its Reactor Coolant Pumps, Turbine Generators, and Main Feedwater Pumps. Another approximately 300 components are monitored mostly monthly with portable vibration detecting equipment.

Latest acquired data is compared with previous data for trends, and if significant degradation exists, a Notification is initiated, and components considered "degraded" are placed on a watch list. Not only does the vibration analyst identify the fault, but is also expected to provide a corrective action recommendation. Following corrective action by Maintenance, a confirmatory vibration survey is performed to assure the correction was effective.

The DCISC reviewed a recent example of a DCPP vibration problem. Vibration in the Main Turbine Electro-Hydraulic Pump began to experience horizontal high frequency vibration. After monitoring the trend of vibration acceleration as a function of time and as a function of frequency for several months, the vibration began to increase. After analysis, the pump was replaced. Inspection of the bearings showed clear evidence of early wear.

Vibration analysis is an important tool to help prevent rotating equipment failures. The DCPP Machine Vibration Program appeared comprehensive and effective. The process by which non-normal vibration is classified, analyzed, and corrected was found to be systematic and well defined.

Experience with the New Reactor Vessel Head Assembly (Volume II, Exhibit D.5, Section 3.10)

The DCISC Fact-finding Team met with Mike Gibbons, Mechanical Maintenance Manager (and previously Project Engineer of the RV Head Project), to review DCPP's experience with their new Reactor Vessel Head Assembly. The DCISC last reviewed this item at its Public Meeting in December 2009.

The new head meets all DCPP expectations with the following major characteristics:

- Integrated design reduces dismantling/re-mantling activities reducing radiation exposure and outage critical path time
- Fewer Polar Crane demands
- Integrated radiation shielding reducing radiation exposure
- Fewer rigging requirements for improved personnel safety
- Eliminated the Alloy 600 weld cracking issues (replaced with Alloy 690)
- Easier inspection of J-welds and other head areas reducing radiation dose

The new DCPP Reactor Vessel Head Assembly has fully met DCPP expectations and has resulted in improvements in outage time, personnel safety, and personnel radiation exposure.

Containment Fan Cooler Units Anti-Rotation Modification Performance (Volume II, Exhibit D.7, Section 3.8)

Unit 1 CFCU anti-rotation devices were installed during 2010 with satisfactory performance. A Unit 2 device was installed by May 2011, and by June noisy operation was evident, resulting in replacement with a spare. Shortly afterward two more devices were found noisy (ratchet pawls dragging), causing DCPP to write a Prompt Operability Assessment (POA) for justification of operation only at low speed. Performing an Apparent Cause Evaluation (ACE), DCPP and the vendor determined the devices are rubbing due to machining tolerance issues. Through the end of 2011 all devices were refurbished. In January 2012 DCPP commissioned an independent design review of the device, which was in-progress at the time of the fact-finding meeting.

DCPP's new anti-rotation devices on the Containment Fan Cooler Units (CFCUs) have experienced noisy operation due to rubbing caused by manufacturing tolerance issues. DCPP has refurbished each device and has an independent design review in-progress. The DCISC will continue to follow this issue.

Overview of the Containment Sump (Volume II, Exhibit B.3)

The containment sump installed in each DCPP unit is not needed for normal plant operation but is intended for use only in a situation involving a significant loss of reactor coolant accident (LOCA) which results in an injection phase to inject cooling water into containment. The containment sump collects reactor coolant and chemically reactive spray solutions following a LOCA. The containment sump serves as the water source to support long-term recirculation for the functions of residual heat removal, emergency core cooling, and containment atmosphere cleanup.

There were two industry issues on the containment sump, which occurred, in the early 1990's, which both relate to the potential impact of debris blockage on emergency circulation when strainers became clogged.

DCPP was constructed with an 80 square foot strainer, which was subsequently increased to 700 square feet, and later to 3,300 square feet. During 2008, DCPP, identified a significant source of debris from the insulation on its steam generators, but as the steam generators were to be replaced beginning in 2009 with insulation which would not be debris for the sump, DCPP was allowed some additional time to meet the NRC's deadline.

DCPP utilized a multiple solution pathway to achieve debris reduction, a larger strainer, and testing for compliance as follows:

- Key insulation was replaced or jacketed
- Insulation systems were jet-tested to prove debris reduction
- Installed debris interceptors to capture debris
- Sump Strainer surface area increased to 3300 square feet per unit
- Increased water inventory in refueling water storage tank
- Strainer tested for head loss and for fiber bypass
- Fuel Assembly tested for head loss
- On-going Containment Cleanliness Program

There are two ongoing industry programs, and DCPP is participating in both. These are the jet-testing program to reduce debris and the fuel-testing program to confirm long term core cooling. DCPP successfully jet-tested Temp-Mat and calcium silicate piping insulation and the cable tray covers which protect electrical cable insulation and the Pressurized Water Reactor Owners Group (PWROG) fuel test results confirm Diablo Canyon meets the requirements for long term core cooling.

DCPP is currently the only plant with a full strainer back flush capability while cooling the core at the same time. This allows a procedure to permit back-flushing of debris off the strainers. This capability was integral to the original design for DCPP but has been retained with the installation of new, larger strainers.

DCISC Reviews of DCPP Systems/Components

Component Cooling Water System Review (Volume II, Exhibit D.1, Section 3.8)

The Component Cooling Water System (CCW) System is a closed-cycle safety-related cooling system that provides the following functions, as delineated in the system's Design Criteria Memorandum:

- Removes heat from safety-related and non-safety related system components during normal operation and transfers it to the Ultimate Heat Sink (UHS), i.e. the Pacific Ocean, via the Auxiliary Salt Water System (ASW).
- Provides for safe shutdown and cooldown of the reactor by removing heat from safety-related and non-safety related system components after any accident leading to an emergency shutdown, and transfers it to the UHS via the ASW System.
- Provides a monitored, intermediate barrier between components handling radioactive reactor coolant and the UHS or the atmosphere.

The CCW system is comprised of three CCW Pumps, two CCW Heat Exchangers, a CCW surge tank, two chemical addition tanks, and connected valves and piping. Of the three parallel piping trains, two are separable redundant loops (each with one redundant pump) serving the Engineered Safety Features (ESF) equipment and post-accident heat loads (i.e. vital loads). The third train serves non-vital equipment. CCW Pump motors are powered by the 4160V vital buses, which have emergency diesel generator backup. The CCW System serves the following major safety-related heat loads:

- Residual Heat Removal (RHR) System
- Containment Fan Cooler Units (CFCUs)
- Safety Injection Pump Coolers

Among the many nonsafety-related systems and components that are served by the CCW System are the following important loads:

- Reactor Coolant Pumps
- Reactor Vessel Supports
- Spent Fuel Pool Heat Exchanger
- Excess Letdown Heat Exchanger
- Seal Water System Heat Exchanger

CCW System health was Green (excellent) for both units.

The CCW Systems in both Units 1 and 2 appear to be in good condition and have been in healthy status for a number of years.

Plant Health Committee (Volume II, Exhibit D.2, Section 3.2)

The DCISC observed the August 10, 2011 DCPP Plant Health Committee (PHC) meeting. The PHC is governed by DCPP Procedure OM4.ID16, "Plant Health Committee" and is a management team responsible for:

- Continual review of system and program health issues
- Routinely monitoring the status of plant health issues on the plant health issues list for action status and completion
- Routinely monitoring the status of the system health tactical list
- Review and approval of action plans to address plant health issues that originated from system health reports, maintenance rule, operator workarounds, program health reports, emergent issues, and others deemed important to monitor
- Review and monitoring of plant health issue plans that are presented to the PHC

Plant health issues that require PHC review include:

- Issues that result in a red or yellow (unacceptable health) system health color (reviewed at least every 6 months)
- Programs that are rated red or yellow health color (reviewed at least every 6 months)
- Equipment performance issues that result in a red or yellow component health color
- Issues that result in a Maintenance Rule (a)(1) system
- Chronic system, program, or component health problems
- Issues that require special management attention or extensive resources to address
- High Critical (1A) Preventive Maintenance deferral requests and appeals

The PHC procedure appeared appropriate. The PHC uses a Plant Health Issue Plan Data Base (active issues are contained in the Plant Health Issues List) to collect, rank, score, prioritize, and provide a status for plant health issues. The Committee assures that there are effective action plans to address health issues (to return to white or green health status) and monitors the plans/schedules until completion. The action plans are included in the appropriate section of the system, program, or component health reports.

The August 10, 2011 PHC meeting agenda consisted of the following:

1. Safety Message: drive carefully and slowly on-site.
2. Work Control Status Update

3. Main Steam System
4. System/Component Engineer System Health Presentations:
    a. Steam Generator Blowdown System
    b. Turbine Gland Steam System
    c. Spent Fuel Cooling System
5. Emergent Issues
6. Action Item Review
7. PHC Member Discussion

The PHC discussed systems in Yellow and Red health. There were no Red systems. Actions were in-place to resolve each of the above unhealthy system items. These were included on the DCPP Tactical List.

The Plant Health Committee continues to show improvement by focusing its resources on system and component health. The August 2011 meeting was successfully carried out with system health improvement as its top priority.

Emergency Diesel Generator (EDG) System (Volume II, Exhibit D.3, Section 3.5)

The EDGs are safety-related pieces of equipment whose functions are as follows:

- To furnish sufficient power to mitigate a design basis accident in one unit and safely bring the other unit to cold shutdown when both offsite power sources are unavailable.
- To act as a backup source of power to enable the reactor to continue to produce power for 72 hours whenever there is no accident condition, but one of the two offsite power sources is inoperable.
- To furnish power sufficient for an emergency shutdown of the plant whenever the main turbine-generator and the offsite power sources are not available.

The EDG fuel oil supply system is designed with enough fuel capacity to provide 7 days of onsite power generation in order to operate: (a) the minimum required Engineering Safety Features (ESF) equipment following a loss-of–coolant accident (LOCA) for one unit, and the equipment in the second unit in either the hot or cold shutdown condition, or (b) the equipment for both units in either the hot or cold shutdown condition. Each nuclear operating Unit is supported by three EDGs. Each diesel-generator set is provided with two 100‰ capacity starting air trains, with each train having two starting air motors.

Each EDG is designed to start automatically on any of the following signals:

- A Safety Injection signal from either Train A or Train B of the plant protection system.
- Undervoltage on the preferred offsite sources to each of the 4160V vital buses; this starts its

respective diesel.

- Undervoltage on any of the vital 4160V buses; this starts its respective diesel.

Currently, the health of EDG Systems of both Units are rated Yellow. One significant issue that confronts the EDGs of both units is equipment obsolescence, which is being handled as follows:

- The project to replace the EDG Controls was presented to the Plant Review Committee on July 30, 2009 and approved on January 20, 2010. This included approval of the proposed budget for this project. The basis for approval was overall system vulnerability. Parts had been critical since refueling outage 1R15. However, the 2010 budget and outage 1R17 milestones could not be supported.
- The scoping/design change meeting is set for January 2012, with the design change to be complete by January 2013.
- Implementation is planned for outages 1R18 and 2R18 with completion by 2015.

On three separate occasions during Refueling Outage 2R16, work on the 230kv system caused unanticipated and undesired auto-start signals to the three Unit 1 EDGs. In each situation, all three EDGs performed as designed.

As assessed by DCPP, the system health (rated Yellow) of the Emergency Diesel Generators (EDGs) needs improvement. The major impediments to the EDGs' Health in both Units 1 and 2 appear to pertain to obsolescence issues primarily of the EDG Control Systems. The station has deferred addressing these issues in recent years but now has a plan to address them. Because the EDGs of both Units are currently rated Yellow, and since the action plans for the major issues span several years, the DCISC will follow up on a regular basis.

Three Losses of 230kV during Outage 2R16 (Volume II, Exhibit D.5, Section 3.2)

The DCPP 230 kV power system is the only offsite power system designed to be immediately available to mitigate the consequences of postulated accidents involving loss of normal electric power. It is backed up by the six (three per unit, which can be cross-tied between units) air-cooled Emergency Diesel Generators and the 500 kV offsite power system.

The events, identified causes, and immediate corrective actions were as follows:

Event 1

On May 16, 2011 as part of the 230 kV Startup System Reliability Upgrade Project, a physical modification was being made to the 12 kV Startup Relay Board Panel RU. During cutting of the RU Panel, which was being performed with a reciprocating saw, the 230 kV Line Differential Relay 287 actuated and sent a trip signal to the Unit 1 Startup Transformer 2-1 output breaker to the Unit 1 Startup Bus and to the Unit 2 Startup Transformer 2-1 output breaker (cleared at the time) to the Unit 2 Startup Bus.

For immediate corrective action DCPP restored startup power and identified sensitive devices in the electrical panel that would need to be isolated or protected. Clearances were modified to add relays in the "cut out" position and maintenance ceased cutting methods involving a reciprocating saw, instead using a cutting wheel.

The RCE-stated cause was that the "Project failed to perform an adequate risk assessment during the planning stage of the modification" in that there was no risk assessment of the effects of induced vibration of the reciprocating sawing on Unit 2's panel on the energized relays affecting Unit 1. Also, DCPP did not have a process requiring performance of a risk assessment by Operations on the operating unit for refueling outage work that takes place on equipment containing components for both units.

Event 2

On May 26, 2011 while performing current circuit tests (Generic Current Circuit Loop Functional Test), 230 kV Pilot Wire Differential Relay 287 actuated and sent a trip signal to the Unit 1 Startup Transformer 1-1 output breaker, to Unit 1 Startup Bus, and Unit 2 Startup Transformer 2-1 output breaker (cleared at the time) to the Unit 2 Startup Bus.

For immediate corrective action DCPP performed troubleshooting to verify that the circuit was configured per the approved design, and no issues were identified. All shift personnel were briefed on the event and on the human performance tools that prevent such occurrences. The current circuit loop functional test was re-performed successfully with enhanced management oversight.

The presumptive root cause was an inadequate "mental model" which resulted in connecting test equipment to the incorrect terminal block in that the human error tool, independent verification, was improperly used. This was a result of inconsistent reinforcement by the extended outage leadership team and by the lack of high quality, detailed work instructions.

Event 3

On May 27, 2011 while performing function testing of Unit 2 Relay 87UT21, technicians inadvertently began testing on Unit 1 Relay 51/87UT11, initiating a trip signal for the Unit 1 Startup Transformer 1-1 hi-side circuit interrupter and output supply breaker to the Unit 1 Startup Bus.

For immediate corrective action DCPP re-performed the pre-job brief, focusing on roles and responsibilities, and installed barriers on all in-service relays that were not part of the test. Management provided direct oversight, and personnel used the appropriate independent verification for all restoration actions.

There was a double capture slip ("muscle memory," i.e., acting "automatically" based

on previous repetitions) which resulted in connecting a jumper to the incorrect unit relay due to failure to adequately apply human performance error reduction tools during maintenance activities. This was a result of inconsistent reinforcement on the part of the extended outage leadership team.

DCPP performed a Root Cause Evaluation (RCE), which determined the following long-term corrective action to prevent recurrence (CAPRs):

Event 1 –

The DCPP procedure, "Assessment of Maintenance Risk," was revised to require a risk assessment for both daily and outage work being performed in panels that can potentially impact both units. The procedure controlling work involving panels that contain sensitive or positionable components/equipment that impact both units was revised to install temporary protective barriers for components and terminals. DCPP installed signage and/or "robust barriers" on/in front of panels containing components that can potentially affect both units that require a risk assessment prior to beginning work.

Event 2 –

Developed robust barriers and practices/techniques for (1) maintenance Correct Component Verification (CCV) requirements to require barricading adjacent wrong components in addition to flagging correct components, (2) working on electrical/instrument components, and (3) initial and refresher training to maintenance personnel on the practice and use of robust barriers. Provided precise written direction for the performance of current circuit tests, referencing the Root Cause Evaluation (RCE). Developed individual procedures for current circuit tests similar to the relay test procedures in time for Outage 1R17.

Event 3 –

Revised the applicable procedures for Orders/Operations involving panels that contain components/equipment that impact both units to install temporary protective barriers. Installed signage and "robust barriers" on/in front of panels containing components that can possibly impact both units. Strengthened maintenance CCV requirements to require barricading adjacent wrong components in addition to flagging correct components. Developed robust barriers when working on electrical/instrument components. Provided initial and refreshed training to maintenance personnel on the practice and use of robust barriers. Developed training on supervisor coaching to identify opportunities for and then coach on accomplishing work while demonstrating the appropriate behaviors, especially the correct use of human performance tools such as verification practices.

The DCISC reviewed the RCE and concluded that it was comprehensive and thorough. The root and contributing causes and the corresponding corrective actions appeared appropriate.

DCPP's three losses of 230 kV offsite emergency power during Outage 1R17 were identified and handled in a responsive manner. The immediate corrective actions were appropriate. The Root Cause Evaluation (RCE) was comprehensive and thorough, providing reasonable causes and

corrective actions to prevent recurrence. The RCE appeared satisfactory to evaluate the effectiveness of corrective actions during the next outage, 2R17.

Compressed Air System (Volume II, Exhibit D.5, Section 3.3)

The Compressed Air System (CAS) is common to both units and is divided into two Subsystems: Instrument Air System (IAS) and Service Air System (SAS). The IAS is Safety Class 2, having redundancy and high-quality components typical of Class 1, but it is not designed for seismic loads or supplied by emergency electrical power. IAS consists of three primary full-capacity air compressors, which supply clean, dry air pressure primarily to air-operated valves (AOVs) and instruments needed to run the plant and for safe shutdown. Normally one compressor is required for plant operation. There are three additional full-capacity compressors, which serve in a secondary role. They normally are used for the additional refueling outage compressed air demands but can be aligned to the IAS anytime.

Because IAS is not fully safety-related, the 17 valves required for safe shutdown are supplied with an additional source of assured air from the Backup Air/Nitrogen System (BANS), a Class 1 design. BANS is a passive pressure system with air or nitrogen accumulators or tanks located with and dedicated to each safe-shutdown valve. They are designed to resist earthquakes and require no electrical power. Each is designed with capacity adequate for valve operation to assure safe shutdown. The Compressed Air System was reported to be Green (excellent) on its System Health Report.

The DCISC accompanied the System Engineer on a tour of the major components of the Compressed Air System. All components appeared to be in good condition.

DCPP's Compressed Air System health is rated Green (excellent), and the system appeared to be running as designed. The System Engineer appeared knowledgeable and proactive about his system.

Eagle 21 Process Protection System Replacement Project (PPSRP) (Volume II, ExhibitD.7, Section 3.7)

DCPP's original Westinghouse 7100 analog reactor protection sets were replaced in outages 1R6 and 2R6 with the existing Eagle 21 Process Protection System (PPS). The DCPP digital Eagle 21 PPS monitors plant parameters, compares them against setpoints, which if exceeded, provides signals to the Solid State Protection System (SSPS). The SSPS, in turn, evaluates the signals through coincident logic and performs Reactor Trip System (RTS) and Engineered Safety Features Actuation System (ESFAS) command functions to mitigate an event that may be in progress.

The PPSRP will replace the existing digital Eagle 21 Process Protection System with a software-based Triconex TRICON platform for the primary PPS functions and incorporate a logic-based Westinghouse/CS Innovations Advanced Logic System for functions, which require built-in diversity. The PPSRP is scheduled to be implemented during outages 1R18 and 2R18 in February 2014 and

September 2014, respectively.

The proposed PPS addresses current NRC regulations and guidance regarding Diversity and Defense-in-Depth (D3). It will implement automatic protective functions in a logic-based system with built-in diversity that addresses software Common Cause Failure (CCF). DCPP submitted its PPSRP License Amendment Request (LAR) to the NRC in October 2011 and received NRC acceptance of its content. DCPP had already submitted its Defense-in-Depth and Diversity Evaluation to NRC. NRC projects its approval by October 31, 2013, which would permit DCPP to install the replacement in 2014 in Refueling Outages 2R18 and 1R19. NRC held a public meeting in San Luis Obispo in January 2012 with local interveners described as "positive" because of the replacement of old, aged components.

The DCISC Fact-finding Team received and reviewed DCPP's "Process Protection System (PPS) Replacement Conceptual Design Document" and found it to be comprehensive and detailed. DCPP is managing the replacement as a formal project with a project manager. They have been successful with their large managed projects.

PPSRP suppliers must develop their hardware and software with an approved 10CFR50, Appendix B Quality Assurance Program, including an acceptable Validation and Verification Program. All systems developed or modified must be adequately tested before delivery. Pre-installation testing is performed by personnel familiar with the system but independent of the developers.

DCPP has submitted the License Amendment Request to the NRC for its Eagle 21 Process Protection System Replacement Project. NRC expects to complete its review and issue approval in October 2013. This will permit DCPP to begin installation in 2014. The DCISC should continue to monitor this project through installation and subsequent operation.

Control Room Ventilation System (Volume II, Exhibit D.7, Section 3.9)

The DCISC met with the Control Room Ventilation System (CRVS) System Engineer, to review the system and recent issues with meeting its design basis.

The DCPP Control Room Ventilation System (CRVS) consists of the following three systems:

1. Control Room HVAC System (CRHVAC)
2. Control Room Pressurization System (CRPS)
3. Plant Process Computer (PPC) Room Air Conditioning System

The CRHVAC consists of two independent trains, A and B, for each unit. The CRPS is composed of one train for each unit. These two systems are interconnected mechanically and operationally and are operational during all plant operating modes. The PPC System serves only to cool the PPC Room.

The CRHVAC and CRPS operate in one of the following modes:

Mode 1	CRVS "normal" mode (CRNV)
Mode 2	CRVS smoke removal mode to evacuate smoke in the Control Room
Mode 3	CRVS 100‰ air recirculation with 27‰ passing through high efficiency particulate air (HEPA) filtration, and manual zone isolation is used in the event of toxic chemical spill outside the Control Room when personnel sense a problematic odor or smell.
Mode 4	CRVS pressurization mode (CRPS) to counteract the detected presence of radiation at the Control Room air intake or a Containment Isolation A signal. The system can detect radiation at various air intake locations and select the unaffected intake.

Currently Units 1 and 2 CRVS are in Yellow (unsatisfactory) health as reported in their individual system health reports. Return to healthy status is estimated to be July 2013 with resolution of the following issues:

1. Control Room Habitability Prompt Operability Assessment (POA)
2. CRVS Design Vulnerability POA – a postulated single active failure of an operating booster fan can lead to the introduction of unfiltered airborne contamination in the Control Room that may exceed acceptable limits. This is an issue being followed by the NRC.
3. Containment Fan Cooler Unit (CFCU) Hi-Speed Vibration Alarms POA
4. CFCU Hi-Speed Contactor Chatter

The CRVS Health Reports contained action plans for modification/replacement of ventilation components to bring system health back to an acceptable level. The issues and their resolution are being worked through the DCPP Plant Health Committee process for approval, scheduling and spending. The unfiltered air in-leakage problem potentially occurs when one unit CRVS is in Mode 3 Recirculation and the other in Mode 4 Pressurization. DCPP has changed operating procedures to provide for manual operator action to avoid the problem. Additionally, DCPP is considering removing the cross-tie connection, separating the units' CRVSs. The design deficiency was the subject of an NRC Level III Violation (see Section 3.2.1).

DCPP's Control Room Ventilation System (CRVS) is operable but in Yellow (unhealthy) health. There are several issues, which adversely affect Control Room Habitability due to deign deficiencies, reliability, and aging problems. These are being resolved through procedure changes, which specify manual operator actions and through modifications via Plant Health Committee system health process. DCPP expects return to healthy status in July 2013. The DCISC will continue to monitor these issues.

3.8 Plant Health Committee Meeting (Volume II, Exhibit D.8, Section 3.8)

The DCISC Fact-finding Team observed the April 4, 2012 DCPP Plant Health Committee (PHC) Meeting.

The PHC is governed by DCPP Procedure OM4.ID16, "Plant Health Committee" and is a management team responsible for:

- Continual review of system and program health issues
- Routinely monitoring the status of plant health issues on the plant health issues list for action status and completion
- Routinely monitoring the status of the system health tactical list
- Review and approval of action plans to address plant health issues that originated from system health reports, maintenance rule, operator workarounds, program health reports, emergent issues, and others deemed important to monitor
- Review and monitoring of plant health issue plans that are presented to the PHC

Membership and expected attendance is:

- Plant Health Committee Chairman and Facilitator (currently the Station Director)
- Project Engineering Manager
- Operations Director
- Engineering Director or Senior Director
- Maintenance Director
- Outage Management Director
- Reliability Engineering Supervisor
- Administrative Support Person

Plant health issues that require PHC review include:

- Issues that result in a red or yellow (unacceptable health) system health color (reviewed at least every 6 months)
- Programs that are rated red or yellow health color (reviewed at least every 6 months)
- Equipment performance issues that result in a red or yellow component health color
- Issues that result in a Maintenance Rule (a)(1) system
- Chronic system, program, or component health problems
- Issues that require special management attention or extensive resources to address
- High Critical (1A) Preventive Maintenance deferral requests and appeals

The April 4, 2012 meeting was chaired by Tim King, Director of Nuclear Work Management, in the absence of the Station Director. A quorum was present. The meeting schedule was set for 50 minutes duration, and great emphasis was placed on keeping the meeting on schedule and on keeping the discussions focused on the key aspects of the specific topics. The agenda was as follows:

Safety Discussion - 5 min

- Tactical List Review - 10 min
- System Presentations
  - System 39A/B – Radiation Monitors – 15 min
  - System 43A – Plant Process Computer – 15 min
  - Emergent/New Items – 2 min
- Action Item Review – 2 min
- PHC Member Discussion, if required – 2 min

The PHC reviewed the following listing of the other systems rated Yellow (no systems were rated as Red, i.e. unhealthy with no approved action plan):

Unit 1		
System	Months Unhealthy	Expected Return to Healthy
Reactor Coolant	8	Outage 1R17
Lube Oil	5	July 2012
Emergency Diesel Generators	14	June 2012
Heating, Ventilating, and Air Conditioning	3	July 2013
Rod Control	6	Outage 1R17
4KV Electrical	23	Outage 1R18 (Oct 2013)
Unit 2		
System	Months Unhealthy	Expected Return to Healthy
Emergency Diesel Generators	14	June 2012
Heating, Ventilating, and Air Conditioning	3	July 2013
Rod Control	6	Outage 2R17
4KV Electrical	23	Outage 2R17

The Plant Health Committee meeting was well conducted and efficiently managed, with its members focusing on topics and participating actively and effectively. The DCISC should consider reviewing the station's 4KV Electrical System in a future Fact-finding Meeting.

Safety Injection System Review (Volume II, Exhibit D.9, 3.6)

The DCISC met with the Safety Injection System (SI) Engineer for a review of his system.

The DCPP Emergency Core Cooling System (ECCS) is designed to provide water from the Refueling Water Storage Tank (RWST) to cool the reactor core and provide negative reactivity in the event of a loss of coolant accident in either the Reactor Coolant System (RCS) or the Steam System, spurious

lifting of a RCS relief valve, a Rod Cluster Control assembly ejection, or a Steam Generator tube rupture. The ECCS includes three separate subsystems:

- Centrifugal Charging (high pressure)
- Safety Injection (intermediate pressure)
- Residual Heat Removal (low pressure)

The Safety Injection (SI) System consists of two 100‰ capacity trains that are interconnected and redundant such that either train is capable of supplying 100‰ of the flow required. The SIS contains two safety injection pumps along with associated suction, discharge, and throttle valves and instrumentation for each Unit. The four accumulator tanks and one RWST are also part of the SIS.

The ECCS pumps receive power from the 4160V Vital AC electrical systems, which are backed up by the Emergency Diesel Generators.

The SI Pumps provide ECCS flow to the RCS cold and hot legs, and flow through test lines for check valve testing and to fill all the accumulators. SI Pumps are full-flow tested each refueling outage and tested quarterly at partial/recirculation flow. All tests have been successful.

The SI Pumps are required to be seismically qualified for Design Earthquake, Double Design Earthquake and HOSGRI. They are qualified based on current nozzle loads and current installation configuration. The ECCS is protected from missiles postulated to be generated inside and outside Containment and have been reviewed to ensure that the ECCS is capable of withstanding those missile effects or is protected by barriers from the effects of those missiles. The ECCS is required to withstand the effects of any potential flooding due to natural phenomena and due to postulated tank spills or piping ruptures and to withstand environmental effects of internal flooding.

- ECCS is required to be protected from tsunami effects and is well above maximum levels resulting from the design basis tsunami.

The SI System health is Green with a maximum Green score of 5.0 for both units. There are no significant issues affecting system health. The only issue is periodic back leakage through 2nd-off check valves, resulting in header pressurization. These valves are scheduled for replacement during the next drain-down outage (2R18).

The DCISC reviewed the System Engineer's quarterly walk down inspection report. The report was comprehensive and showed no problems.

The DCPP Safety Injection System, a part of the Emergency Core Cooling System, exhibits Green (excellent) health and has no major problems. The system engineer appeared knowledgeable and pro-active about the system.

Overview of the DCPP Electrical System (Volume II, Exhibit B.3)

At its October 2011 Public Meeting the DCISC received from DCPP an overview of the DCPP electrical

distribution system including the capability of maintaining power to the equipment required to protect nuclear fuel integrity. The DCPP electrical systems consist of:

- 500 kV AC- DCPP output interface with transmission system/ delayed source of off site power.
- 230 kV AC- Immediate source of offsite power (transmission system) following trips or accidents.
- 25 kV AC- Generator output to generator step up transformers.
- 12 kV AC- Power supply for large, medium voltage motors.
- 4 kV AC- Power supply for medium voltage motors (i.e., ECCS Pumps).
- 480 V AC- Power supply for low voltage motors and motor operated valves.
- 120 V AC- Control power and power supply for small loads.
- 250 V DC- Power supply for DC loads.
- 125 V DC- Control Power/station battery.

500kV is the level at which DCPP provides power to the California power grid, and the 500kV System is also the delayed source of off-site power for DCPP if it becomes necessary to backfeed power to the plant. The 230kV System is the immediately available source of power for DCPP, to which the plant automatically connects in the event of any accident and is also used during shutdown and refueling outages. The 25kV system is a system providing interface between the 500kV System and the generator and is used to transfer power between the generator and the grid and also for the house loads, which are fed to auxiliary transformers. The 12kV System is used to operate the large reactor coolant pump motors as well as the two circulating water pumps. The equipment shown on the schematic as non-vital or non-designed class one equipment.

The 4kV System is considered vital, with three vital buses, F, G and H on each unit. There are also non-vital 4kV buses, which run equipment on the secondary side of the plant but which, unlike the vital buses, do not have access to the EDGs. Below the 4kV System are the 480 volt load centers which run small motors, motor-operated valves, heaters, battery chargers, etc. There is also a 120 volt system.

Vital electrical equipment is seismically qualified to operate following design basis earthquakes. Non-Vital electrical equipment is seismically qualified to the Uniform Building Code standards.

4.15.3 Conclusions and Recommendations

Conclusion:

As in previous reporting periods, DCPP has dealt effectively with most equipment and system problems and is focused on improving system health. DCPP's Plant Health Committee has been improved to focus more on system/component health and meets more frequently, and overall system health has improved. The System Engineer/Component Program continues to be effective.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.16,Steam Generator Performance

4.16.1 Overview and Previous Activities

Steam Generator (SG) tube reliability is important to operational safety because the SG tubes are part of the Reactor Coolant System (RCS) pressure boundary. The nuclear industry has experienced substantial problems with a variety of mechanisms that can cause the SG tubes to deteriorate. The most notable of these is stress corrosion cracking. To address these issues DCPP engaged in a major capital project of replacing all 8 DCPP steam generators: four in Unit 2 were replaced during refueling outage 2R14 (February - April 2008), and four in Unit 1 were replaced during refueling outage 1R15, (January – April 2009).

The DCISC reviewed the following topic related to the DCPP Steam Generators during the previous reporting period:

- Results of SG Tube Testing during the Fifteenth Refueling Outage for Unit 2 in October – November, 2009 and the Sixteenth Refueling Outage for Unit 1 in October 2010 (1R16)

All eight DCPP new, replacement steam generators (SG) were determined to be in very good condition after their first inspections, which were required by Plant Technical Specifications to be performed during their first refueling outage after the SG replacements.

4.16.2 Current Period Activities

During the current period (2011-2012) the DCISC reviewed the following topic related to the following topic related to Steam Generator (SG) Performance:

- Health of DCPP Steam Generators

Health of DCPP Steam Generators (Volume II, Exhibit D.9, Section 3.3 and Volume II, Exhibit B.9)

DCPP replaced its four Unit 2 SGs in Outage 2R14 in 2008 and four Unit 1 SGs in Outage 1R15 in 2009. There were more than 25 enhancements from the original SGs, some of which were to help minimize corrosion and wearing of components and also to improve overall SG performance. The replacements were fabricated with corrosion-resistant Alloy 690 thermally treated tubing. Other features included:

- Stainless steel tube support plates (TSP) with tri-foil broached tube holes.
- Advanced anti-vibration bar (AVB) design in u-bends.
- Hydraulic expanded tubes into the tube sheet with no crevices in tubesheet.

Electropolished channel head reduces personnel dose exposure.

- Feeding spray nozzles with small opening sized to restrain large objects from entering tube bundles.
- Sludge collector collects a percentage of sludge and limits tubesheet sludge pile.
- Integrated blowdown holes in tubesheet improves blowdown efficiency.
- Peripheral trough region facilitates draining of tubesheet region.
- More access ports through shell (4 handholes, 10 inspection ports).
- New SGs have 16 steam separators as compared with 3 for the old SGs.

The DCPP SG tube inspection frequency and the extent of the inspections required is governed by Technical Specification 5.5.9 as follows:

- Eddy current testing (ECT) of 100‰ of tubing is required after one cycle of operation.
- After Initial Service Inspection (ISI), inspect each SG every 3rd refueling outage (or 72 effective full power months [EFPM]) if supported by operational assessment.
- Inspect 100‰ of tubes in each SG every inspection period (144 EFPM, 108 EFPM, 72 EFPM, 60 EFPM). These periods are under review and are being revised to 144/120/96/72 EFPM in upcoming TSTF-510.

The results of the SG tube inspections during 2R15 and 1R16, the outages following installation, were as follows:

- 100‰ of tubes were ECT inspected with bobbin coil with excellent results.
- U-2 had one shallow wear indication in a single tube from a tube support plate (5‰ through-wall) which was left in-service, no tube plugging.
- U-1 had one shallow wear indication in a single tube from an anti-vibration bar (5‰ through-wall) which was left in service, no tube plugging.
- The operational assessment of the inspections supported operation for the next three cycles without additional ECT inspection.
- The next TS-required ECT inspections are scheduled for 2R18 and 1R19.

These results were considered excellent.

For this May 2012 Fact-finding Meeting the DCISC was interested in DCPP SG health at this time because San Onofre Nuclear Generating Station (SONGS), with recently replaced SGs, reported SG tube problems to the NRC. Outage testing of SONGS' Unit 3 SG tubes revealed a through-wall tube indication, representing a failed tube. Further inspection and pressure testing revealed seven additional tubes, which failed the pressure test. SONGS Unit 2 shut down for similar inspections and tests and experienced one tube indication, which was found to be acceptable. The tube failures were in the free span between tube supports in the tube bend area and were caused by tube-to-

tube wear. No further information was available about the SONGS failures. Investigations are continuing. The SONGS reactors and SGs were made by a different manufacturer than DCPP.

Status Report on DCPP Steam Generators (SGs) (Volume II, Exhibit B.9)

This DCISC Public Meeting presentation was on the replacement DCPP SGs after two cycles of operation. The tubing for the SGs was fabricated at Sandvik, Sweden; major forgings were fabricated at Japan Steel Works; the SGs were assembled at ENSA, Spain; and were installed at DCPP in 2008 (2R14) and 2009 (1R15). There were more than 25 design enhancements from original SG design with the most significant being the use of corrosion resistant Alloy 690 thermally treated (TT) tubing. The overall design is similar to the old models with 54,000 square feet of service area in the new SGs, which is somewhat greater than in the old SGs, with smaller diameter tubing having been used in the new SGs.

Tube inspection frequency and extent of inspection is governed by DCPP Technical Specification (TS) 5.5.9. Eddy current testing (ECT) of 100‰ of the tubing is required after the first cycle of operation. Following this initial in-service inspection (ISI), each SG is inspected every third refueling outage, if that inspection frequency is supported by an operational assessment. Three refueling outages is the maximum inspection frequency for 690TT tubing, which is greater than the two refueling outage inspection frequency for 600TT tubing and the single refueling outage inspection frequency for 600MA tubing.

The results of the first ISI tube inspections during refueling outages 2R15 and 1R16 in 2009 and 2010, respectively, which were conducted on 100‰ of the tubes by ECT inspections with bobbin coil, were excellent. For U-2, only a single shallow wear indication from a tube support plate (5‰ through-wall (TW)) was found, which was left in service, and no tube plugging was done. For U-1, a single shallow wear indication from an anti-vibration bar (5‰ TW), was found which was left in service, and no tube plugging was done. DCPP operational assessment supports operation for next three cycles without additional ECT inspections. The next TS-required ECT inspections are scheduled during refueling outages 2R18 and 1R19 in 2014 and 2015 respectively.

DCPP continues to perform maintenance on the SGs secondary side including sludge lancing and visual examinations of the top of the tubesheets which is performed during each refueling outage since replacement (2R15/1R16 and 2R16/1R17). Sludge lancing has removed 2 to 3 lbs per SG compared to the 50 lbs typically removed from each SG during sludge lancing on the old SGs. Lancing also removed some small foreign material that may have entered SGs from manufacturing and from the upstream feedwater system through feedring spray nozzles. The new SGs offer a better blowdown design with integrated blowdown piping which also contributes to moving more sludge. DCPP also opted to add a sludge collector as a design feature in its SGs.

Inspections have shown very good conditions at top of the tubesheet regions. The upper internals baseline visual examinations, recommended by Westinghouse, were performed in refueling outages 2R16/1R17 on steam drum components including feedring, moisture separators, and sludge collectors with no abnormal in-service conditions noted.

DCPP reported that 46 domestic nuclear units had replaced their SGs with Alloy 690TT tubing by end of 2011. He remarked that SG replacement with Alloy 690TT tubing has guaranteed corrosion-free tubing but it has not guaranteed wear-free tubing. Tube wear from support structures and loose parts can limit operational assessment run times. Because of tube wear only 25 units are performing tube inspections at maximum allowed three refueling outage frequency. Tube support wear issues are usually discovered in the first ISI and wear rates are trended in subsequent inspections. Historically, for recirculating SGs the most significant wear has been from antivibration bar (AVB) structures, with some tube support plate (TSP) wear.

For the San Onofre Nuclear Generating Station (SONGS) Unit-3 SGs, the Mitsubishi designed replacement SGs have experienced significant U-bend tube to tube wear due to fluid elastic instability caused by high steam velocity, high void fraction (low damping), and less than expected AVB-to-tube contact forces. The SONGS problems may be due to a design error resulting in a faulty hydraulic model incorrectly predicting steam flows and velocities in the U-bends. The replacement SGs of Westinghouse design have an excellent record with all 15 units with Westinghouse-designed SG replacements (including DCPP U-1 and U-2) at three refueling outage inspection frequencies based on excellent tube inspection results. Insignificant numbers of tubes with AVB wear and TSP wear and no tube-to-tube wear. Westinghouse uses the Ethos hydraulic model which was not the model used by Mitsubishi.

To have vibration as occurred at SONGS the AVB must not have adequate contact forces so that they are not damping in the middle of the span between other AVBs or the AVBs are spaced too far apart. In either case the resonant frequency for the tubes at SONGS is clearly lower than it should be to resist the flow induced vibration that exists at full power. SONGS may be able to restart power generation operations but may be reduced to running at D-rated power levels at which flow induced vibration would decrease and could be measured by instrumentation.

4.16.3 Conclusions and Recommendations

Conclusion:

Because of the San Onofre Generating Station (SONGS) Steam Generator (SG) tube failures of relatively new SGs, the DCISC reviewed the health of DCPP's relatively new SGs. DCPP's SG tubes had shown excellent inspection and test results in Outages 2R15 and 1R16 and are considered to be in excellent health. DCPP's plant and SGs were designed and fabricated by a different manufacturer than SONGS. Although in excellent health, the DCISC should monitor SG inspection results during future outages.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.17, Outage Management

4.17.1 Overview and Previous Activities

The DCISC monitors PG&E's outage plans, actions, and results in the following ways:

- Review of outage safety evaluations and plans
- Regular Fact-finding meetings to discuss planned major modifications, inspections, maintenance and activities
- Regular reports from PG&E at DCISC public meetings on outage plans and outage performance, noting any special situations or problems affecting safety
- Visits to DCPP during outages to monitor the Outage Coordination Center, Control Room and activities of interest
- Reviews of documentation and reports of outage activities such as steam generator tube inspections, major equipment problems, and events affecting safety

Since the DCISC began review of this subject in 1990, outage management performance has steadily improved as shown in the table below. PG&E expects its outages can routinely run in the high-twenty to low-thirty day range.

Other outage indicators also are showing continuous improvement. With the exception of anomalous 1R9 radiation levels and the long Steam Generator replacement outages (2R14 and 1R15), radiation exposure and personnel injuries have been generally declining in the last three outages as follows:

	Outage Duration (days)		Collective Radiation Exposure (person-Rem)		Personnel Safety (recordable injuries)		Nuclear Safety Events	
Outage	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2		
R13	41.0	38.8	116	74	5	3	0	0
R14	29.8	68.9*	103	226*	6	3	0	0
R15	58.0*	37.7	247*	87	3	–	0	0
R16	41.8	35.8	123	30	1	0	0	0
R17	55.0	–	42	–	1	–	0	–

** Steam Generator Replacement Outage*

During the 2010 to 2011 DCISC reporting period, DCPP completed Refueling Outages 1R16 and 2R16 and reviewed the following outage-related topics:

- Outage 1R16 Plans and Results
- Outage 2R16 Safety Plan
- Outage Tour of Containment
- Outage 2R16 Performance

It appeared that DCPP planned 1R16 very well. DCPP expected to have no manpower availability problems during the outage, except for a concern about available pipe welders. The 2R16 Outage Safety Plan appeared well designed to achieve outage safety. It was especially comprehensive and detailed in describing the schedule and steps of the outage designed to keep the reactor core and spent fuel cooled and to avoid losses of electrical power. Emphasis was also placed on preventing and mitigating accidents and on controlling radioactive material. Shutdown radiation levels in the Unit 2 Containment Building were very low, and areas with higher radiation levels were clearly posted. When the DCISC toured the plant, the DCPP escort was highly oriented to maintaining radiation exposure as low as reasonably achievable. Conditions in the plant throughout the tour were clean and orderly, especially for a refueling outage. DCPP successfully completed its 1R16 and 2R16 refueling outages in which most goals were met, except that outage durations were longer than predicted due to emergent work and some rework. Nuclear safety was upheld.

4.17.2 Current Period Activities

During the current period (2011-2012) the DCISC reviewed the following topics related to outage management:

- Outage 1R17 Safety Plan
- Outage 1R17 Plant Tour
- Outage Coordination Center
- Results of Outage 1R17

Outage 1R17 Safety Plan (Volume II, Exhibit D.7, Section 3.3)

The intent of the Outage Safety Plan is to provide a concise document to use in evaluating plant conditions during hot and cold shutdown conditions to ensure that key safety functions are satisfied, while maintaining consistency with the Technical Specifications and Equipment Control Guidelines. DCPP's outage safety program is designed around three major concepts:

1. Prevention of any accident-initiating event
2. Mitigation of an accident before it potentially progresses to core damage
3. Control of radioactive material if a core damage accident should occur

The outage safety plan provides background information for the logic contained in the outage safety checklists. The checklists provide the logic used to develop the outage safety schedule. The schedule and checklists ensure that the equipment and plant conditions assumed in the shutdown abnormal procedures are met. These procedures contain guidance for providing passive core cooling and key system restoration.

Outage safety planning is based upon the assumption of a worst-case event, which is a loss of all AC power.

The Outage Safety Plan contained the following topics:

- Infrequently Performed Tests or Evolutions
- Contingency Strategies
- Transition Periods and Testing
- Prevention of Accident Initiating Events
- Outage Safety Checklists
    - Mode 5 Loops Filled
    - Mode 5 Loops Not Filled
    - Mode 6 Reactor Coolant System (RCS) Level at Reactor Vessel (RV) Nozzles
    - Mode 6 Level Below RV Nozzles
    - Core Offload
- Containment Closure
- Recent DCPP and Industry Outage Events

DCPP used a computerized, quantitative program, Safety Monitor, replacing the older ORAM-Sentinel, as a probabilistic risk analysis tool, to analyze the risk of reactor coolant boiling and core damage risk while fuel is in the reactor vessel based upon the outage equipment out-of-service schedule information. The DCISC reviewed this controlling procedure and found it to be comprehensive. The resultant Outage Safety Schedule shows the Defense-in-Depth (DID) Status for various states of the following safety functions:

- Decay Heat Removal Capability
- Reactor Coolant System Inventory Control
- Reactivity Control
- Support Systems (Heat Sink)
- Containment Closure
- AC Power Available

- Spent Fuel Pool Cooling
- DC Power
- 120VAC Instrument Power
- Emergency Diesel Generator/Fuel Handling Building/Charging Power Supply

DCPP used a system (Procedure OP Q-38, "Protected Equipment Postings – Outages") to designate and protect equipment required for DID of safety systems during outages. The system included lists, tags, signage, and physical barriers. The procedure appeared complete.

Defense-in-Depth Status was represented by the following four color definitions:

Green

represents >N+1 DID, where N is the minimum equipment needed to maintain a key safety function with more than one backup means of support.

Yellow

represents N+1 DID, which is considered the normal DID. Key safety functions are fully supported with at least one backup means of support.

Orange

represents an N condition, where key safety functions are supported, but minimum DID is not met, and compensatory measures must be in place.

Red

represents a <N condition in which key safety functions are not supported.

DCPP considers a status of Green or Yellow acceptable for planned outage activities because key safety functions are more than fully supported with DID. No planned activities should result in an Orange condition; however, in the rare case where an Orange condition is planned, a contingency plan with compensatory actions must be developed and implemented. Planned Red conditions are prohibited. The 1R17 Outage Safety Plan contained no Orange or Red conditions and few Yellow ones.

DCPP's Outage Safety Plan for Outage 1R17 appeared satisfactory for maintaining appropriate Defense-in-Depth to assure safety during the outage.

Outage 1R17 Plant Tour (Volume II, Exhibit D.9, Section 3.4)

The DCISC Fact-finding Team's tour of the plant during Outage 1R17 included the following:

- Control Room
- Turbine Building – all levels
- Cold Machine Shop

- Yard area
- Maintenance I&C Shop

The plant was clean and orderly, outage work locations appeared orderly, personnel were wearing proper safety gear, and Security was appropriately present. However, during the tour several cabinets and bookcases were identified that lacked adequate seismic bracing to protect personnel during an earthquake. These conditions are discussed in Volume I Section 4.20 and Volume II, Exhibit D.9, Section 3.7 of this Annual Report under the topic, "Office Seismic Safety."

On its plant tour the DCISC found that the plant was clean and orderly, outage work locations appeared in order, personnel were wearing proper safety gear, and Security was appropriately present.

Outage Coordination Center (OCC) Meeting (Volume II, Exhibit D.9, Section 3.5)

The DCISC observed the OCC evening status meeting on day 31 of Outage 1R17, which began on April 22, 2012. Representatives from all functional areas of the plant each provided a very brief update of their status. Detailed specific questions were directed to individual discussions following the meeting to keep the meeting as short as possible. The OCC Director presented a list of emerging items and actions being taken to resolve them. Operations provided their shift priorities. Safety and human error prevention messages were given. There had been a 240-volt shock that day, which, though apparently minor, was given considerable emphasis.

The DCISC received the following outage reports:

- Plan of the Day – this was a colorful, four-page document containing the following:
  - Site Standard of the Day: Questioning Attitude
  - Operations Update on Primary, Secondary, and Electrical Systems and Projects
  - Access Close-out Process – process for contractors, temporary workers, etc. to properly process out of the system when their outage work has completed
  - Clarification of Records and Document Storage Requirements
  - ALARA (As Low As Reasonably Achievable) Radiation Dose Tips
  - OCC Contacts Directory
  - Outage Safety Plan Status
- OCC Composite Dayshift Turnover Report
  - Detailed listing by plant function/department of items ready for turnover to the Night Shift
  - Outage update regarding personnel safety, foreign material exclusion, and security events

    - Plant update regarding Decay Heat Removal, Safety Monitor risk level, Offsite Power Source status, and Protected Equipment Status

- Plan of the Day Package – a detailed list and schedule of the items in the two lists above

The DCPP Outage Coordination Center (OCC) evening status meeting was concise and to-the-point while providing necessary outage information to all plant areas. Short oral reports were given, and detailed information was provided in comprehensive documents but not reported in the meeting. The meeting appeared beneficial to all without being burdensome and was efficient.

Results of Outage 1R17 (Volume II, Exhibit B.9)

DCPP made a presentation on their 1R17 Refueling Outage at the DCISC June 2012 Public Meeting. The major scope items addressed during refueling outage 1R17 on the primary side, the system containing the reactor system coolant were as follows:

- Surveillance Test Procedure (STP) M-13F/G/H and M-15 at the start of the outage.
- Pressurizer Safety Valve Replacement.
- Pressurizer Heater Sleeve Inspection.
- Reactor Coolant Pump #1 Seal Return Flow Transmitter Replacement.
- Centrifugal Charging Pump 1-3 BA Leak Repair.
- Core Exit Thermocouples Replacement.
- Reactor Vessel Level Indicating System Cap Fill.
- Internals Lift Fixture 10-year Inspection.
- In Service Inspection (ISI) of the Reactor Vessel.

The pressurizer heater sleeve inspection was performed as a result of operating experience received from other stations where degradation has been found to this Reactor Coolant System boundary, and no degradation was found at DCPP. The core exit thermocouples replacement was undertaken due to aging and refueling outage1R17 was the first of a series of outages where this work will be performed. The reactor vessel in service inspection included an ongoing inspection of welds under the vessel and on the hot leg.

The following major scope items were addressed during 1R17 on the secondary side, the system of piping wherein steam is produced and sent to the turbine:

- Exciter Rotor Replacement.
- Acid /Caustic Skid Replacement.
- Steam Generator (SG) Sludge Lance and Foreign Object Search & Retrieval (FOSAR).
- H2DP Motor.

- Outfall Tunnel Inspections & Repairs.
- ASW 1-2 pump/motor swap
- Turbine Driven AFW Pump Turbine Shaft Replacement.
- West Side Saltwater Outlet Expansion Joint.

The acid/caustic skid replacement was undertaken for industrial safety reasons due to degraded piping while sludge lancing and Foreign Object Search and Removal (FOSAR) for the steam generators will be performed during every outage while eddy current testing will only be performed every third outage.

During refueling outage 1R17 the major scope items for electrical components included the following:

- Vital Battery 1-2 Replacement.
- Vital Battery 1-3 Replaced 3 Cells.
- Main Bank and Start-Up Bank Maintenance.
- Dissolved Gas Analyzer for Main Bank Transformers.
- 480v Bucket Replacements Bus 2F.
- Bus F Maintenance.
- 230kv Switches Re Silicon.
- 4KV Cable Replacement

Vital Battery 1-2 was replaced as part of regular preventive maintenance while the three cells replaced on Vital Battery 1-3 were replaced as part of the ongoing program to monitor and make replacement early if indicated. The 4kV cable replacement included replacement of the last non-vital cable and this project, involving a system, which could initiate a reactor trip, is now complete.

Major scope projects undertaken for the first time during 1R17 included:

- Polar Crane upgrade - to provide more reliable, improved controls.
- Acid/Caustic Skid replacement - to eliminated potential industrial safety hazards
- Control System replacement - a unique project in the U.S. to address obsolete equipment and to prevents failure that could result in a reactor trip.

The upgrades to the Polar Crane were made to enhance its reliability in a commercial sense as it is required to move large, heavy objects within containment. The Process Control System replacement was an ambitious project and the most important of the first time projects as it affects approximately 250 controls and indications of which one third are safety-related.

The refueling outage1R17 goals as compared to performance were as follows:

Performance Goals	Goal	Actual
Recordable & Disabling Injuries	0/0	1/0
Nuclear Safety Events	0	0
Human Performance Events	0	2
Outage Duration (days)	<40	55 d
Dose Goal (Rem)	<50	41.7
Significant Foreign Material Events	0	0
Security Loggable Events	10	7
Cost	<$43.6m	TBD
Power Ascension (days)	<5	TBD
Reliable Run at 100‰ (days)	>90 days	TBD

The one recordable injury experienced and the dose achieved during refueling outage 1R17 represents the best ever for a U-1 refueling outage which DCPP attributed in part to good chemistry controls and worker practices.

Some of the challenges during refueling outage 1R17 included human performance. Human Error resulted in loss of the second channel of low temperature over pressure protection for nine minutes when an instrument panel was mistakenly de-energized with a second panel having been previously de-energized, and additional peer checking was required as a result of this event. Fuel movement in the Spent Fuel Pool near the drained transfer canal resulted in a momentary high exposure to fuel handlers while the fuel handling team was attempting to place a fuel assembly near the canal wall. The high radiation dose monitor activated and the activity, which resulted in a negligible dose, was terminated. DCPP is taking all necessary actions to prevent recurrence of this event and to review the application of the lessons learned to other areas within the plant. In both the foregoing cases a Significance Level 1 Apparent Cause Evaluation (ACE) was being performed for corrective actions prior to next outage.

During 1R17 there was an intrusion by “salp”, a jellyfish-like sea creature, at the Intake Structure which had the potential to impact Auxiliary Saltwater System cooling and resulted in U-2 power being ramped down and a delay in the reduction of Reactor Coolant System inventory for U-1 to maintain defense in depth.

In the area of nuclear safety, there were no decay heat removal challenges, and DCPP had the lowest radiation dose for a U-1 Outage. There were seven security-related loggable events, which was better performance than the goal set of not more than ten. All defense in depth equipment operated well, and planned system health work was completed and included 45 system health improvements. The Outage Safety Plan and the Outage Safety Schedule, created before the actual outage schedule to ensure defense in depth, were successfully maintained for decay heat removal.

4.17.3 Conclusions and Recommendations

Conclusion:

DCPP's Outage 1R17 preparation and performance were good with an effective Outage Safety Plan, orderly and effective control of work by the Outage Coordination Center, appropriate use of personal protective equipment, and meeting outage safety goals.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.18, Plant Security

Note: because of the sensitive nature of nuclear plant security, only limited information can be presented in this public report.

4.18.1 Overview and Previous Activities

The DCISC has previously reviewed plant security in fact-finding meetings by reviewing security performance measures and by reviewing plant audits and NRC inspections of the Security Program. Additionally, there have been overviews of the Security Program in DCISC public meetings.

The DCISC reviews and NRC inspects these measures. The DCISC monitors and assesses current security measures and expected modifications to determine whether there may be negative effects on plant safety during normal operation and maintenance and emergency response during off-normal conditions.

The DCISC's interest and scope of review was limited to the effects of Security-related barriers and procedures on nuclear and operational safety rather than Security itself. The DCISC reviewed the following items during the previous reporting period:

- Safety/Security Interface
- Cyber Security

The DCISC concluded that DCPP appeared to have an effective program for maintaining its safety/security interface and satisfactory plans and resources to implement its cyber-security program. The DCISC will follow up on both of these during the next reporting period.

4.18.2 Current Period Activities

The DCISC reviewed the following security-related items during the current reporting period:

- Safety/Security Interface

Safety-Security Interface Process (Volume II, Exhibit D.5, Section 3.11)

In March 2010 the NRC published its regulation 10CFR73.58, "Safety/Security Interface Requirements for Nuclear Power Reactors," which stated:

a. Each operating nuclear power reactor licensee with a license issued under part 50 or 52 of

this chapter shall comply with the requirements of this section.

b. The licensee shall assess and manage the potential for adverse effects on safety and security, including the site emergency plan, before implementing changes to plant configurations, facility conditions, or security.

c. The scope of changes to be assessed and managed must include planned and emergent activities (such as, but not limited to, physical modifications, procedural changes, changes to operator actions or security assignments, maintenance activities, system reconfiguration, access modification or restrictions, and changes to the security plan and its implementation).

d. Where potential conflicts are identified, the licensee shall communicate them to appropriate licensee personnel and take compensatory and/or mitigative actions to maintain safety and security under applicable Commission regulations, requirements, and license conditions.

To provide guidance on implementation, NRC issued Regulatory Guide (RG) 5.74, "Managing the Safety/Security Interface," dated June 2009, stating, "This guide describes a method that the staff of the U.S. Nuclear Regulatory Commission (NRC) considers acceptable for licensees to assess and manage changes to safety and security activities so as to prevent or mitigate potential adverse effects that could negatively impact either plant safety or security." DCPP performed a plant-wide review of procedures and processes to identify any gaps that existed to meet the RG requirements. There were 33 procedures changed to either remove the gaps or enhance the procedure in meeting the RG

The DCISC Fact-finding Team received and reviewed the DCPP Procedure OM11.ID7, "Safety/Security Interface Program," dated November 1, 2010. The procedure identifies management controls and processes used to establish and maintain an effective interface between nuclear safety and site security. The procedure instructs Design Engineering, Projects, and Security to involve all others in any modifications or changes to the plant physical configuration and procedures. The procedure includes a detailed and comprehensive checklist for each proposed modification or procedure that has potential security or safety impacts.

The procedure addresses the following:

- Plant Modifications
- Procedure Changes and Emergency Plan Changes
- Emergent Operational Conditions and Maintenance Activities
- Changes to Security Plans
- Safety/Security Programmatic Reviews

The DCISC determined that the procedure was satisfactory in controlling the safety/security interface at DCPP.

PG&E believed that the DCPP Safety-Security Interface has gone smoothly with no problems. The DCISC has noted no issues from reviewing plant or NRC documents.

The DCPP Safety-Security interface appears to be functioning satisfactorily.

4.18.3 Conclusions and Recommendations

Conclusion:

DCPP appears to have an effective program for maintaining its safety/security interface. The DCISC will follow up on this topic again during the next reporting period.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.19,Independent Spent Fuel Storage Installation (ISFSI)

4.19.1 Overview and Previous Activities

This section of the report describes DCISC reviews of the DCPP Independent Spent Fuel Storage Installation (ISFSI). "Spent Fuel" is also referred to as "Used Fuel."

The DCISC has been following the DCPP ISFSI since it was in the planning stages at PG&E in 1997. The following ISFSI-related topics were reviewed in the previous reporting period:

ISFSI Status at the following fact-finding and public meetings:

- Used Fuel Storage Program
- Spent Fuel Inventory

In the previous reporting period the DCISC concluded that DCPP has successfully completed construction of its Independent Spent Fuel Storage Installation (ISFSI) and completed two major loading campaigns of 16 casks for a total of 512 spent fuel assemblies. The campaigns have all gone according to plans and expectations. DCPP is ordering additional casks and planning to construct more concrete pads to accommodate additional spent fuel at the ISFSI. At the end of 60 years plant life both the Spent Fuel Pool and the ISFSI will be full.

4.19.2 Current Period Activities

The DCISC reviewed the following items related to the ISFSI during the current reporting period:

- Loose ISFSI Hold-down Bolts

Loose Hold-Down Nuts on Casks in the Independent Spent Fuel Storage Installation (ISFSI) (Volume II, Exhibit D.8, Section 3.6)

Each ISFSI cask storage pad accommodates up to 20 HI-STORM storage casks and is designed with an embedded steel structure having a steel plate ring at the surface of the concrete that mates with the bottom of each cask for the purpose of seismic stability. During installation on the pad, each cask is compressed against the embedment plate using 16 studs. Each stud is preloaded to approximately 157,000 pounds force (lbf). The preload is achieved by threading the studs into a coupling steel block located on the underside of the embedment plate buried in concrete. Either field-installed shims or a permanently installed circumferential shim plate weldment is used to

ensure that the proper pre-load is obtained in each anchor stud. The process for installing the storage casks is governed by procedures, and personnel responsible for implementing the procedure are trained to do so.

Each of the casks is inspected by procedure on an annual basis, and tightness of the anchor stud nuts is one of the criteria specified by the procedure. The prior annual inspection of cask number 229-317 was completed on September 29, 2011. There were no deficiencies noted with regard to the tightness of the anchor stud nuts at that time.

After the loose nut was identified, actions were initiated to re-tension the loose nut and to verify the tension of the fifteen remaining anchor stud nuts of cask 229-317. Also, based on the discovery of the discrepant condition, an Extent of Condition evaluation was conducted of all other storage casks. This evaluation identified two additional cases of a loose anchor stud nut. All three anchor stud nuts that were loose could be turned by hand. The three loose nuts were in three different locations on three different casks. These studs were retensioned, and actions were implemented to verify the tension on the remaining anchor stud nuts.

The physical properties of the studs, nuts, and plates made it difficult to conclusively determine a root cause, as discussed in the remainder of this paragraph. Calculations indicated that elongation of the stud by 0.023 inches would produce a tension of 157,000 lbf, the tension stipulated in the procedure. Consequently, the introduction of very small amounts of foreign material (having dimensions as small as from 0.010 inches to 0.020 inches) could lead to a relaxation in the tension if the dimensions of that material could degrade under compression. To address this issue, it was determined that the addition of a final tensioning verification would help to assure that any degradation of foreign material during initial tensioning would be identified and corrected. An analysis was also conducted of the procedure for installing the casks on the pads, and it was concluded that the procedure may not have included sufficient controls with respect to cleanliness of the area, which could have caused the preload to be reduced. That is, cleanliness conditions were directed to be verified during the preparation phase, but not immediately prior to the final positioning of the cask. Also, there was no required additional verification of stud tensions after completion of the tensioning process for all studs, nor were visible alignment marks installed that could support subsequent inspections. Further, the procedure for the annual inspection did not specify a requirement that the anchor studs be tight.

In addition, further evaluation of the design and installation of the cask storage arrangement was conducted, including an evaluation of the effect of not pre-tensioning the anchor studs. This evaluation provided assurance that if preload is lost in any or all anchor studs the cask will maintain its stability in the event of a design basis earthquake.

Immediate corrective actions, in addition to examining the other casks for loose nuts, were completed as follows:

- Retension of the studs with the loose nuts
- Verification of tension on all anchorage studs
- Application of torque paint to each of the anchorage stud and nut assemblies

Other corrective actions involve:

- Revising the procedure to include a final cleaning swipe of the embedment ring and cask underside just prior to the final positioning of the cask. (Complete)
- Adding a procedure requirement to include verification of stud tension after the cask transporter has been moved away from the cask. (Complete)
- Revising the annual inspection procedure to specify "anchor stud nuts are not loose utilizing full effort of a hand." (Due by June 2012)
- Developing a License Amendment to remove the requirement for pre-tensioning the anchor stud and nut assemblies from the ISFSI Final Safety Analysis Report. (Expected completion January 2013)

The specific circumstances leading to the three loose nuts on ISFSI storage casks are difficult to diagnose. Nevertheless, the corrective actions to prevent recurrence address a broad range of contingencies and appear to be adequate and appropriate. DCPP's analysis has determined that the ISFSI casks will maintain their stability in the event of a design basis earthquake without having their studs pre-tensioned.

4.19.3 Conclusions and Recommendations

Conclusion:

DCPP effectively identified, evaluated, and corrected the loose nuts found on three Independent Spent Fuel Storage Installation (ISFSI) cask seismic hold-down studs. Evaluation showed that the casks would be stable even with the nuts being loose.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.20, Earthquakes and Tsunamis

4.20.1 Overview and Previous Activities

This section of the report provides updates on recent seismic events, tsunamis or related matters that could affect DCPP.

In previous reports the DCISC has reviewed with PG&E earthquakes occurring in California in the vicinity of DCPP as well as seismic designs, analyses, and activities related to DCPP. This has included updates to PG&E's Long Term Seismic Program which is an NRC license condition requiring PG&E to monitor and evaluate seismic events world-wide which could potentially affect DCPP design.

In the previous period the DCISC reviewed the following activities:

- Seismic Bracing of Tall Furniture
- SISI Housekeeping Activities
- NRC Seismic Workshop
- Shoreline Fault Status

In the previous reporting period the DCISC concluded that DCPP is in a unique seismic area with the potential for large earthquakes, and its design basis takes this into account. The DCISC notes that little progress appears to have made during the period late 2010 – early 2011 regarding protecting personnel in office spaces from moving objects that could cause personnel injury and/or impede response to an emergency in the event of an earthquake. Performance appears to have improved considerably in the area of DCPP's Seismically Induced Systems Interaction Housekeeping Program since mid-2010. The preliminary results of the PG&E analysis of the Shoreline Fault rupture showed that the DCPP seismic design basis remained valid for any of three possible scenarios: either (1) as a single segment, or (2) as all three segments together, or (3) as all three segments together combined with a Hosgri rupture.

4.20.2 Current Period Activities

The DCISC reviewed the following item during the current reporting period:

- Tsunami Hazard and Seismic Hazard Update
- Shoreline Fault Prompt Operability Assessment (POA) Review
- Office Seismic Safety Update
- Seismically Induced System Interactions (SISI)

- Update on DCPP Response to NRC Generic Letter and Issues concerning Seismic Risk Evaluation for U.S. Operating Reactors

Tsunami Hazard and Seismic Hazard (Shoreline Fault) (Volume II, Exhibit D.2, Section 3.1 and Exhibit B.3)

The DCISC met with PG&E Seismologists to discuss the progress made recently on understanding two issues: the tsunami hazard at the DCPP site and the seismic hazard arising from the Shoreline Fault zone.

Tsunami Hazard

Prior research concluded that the only phenomenon that could produce a tsunami as high as 10 meters (about 30 feet) at the Diablo Canyon site is a local landslide offshore, triggered either by a local earthquake or perhaps by other forces such as major storms or tidal forces. Therefore the next phase of the research will emphasize the landslide aspect, emphasizing a more detailed understanding of the local topography off shore and the composition of the undersea ocean floor off shore. The seismic aspect of the tsunami study will be examining what the maximum magnitude might be for such a triggering earthquake, and the magnitude of the wave height that might result. The effort is concentrating on constraining the maximum seismic magnitude through seismological and geophysical evidence, including a study of the variability in the physical phenomena.

The issue of variability is critical, because the way the analysis is performed, one needs an estimate of the median properties (earthquake properties as well as characteristics of the wave-formation and wave-propagation phenomena), as well as a characterization of the variability in each of these – the extremes of the tails of the distributions of these various phenomena are what would produce the largest tsunami wave heights. Based on data and models, the approach is to do a simulation to determine the distributions of these properties out to at least two standard deviations, and possibly three, if supportable from the evidence. The problem is that the "high tails" of some of these distributions could yield values, if a blind extrapolation of the body of the distribution is used without data to support such an extrapolation, that might be un-physical, meaning that the extreme values of the distribution perhaps simply could not happen physically. The effort now, as summarized by the PG&E staff, is in part to understand the physical phenomena well enough to provide a constraint on the tails of these distributions, if it is physically correct to do so. Without such a constraint, the models could produce "results" out in the tails that are mathematically correct but physically not realizable.

The detailed effort, therefore, is concentrating in the near future both on gathering data offshore about local topography, local geology, and local seismic features, and on putting it into a validated analysis model that can do numerical simulations. A suite of such tsunami-generation simulation codes exists, some of them developed by the Southern California Earthquake Center. However, to be used near the DCPP site, these codes require both verification (that a code does the "arithmetic" correctly) and validation (that a code captures the physical phenomena correctly.) That is a major part of the analysis work for the next year.

A major aspect of the fieldwork during the next year will be taking measurements offshore --- bathymetry measurements and the mapping of offshore deposits that could be landslide sources. PG&E will be deploying a boat offshore to make certain seismic measurements (see below), and the equipment to assist in the tsunami investigations (multi-beam transducer bathymetry equipment for example) will be aboard too, in a piggyback arrangement.

The PG&E staff indicated that the results of this detailed technical work will be available about a year hence. It is likely to be breaking new technical ground in the sense of being ahead of the current state of the art. It will therefore require and will receive peer review (supported by PG&E) in the community of tsunami experts.

Seismic Hazard and the Shoreline Fault:

The DCISC also discussed with PG&E seismologists the latest work by PG&E to understand the seismic hazard near the Diablo Canyon site, including further characterization of the Shoreline Fault zone. This meeting was the latest in a long series of DCISC fact-finding meetings and briefings at DCISC public meetings about this issue.

The most important topic concerned the upcoming series of offshore measurements, using high-energy three-dimensional survey techniques, that PG&E will be undertaking in the next half year or so, using a heavily-instrumented boat. The boat will concentrate on the first three miles offshore, where the Shoreline fault zone is located. [As mentioned above, this same boat will also carry instrumentation for examining tsunami-source issues – landslide phenomena etc. – because it will be out in the water anyway doing the seismic survey.]

PG&E staff reported that they have already published a report on the methodology that is being used for studying the seismic data. The next report will be a companion piece with an extensive review of the existing data. PG&E is still awaiting state permits for some of the studies using air guns for geophysical measurements. They will survey approximately from San Simeon in the north to Avila Bay in the south. This offshore work will be supplemented by some onshore two-dimensional seismic geophysical studies from the DCPP site eastward toward Los Osos valley. This latter field study will try to examine the geology etc. down to a depth of about six miles.

The schedule for this work, both offshore and onshore, is that the measurements will take place over the coming year. Data analysis will occur concurrently but any final report will likely be thereafter, although any important interim findings will be reported to the NRC and the public as they arise.

The PG&E technical studies of both the tsunami hazards and the seismic hazards (emphasizing the Shoreline Fault) are proceeding in an orderly way, indeed very quickly. The technical quality seems to be exemplary. Their progress to date has been substantial on both topics, and their increased understanding has helped both the DCPP team and the NRC to understand these issues more fully. The DCISC will definitely continue to follow both of these topics over the next year or more as the PG&E studies proceed.

Office and Workspace Seismic Safety Update (Volume II, Exhibit D.9, Section 3.7)

The DCISC met with DCPP to tour the plant for outage work and to observe tall furniture for its seismic anchoring to prevent injury to plant personnel during an earthquake. Such bracing is important to plant operational safety because injuries to plant personnel would reduce the number of personnel available to respond and implement post-earthquake safety procedures.

The DCISC observed tall furniture in the following locations:

- Control Room Shift Manager's Office
- Main Turbine Floor outside the Control Room entrance
- Control Room Briefing Room
- Unit 2 Plant Process Computer Room
- I&C Maintenance Lab
- Various locations in the Administration Building
- Outage Coordination Center

None of these locations, except the I&C Maintenance Lab and some locations in the Administration Building, appeared to have seismic anchors or bracing for the tall furniture and cabinets. Cabinets in the Control Room Briefing Room, which reportedly had weights in their bases, easily tipped when shaken, suggesting that any counterweights that might be in these cabinets would not be effective in preventing them from falling over. Likewise, new tall cabinets had been installed into the Control Room Shift Manager's office without any seismic bracing, and were aligned so that they would fall directly into the Shift Manager's workspace. A few locations in the I&C laboratory had screw anchors, but some were screwed into the dry wall and could be easily pulled loose, and thus would clearly not be effective in preventing the furniture from falling onto personnel during an earthquake. The fact that a number of anchors in the I&C building were found to be improperly installed (screws into drywall) draws into question all of the seismic anchoring that exists in that building, and potentially on the site.

DCPP was working on a station policy to implement the corporate policy and had a completion date of June 30, 2012. DCPP would perform furniture reviews/corrective action beginning with the Control Room and work out from there. New furniture is to be purchased with base weights or capability for proper anchoring. A Corrective Action Program Notification was initiated by DCPP to document the findings by the DCISC and formally initiate/spur/track action by the plant to brace or weight potentially dangerous furniture in a seismic event.

There was no improvement in the status of office and workspace seismic safety since the DCISC Fact-finding Meeting in May 2011, and new seismic personnel hazards were identified during this Fact-finding tour. Of the limited seismic bracing that is installed at DCPP, some is improperly installed and would be ineffective in protecting personnel during an earthquake. DCPP initiated a Corrective Action Program Notification to document problems found and to get action started.

The DCISC will continue to closely monitor this item.

Recommendation:

DCPP should assign a manager with the authority and inclination to develop the DCPP site office and workspace seismic safety policy and devote the resources needed to implement necessary changes to avoid harm to personnel from a seismic event.

Basis for Recommendation:

The DCISC has observed numerous examples of tall office and workspace furniture, which, unanchored or incorrectly anchored, creates a threat to personnel safety during earthquakes. Inattention to personnel seismic safety appears to be pervasive around the plant, including the existence of clear hazards in the Control Room Shift Manager's office and briefing room. PG&E has a corporate policy for resolving this type of hazard. Because some existing anchors are improperly installed (for example using screws into dry wall in the I&C Maintenance Building), all existing anchors must be considered to be suspect and verified to be appropriately installed. DCPP has stated that they will develop a plant policy in accordance with the corporate policy, but there has been little progress over the past several years. DCPP has now initiated a Notification in the Corrective Action Program, which, if tracked appropriately, should spur on action. The DCISC believes it necessary to initiate this new second recommendation to emphasize its concern.

Seismically Induced System Interactions (Volume II, Exhibit B.3)

The DCPP Seismically Induced Systems Interaction (SISI) Housekeeping Program ensures systems structures and components (SSCs) required for a safe shutdown of the plant, as well as certain accident mitigating systems, will not be impaired from performing their safety function as a result of seismically induced interactions. The objectives of the SISI Program are met on an ongoing basis. Plant modifications and housekeeping and maintenance activities are reviewed for their potential to create SISIs. The SISI Program provides technical guidance to DCPP support personnel to enable them to perform SISI evaluations.

SISI performance monitoring includes the following:

- All plant areas except containment are inspected monthly for SISI housekeeping concerns. Containment is inspected and secured following refueling outages.
- Program owners perform monthly assessments of the process using program metrics.
- Program cornerstone health reports are updated quarterly.
- A quick hit self-assessment of the SISI Program is performed every two years.
- A formal self-assessment of the process is performed at least every two years (in addition to the quick hit self assessment).

The DCPP SISI Housekeeping Program is currently in green (good) health status. Industry

benchmarking has confirmed the strength of DCPP's SISI Housekeeping Program.

Update on DCPP Response to NRC Generic Letter and Issues concerning Seismic Risk Evaluation for U.S. Operating Reactors (Volume II, Exhibit B.6)

DCPP reported at the DCISC February 2012 Public Meeting that the NRC identified a generic issue and issued Generic Issue (GI)–199 Information Notice 2010- 018 in September 2010 to address the implications of updating probabilistic seismic hazard estimates in the central and eastern parts of the U.S. for existing nuclear power plants. Early site permits for new reactors were required to develop probabilistically based seismic hazard curves and Ground Motion Response Spectra (GMRS) based upon a Seismic Probabilistic Risk Assessment (SPRA) model. The seismic hazard analysis has two components: the updated seismic sources or the faults; and the fault characteristics or the geometries and then, for an earthquake on that fault, what is the ground motion at the site. New seismic hazard curves and new ground motion determinations were made and some of the results identified higher seismic hazard estimates that may result in the increased likelihood of exceeding the Safe Shutdown Earthquake (SSE) response spectra at operating nuclear facilities in the central and eastern U.S. The SSE ground motion spectra is based upon an earthquake on a fault closest to the plant while a probabilistic analysis considers all the faults and estimates ground motions for the selected probability of exceeding the ground motion and represents a different methodology.

The issues as they relate to DCPP are as follows:

- DCPP was excluded from the original GI-199 issue as it did not rely on the central or eastern U.S. source and ground motion models for its Seismic Probabilistic Risk Analysis (SPRA).
- DCPP has a detailed SPRA required by its Long Term Seismic Program (LTSP).
- DCPP recently updated its SPRA to include the Shoreline Fault Zone (SFZ).
- Shoreline Report was submitted to the NRC Jan 2011. NRC review is in process.

DCPP reviewed and described for the Committee a graph showing the updated Shoreline Fault GMRS, including the original analysis of the Hosgri Fault, together with that for the Los Osos and San Luis Bay Faults, which shows the ground motions predicted for earthquakes on the three faults, Los Osos, San Luis Bay and Shoreline Faults, would be less than that for the Hosgri Fault.

As part of DCPP's update, probabilistic based seismic hazard curves were developed. The seismic hazard curve is input to the DCPP SPRA to determine a seismic risk number. This indicates the annual probability of core damage from a seismic hazard. From the analysis of data from the Long Term Seismic Program to that for the Shoreline Fault, including the latest modeling techniques, the seismic risk number for DCPP has been reduced.

In January 2012 the NRC issued a 10 CFR 50.54(f) letter requesting information to address:

- NRC Fukushima Near Term Task Force (NTTF) Recommendation 2.1 – Update Seismic Hazard.

- GI-199 issue is subsumed by the NTTF Recommendation 2.1.
- Draft letter requires an updated seismic hazard using current probabilistic methodology.
- GMRS < SSE no action.
- GMRS > SSE risk evaluation required.

The generic issue subsumed by the 10 CFR 50.54(f) letter provides for updating the seismic hazard using current probabilistic methodology, development of site specific hazard curves and, specifically for western U.S. nuclear plants to have source characterization models and ground motion models and provides a very detailed review process which DCPP does not expect to complete until the end of 2014.

DCPP's LTSP has been maintained to update seismic knowledge of source through the AB 1632 seismic studies currently in progress and for ground motions. A License Amendment Request has been submitted to NRC which proposes a ten-year update of seismic hazards; an update process with operability criteria; and a Senior Seismic Hazard Analysis Committee (SSHAC) level 3 process. The seismic hazard update required by the NRC Letter will be performed.

4.20.3 Conclusions and Recommendations

Conclusion:

DCPP is in a unique seismic and tsunami area with the potential for large earthquakes, and its design basis takes this into account. Because of this and recent discoveries of additional faults nearby, PG&E has underway a significant research effort to map the ocean floor around DCPP for earthquake faults. The DCISC notes that little progress appears to have made during the period late-2010 – mid-2012 regarding protecting personnel in office spaces from moving objects that could cause personnel injury and/or impede response to an emergency in the event of an earthquake but notes that DCPP has initiated an augmented effort to work this issue. Performance appears satisfactory in the area of DCPP's Seismically Induced Systems Interaction Housekeeping Program. The DCISC considers this conclusion safety significant and has developed a recommendation for corrective action (see Recommendation R12-1 below.)

Recommendation R12-1:

DCPP should assign a manager with the authority and inclination to develop the DCPP site office and workspace seismic safety policy and devote the resources needed to implement necessary changes to avoid harm to personnel from a seismic event.

Basis for Recommendation:

The DCISC has observed numerous examples of tall office and workspace furniture, which, unanchored or incorrectly anchored, creates a threat to personnel safety

during earthquakes. Inattention to personnel seismic safety appears to be pervasive around the plant, including the existence of clear hazards in the Control Room Shift Manager's office and briefing room. PG&E has a corporate policy for resolving this type of hazard. Because some existing anchors are improperly installed (for example using screws into dry wall in the I&C Maintenance Building), all existing anchors must be considered to be suspect and verified to be appropriately installed. DCPP has stated that they will develop a plant policy in accordance with the corporate policy, but there has been little progress over the past several years. DCPP has now initiated a Notification in the Corrective Action Program, which, if tracked appropriately, should spur on action. The DCISC believes it necessary to initiate this new second recommendation to emphasize its concern.

22nd Annual Report, Volume 1, Section 4.21, Fire Protection

4.21.1 Overview and Previous Activities

Fire protection requirements are contained in NRC's regulations in 10CFR50 Appendix R. Appendix R specifies the minimum requirements for safe shutdown systems and equipment, fire hazards analysis, prevention, detection and mitigation, fire brigades and training, emergency lighting, fire barrier and penetration qualifications, and fire doors. PG&E has committed to implementing these requirements, utilizing interpretations and deviations approved by NRC. The NRC periodically performs inspections of the DCPP fire protection program implementation.

The DCISC has looked into the following aspects of DCPP fire protection in the previous reporting period:

- Unplanned Release of CO^2 from CARDOX
- Fire Protection Update & Walkdown
- NFPA 805 Conversion

The DCISC concluded in the previous reporting period that DCPP corrective actions to prevent recurrence of the unplanned release of carbon dioxide from the Unit 1 CARDOX System appear to be appropriate. PG&E's and the County's public notifications of the Alert that stemmed from this problem contained some wording that could cause the public to be unnecessarily concerned about the potential risks associated with this event. DCPP continues develop its analysis to support conversion from NRC's current deterministic fire protection regulations to the performance-based, risk-informed National Fire Protection Association (NFPA) 805 standard, which has been accepted by NRC. DCPP's Fire Protection System is currently in White (acceptable) health; however, it had been Red and Yellow (both unacceptable, but operable) for a long time, and the DCISC will continue to monitor it closely.

4.21.2 Current Period Activities

The DCISC reviewed the following fire protection items during the reporting period:

- Update on Implementation of National Fire Protection Association (NFPA) Standard 805

Update on Implementation of National Fire Protection Association (NFPA) Standard 805 (Volume II, Exhibit D.2, Section 3.4 and Exhibit D.8, Section 3.4)

The DCISC met with DCPP to review the DCPP transition from NRC regulation under the NRC's long-standing standards and codes governing fire protection to a new NRC regulatory regime whose

technical basis is substantially drawn from the National Fire Protection Association's code NFPA 805, "Performance-based Standard for Fire Protection for Light Water Reactor Electric Generating Plants" (2010). After the NRC changed its regulations to allow such a voluntary conversion to NFPA 805, more than half of the US nuclear plants undertook to make the conversion of their fire-protection programs. DCPP committed to the transition in December 2005, and must submit its request to amend its NRC license by June 2013. Many plants nationwide are undertaking this transition, and DCPP is one of the leading plants in this conversion work in terms of both its schedule and its technical work.

The main difference between the older and the new NRC regulatory approaches is that the NFPA 805 approach is performance-based, allowing the fire protection program to modify its scope and depth of coverage to emphasize those aspects of the program whose contribution to safety is more critical, with less emphasis on certain other aspects. The NRC's decision to allow a plant to comply with the changed regulations is based on the conviction that the new approach will achieve comparable safety, or in many areas improved safety, with a more transparent and reviewable program that is also more efficient.

The transition activity itself is complicated and extensive. It involves performing engineering analyses that include engineering evaluations, a fire PRA, and calculations that model fire growth and spread. Each plant must also evaluate changes to determine whether defense-in-depth and safety margins are maintained. For the resulting fire protection program, each plant must document the results of analyses, ensure the quality of the analyses, and maintain configuration control of the resulting plant design and operation.

A major aspect of the DCPP work to convert to NFPA 805 has been to develop a modern fire probabilistic risk assessment (PRA) that must to be used as an integral part of the plant's demonstration that it will meet the NFPA 805 requirements. That fire PRA, which has been undertaken by the DCPP staff in accordance with the ASME-ANS Combined PRA Methodology Standard (ASME-ANS Ra-Sa, 2009), has been largely completed and is ready for use in this activity. It has also been the subject of an industry peer review of an earlier version of the fire PRA that found it satisfactory.

One requirement for the conversion is that the core-damage frequency from internal fires, as analyzed in the fire PRA, is at or below 5 x 10-5 per year. Some of the modifications being evaluated (see below) are needed to meet this goal.

The current stage of DCPP's work is that the fire PRA is almost complete and will be complete by June 2012. A few technical elements are still not complete, the most important being the understanding and documentation of how operator manual actions ("OMAs") and multiple spurious actuations ("MSAs") contribute to the fire PRA risk profile. The latter are postulated events in which a cable-tray fire causes multiple spurious actuations of equipment due to hot shorts or other electrical problems. There is an industry-wide methodology for addressing OMAs and MSOs that is being implemented for the specific DCPP layout and fire-initiator data base.

The plant is also identifying those postulated fire-initiated accident sequences that contribute most

to the fire PRA bottom line risk numbers (core damage frequency), and examining ways to reduce the frequencies where feasible. (The DCISC believes that this is using the fire PRA in the best way, as a means of identifying issues for further evaluation.) Several candidate changes to the plant are being analyzed, the most important of which are possible upgrades to elements of the fire protection system and to the hot shutdown panel, and changes to the ERFBS (electrical raceway fire barrier system.). Some of the possible changes could be quite expensive, and engineering work is under way to develop the most effective approaches.

Other related work involves helping the plant's LBVP (Licensing Basis Verification Program) in reconstituting the fire part of the plant's licensing basis, and supporting the overall upgrading of the station's PRA. On this latter point, important work is now under way to produce a new seismic PRA, and some of the PRA staff resources devoted to this seismic-PRA task are also working in the fire PRA area, so a competition for these resources is a difficult managerial task, because both programs are of very high priority.

4.21.3 Conclusions and Recommendations

Conclusion:

Conversion to an NRC fire-regulation regime under National Fire Protection Association Standard NFPA 805 is a very extensive and complex activity. Based on this review, DCPP appears to be adequately implementing this program. In fact, DCPP is one of the leading plants nationwide in this conversion work. The DCISC will undertake a further review of this area when the plant has identified the important proposed plant modifications.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.22, Training and Development Programs

4.22.1 Overview and Previous Activities

The focus of this Section is on formal environments created to transfer specific knowledge and skills to individuals within the organization for their individual development. Organizational Development is included in Section 4.14 "Organizational Effectiveness and Development."

The DCISC reviewed the following training topics during the previous reporting period:

- July 2010 DCPP Self-Assessment of Maintenance and Technical Training
- DCPP Presentation on the Results of DCPP's Self-Assessment of Training at DCISC's February 2011 Public Meeting

Though the July 2010 self-assessment of Technical and Engineering Training Programs and the accompanying Negative Comments were based upon comparisons to industry best practices rather than to minimum acceptable performance, the DCISC concluded that the Negative Comments individually and collectively reflect a lack of rigor in some aspects of DCPP Technical and Engineering Training Programs.

4.22.2 Current Period Activities

During the current period (2011-2012) the DCISC reviewed the following topics related to equipment reliability:

- Licensed Operator Continuing Training
- Training Oversight Committee
- Results of Operator Licensing Exams

Licensed Operator Continuing Training (Volume II, Exhibit D.2, Section 3.5)

The DCISC observed licensed operator refresher training on DCPP Extreme Damage Mitigation Guidelines (EDMG) which provide initial guidance for the Emergency Response Organization (ERO) to respond to a beyond-design-basis event such as a fire or explosion that could damage a large area of the plant, resulting in a loss of plant control or monitoring capability. The Guidelines also aid in determining short-term mitigation strategies, which can be utilized by the ERO to stabilize the situation or delay event degradation, while long-term strategies are being developed. EDMGs are implemented only if control of the plant cannot be established from the Control Room or the Hot Shutdown Panel, or if damage has occurred to the Spent Fuel Pool (SFP) that results in leakage greater than the capability of normal make-up to the SFP. The EDMGs include the following:

1. Fire System Management Strategies
2. Internal Spent Fuel Pool Makeup
3. External Spent Fuel Pool Makeup
4. Spent Fuel Pool Cooling via Spray
5. Spent Fuel Pool Leakage Control Strategies
6. Refueling Water Storage Tank Makeup
7. Makeup to Condensate Storage Tank
8. Manually Depressurize the SGs to Minimize RCS Inventory Loss
9. Manual Operations to Control Steam Generator Water Level
10. Use of Fire Engine to Supply Water to Steam Generators
11. Containment Flooding with Portable Pump
12. Vent Containment
13. Start Diesel Generator without DC Power
14. Portable Sprays

The instructor, in accordance with the lesson plan, began the discussion with the earthquake and tsunami damage and corresponding response at the Japanese Fukushima Plant in March 2011. Then, the following guidelines were discussed:

1. Locally start the Emergency Diesel Generator with no DC power
2. Operate the Backup Spent Fuel Cooling System
3. How to manage Firewater System inventory to provide water for plant cooling
4. Providing temporary ventilation for the switchgear rooms
5. Operation of the Diesel-driven Long-Term Cooling Water Pumps

Following the classroom session, the instructor led the students on an In-Plant Walkdown of EDMG Equipment; however, the DCISC did not observe this part of the training. This included hands-on familiarization of the following “how tos”:

1. Operate motor-operated valves using electrical contractors
2. Vent Containment
3. Control SFP leakage
4. Trip the reactor by de-energizing rod control circuits
5. Fill the SFP from the Firewater System both internally and externally
6. Spray the SFP using the fire engine

7. Spray the SFP using the crane boom
8. Suppress a radioactive breach of Containment using fire water
9. Isolate a damaged fire water header
10. Align temporary ventilation to the Vital 48V switchgear room

The Licensed Operator Continuing Training Class and subsequent equipment walkdowns on Extreme Damage Mitigation Guidelines were professionally and effectively conducted. The instructor was knowledgeable and engaging, the class materials were appropriate, and the students were knowledgeable and participated actively.

Training Oversight Committee (Volume II, Exhibit D.2, Section 3.7)

The Training Oversight Committee (TOC) is a site level committee providing senior management oversight, direction, support, and accountability for the implementation and maintenance of all site accredited and non-accredited training programs. The TOC also provides oversight of station performance and direction as to how training may be used to improve station performance. The Site Vice-President chairs the TOC. Two other related committees are the Training Advisory Committee, a department level committee to evaluate program effectiveness, improve performance, and ensure compliance with accreditation objectives. The Curriculum Review Committee is a working level committee that determines the details of a training program to ensure that incumbents receive the training needed to maintain and improve their performance. Each of these committees meets at least quarterly. These committees have charters contained in DCPP Interdepartmental Administrative Procedure TQ2.ID7, "Training Committee Guidance."

The August 10, 2011 TOC meeting met using the following:

1. Safety Discussion
2. Review and Approve Previous TOC Minutes
3. Status Open Action Items
4. Qualification Issues
5. Selected Training Program Review and Challenges
    a. Initial License Operator Training – L091 NRC Exam Status
    b. Licensed Operator Continuing Training – reschedule annual exam to 1/9/2012
    c. Shift Technical Advisor
6. Review Training Accreditation Renewal Activities
7. Discuss Site Training Planning and Issues – Training Building Roof Repairs
8. Review Selected TOC Performance Indicators
    a. Review station performance gaps and training needs

   b. Learning Services Health Card

9. Review Other Topics of Discussion
10. Review New Action Items
11. Conduct a Plus/Delta Critique of the TOC Meeting
12. Schedule Next Meeting
13. Executive Session

The DCISC observed Agenda Items 1 – 5 and found that the TOC performed a detailed, thorough presentation and review of the training programs specified. The discussions went into appropriate detail, and probed for additional specifics in some areas. Attendance was good, and the discussions/questions were focused and penetrating.

DCPP's August 10, 2011 Training Committee Meeting was well planned and executed. Agenda topics were appropriate and timely. The attendee participation was good, and questions were thoughtful.

Results of Operator Licensing Exams (Volume II, Exhibit D.6, Section 3.7)

On August 22, 2011, contrary to station's expectations for a 100‰ pass rate, five of 21 candidates received confirmed failure results for the L091 NRC written exam. Another candidate later failed the simulator exam. The Root Cause of the failures was determined to be "insufficient oversight and execution of the NRC Exam Development process and a remediation program that did not require student mastery of the subject matter."

The license program consisted of an orientation program for Instant Senior Reactor Operator (SRO) candidates (i.e. those pursuing SRO licenses who had not previously held a Reactor Operator (RO) license), pre-fundamentals phase, fundamentals phase, systems phase, operations phase, and pre-license preparation phase.

Throughout the program, student performance was monitored using a "Student Health Card," which included results of weekly tests, quizzes, rolling averages, and other performance-based data such as simulator comments, and progress on qualification cards. A DCPP Candidate Readiness Review Board (CRRB) met at the end of each phase, during the mid-point of the Operations Phase, and following the Audit Exam for determining whether candidates would sit for the NRC written exam.

Student remediation was conducted throughout the program in accordance with a governing station procedure, which required various types of remediation based on both the student's rolling test average and the recent test score. Depending on the student's performance in various areas, the student would be required to have standard, instructor, or full remediation.

The pre-license preparation phase, which is the final preparation phase, is a six-week period followed directly by the license exam. No new material or learning objectives are introduced during

this phase in which final preparations are made for the candidates' readiness for the NRC written exam. A typical week includes daily practice quizzes, simulator practice, Job Performance Measures practice, and self-study. The week typically concludes with an NRC practice exam.

Following the first half of the pre-licensing phase was an audit exam, which was a full practice exam (i.e. written, simulator, and Job Performance Measures) that had been written by the exam development team and administered by industry peers. For class L091, the written portion of the Audit Exam was a modified version of the NRC written exam used for the previous DCPP license class, and all members of class L091 passed.

The NRC Written License Examination, like the above Audit Exam, was developed by exam development team members. This process occurred with the support of the Operations Representative, whose responsibilities included reviewing the NRC Written Exam for operational validity and acting as the point of contact for organizing and supporting the validation of the exam by licensed operators.

DCPP performed an extensive Root Cause Analysis of the factors contributing to the NRC Written Exam failures. Station efforts in this regard included examinations of Root Cause Evaluations of other nuclear power plants in similar situations, a detailed examination of DCPP's candidate selection process (including the professional and educational backgrounds of all of the candidates), and an examination of the potential impacts of the components of nuclear industry Safety Culture on the training process. Two Root Causes (RC) were identified:

- Insufficient oversight and execution of the NRC Written Exam process.
- The Initial License Training remediation program did not require student mastery of the subject matter.

Two additional Contributing Causes (CC) were identified:

- Inaccurate mindset led the Candidate Readiness Review Board to inappropriately assess available data to correctly determine candidate readiness for the NRC Written Exam.
- Previous license class successes resulted in insufficient rigor in the Selection and Familiarization process of instant SRO candidates.

The station developed specific corrective actions to address each of the above Root and Contributing Causes, and the corrective actions appeared to be appropriate.

The station's analysis of the organizational causes of 5 operator candidates out of 21 failing the NRC Written Exam for Licensed Operators was thorough and incisive. Corrective actions appeared to be appropriate. The structure and extent of the training, evaluation, and remediation programs were impressive.

4.22.3 Conclusions and Recommendations

Conclusion:

DCPP's training and development program appeared satisfactory based on observation of a licensed operator training class, observation of a Training Committee meeting, and the root cause analysis and corrective actions for failures of some operators to pass the NRC license exam.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.23, License Renewal

4.23.1 Overview and Previous Activities

The purpose of the section is to describe the DCISC's review of DCPP License Renewal.

The DCISC reviewed the following license renewal items during the previous reporting period 2010 – 2011:

- DCPP License Application for License Renewal
- Potential for Seismic Effects on Pressurized Thermal Shock & Implications for License Renewal

The DCPP License Renewal process continued to progress with NRC's draft Safety Evaluation Report (SER) having been released and the Advisory Committee on Reactor Safeguards (ACRS) Sub-Committee meeting completed. There were several open technical issues with the NRC, but these were being resolved. The NRC admitted four contentions by intervenor San Luis Obispo Mothers for Peace. It appeared that the license extension could be issued in early 2012, if the environmental review were to proceed on-schedule and if the contentions were to be satisfactorily settled in the hearings.

However, on April 10, 2011, PG&E submitted a request to the NRC to defer its issuance of the DCPP license renewal until certain seismic reviews are completed in 2015.

4.23.2 Current Period Activities

As discussed in the last paragraph of the above Section, on April 10, 2011 PG&E submitted a request to the NRC to defer its issuance of the DCPP license renewal until certain seismic reviews are completed in 2015. Therefore, during DCISC's reporting year July 1, 2011 through June 30, 2012, DCISC temporarily suspended its review of DCPP's activities regarding license renewal.

4.23.3 Conclusions and Recommendations

Conclusion:

During this DCISC reporting period, the DCPP License Renewal Project remained on hold for completion in 2015. The DCISC will resume its review upon the restart of Licensing Renewal activities.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.24, Closed Loop Cooling

4.24.1 Overview and Previous Activities

This section of the Annual Report was new beginning with the 2010-2011 reporting period. The purpose of the section is to describe the DCISC's review of the Environmental Protection Agency's proposed new rules on requiring closed loop cooling, i.e., cooling towers, on power plants with once-through cooling. The DCISC reviewed the following during the previous reporting period:

- Impacts of Closed Loop Cooling on DCPP

The DCISC concluded that a possible mandate for plant retrofit to use closed, salt-water cooling towers in the future could have major impacts on plant safety. A range of adverse nuclear safety impacts is known qualitatively at this time and is of concern to the DCISC. The DCISC will continue to take seriously the charge to review the safety impacts of the elimination of Once Through Cooling (OTC) at DCPP and provide analysis and input to the process.

4.24.2 Current Period Activities

During the current period, the DCISC reviewed the following closed loop cooling items:

- Impacts of Closed Loop Cooling on DCPP

EPA Closed Cooling Update (Volume II, Exhibit D.5, Section 3.8)

The DCISC met with the Supervisor of Environmental Programs, for an update on the proposed EPA regulation on power plant cooling, which the State of CA is responsible for regulating. The Federal Clean Water Act Section 316(b) is implemented through National Pollutant Discharge Elimination System (NPDES) permits, issued pursuant to Clean Water Act Section 402, which authorizes the point source discharge of pollutants to navigable waters. The California State Water Resources Control Board (SWRCB) is designated as the state water pollution control agency for all purposes stated in the Clean Water Act. The State Water Board and Regional Water Quality Control Boards are authorized to issue NPDES permits to point source dischargers in CA.

Ongoing development of Federal Clean Water Act Section 316(b) Regulations regarding aquatic organism impingement and entrainment and a California Specific Policy for 316(b) rule implementation**may** require all coastal power plants, including existing plants like DCPP, to reduce marine impingement and entrainment levels utilizing the "best technology available" (BTA), meaning closed–cycle cooling systems (i.e., cooling towers) instead of the current once-through cooling system. DCPP employed a consultant, Enercon, to study the scope, site feasibility, potential plant effects, projected costs, and a conceptual implementation schedule with retrofitting a closed-

cycle cooling system at DCPP. The report was published in March 2009 and was submitted to the applicable CA jurisdictions.

The State Water Board is requesting that Southern California Edison (SCE) and PG&E conduct special studies to investigate alternatives for their nuclear power plants to meet the BTA requirements. The studies are to be conducted by an independent third party selected by the State Water Board, undergo a stakeholder and public review, and be completed by October 1, 2013. The Board will then decide what requirements apply to CA's two nuclear plants.

DCPP and the San Onofre Nuclear Station (SONGS) jointly developed and submitted a proposed work scope to the SWRCB Nuclear Review Committee, which was finalized in November 2011. The work is to be performed by an independent third party organization. The project has gone out to six bidders for proposals with the winning bidder selected by mid-March 2012. The project has three phases:

1. Phase 1: screen potential generic once-through cooling methods using 9 criteria
2. Phase 2: screen the results of Phase 1 for nuclear plants
3. Phase 3: detailed cost and schedule of the results of Phase 2

Final completion is scheduled for 2014 or 2015.

4.23.3 Conclusions and Recommendations

Conclusion:

The review by the State of California of a potential change to the current once through cooling system for DCPP (jointly with the San Onofre Generating Station) is progressing with a request for a technical review proposal submitted to six bidders and a project award date of mid-March 2012. The schedule calls for completion of the study in 2014 or 2015. Because a conversion to closed cooling would have a number of important impacts on plant safety, the DCISC will continue to follow this issue.

Recommendations:

None

22nd Annual Report, Volume 1, Section 4.25, Beyond Design Basis Events

4.25.1 Overview and Previous Activities

This section of the Annual Report is new beginning with the 2010-2011 reporting period. The purpose of the section is to describe the DCISC's review of "Beyond design basis events," such as occurred at the Japanese Fukushima Daiichi nuclear plant in March 2011. The DCISC reviewed the following topics during the previous reporting period:

- DCPP Response to Fukushima Daiichi Event
- Fukushima Daiichi Lessons-Learned/Actions
- DCPP vs. Fukushima Daiichi Designs
- DCPP Severe Accident Management Guidelines and Extreme Damage Management Guidelines

The DCISC concluded during the previous reporting period that as a result of the Japanese Fukushima Nuclear Plant earthquake and tsunami damage, the U.S. Nuclear Regulatory Commission, nuclear industry groups, and individual plants are reviewing plants' capabilities to handle "beyond design basis" events, i.e., events beyond which the plants were originally designed. Because of substantial design margins and differences between U.S. and Japanese designs and operating and emergency response procedures, U.S. plants, especially Pressurized Water Reactors similar to DCPP, have different capabilities than Japan to handle beyond design basis events. PG&E has established a formal team to determine the plant's capabilities and recommend improvements. Based on fact-finding meetings and public meetings on this subject, the DCISC believes that PG&E is taking the appropriate actions. The DCISC will continue to follow the lessons learned and to be learned from the events at the Fukushima Daiichi plant as they relate to DCPP's ability to address "beyond design basis" events

4.25.2 Current Period Activities

During the current period, the DCISC reviewed the following:

- Updates on Actions Stemming from Fukushima
- Auxiliary Feedwater Pump Operation during Station Blackout

Updates on Actions Stemming from Fukushima (Volume II: Exhibits B.6 and B.9; Exhibit D.3, Section 3.11; Exhibit D.5, Section 3.4; and Exhibit D.9, Section 3.8)

The Fukushima nuclear power plant consists of a total of six reactors, with Reactors 1, 2, 3 and 4 having been the most severely affected by the earthquake and resulting tsunami on March 11, 2011,

during which Reactors 1, 2 and 3 experienced core damaging events. Reactors 5 and 6 were less affected as they had a diesel generator and AC power available that allowed them to mitigate the consequences of events. The events can be summarized as follows:

- Magnitude 9 earthquake, larger than the plant's design basis, consisting of multiple faults rupturing essentially simultaneously, and seven tsunamis struck Fukushima.
- Hampered site access.
- Earthquake caused a loss of offsite power, but little plant damage.
- Safety systems initially responded as expected.
- Tsunamis, which struck approximately 45 minutes after the earthquake, caused major damage to local infrastructure and loss of onsite AC and most DC power.
    - Tsunami height was approximately 50 feet, constructive interference of multiple waves.
    - Turbine Buildings, Reactor Buildings, and Intakes inundated with seawater.
    - All but one Emergency Diesel Generator damaged.
    - Safety equipment to maintain core cooling damaged.
    - Plant electrical distribution systems (AC and DC) extensively damaged.

On May 11, 2011, in response to the Fukushima accident in Japan, the NRC issued Bulletin 2011-01, "Mitigating Strategies," to request licensees to provide a comprehensive verification of their compliance with the regulatory requirements of Title 10 of the Code of Federal Regulations (10 CFR) 50.54(hh)(2), Conditions of Operating License. Responses were required to be submitted in 30 days and 60 days.

The DCISC was provided a copy of DCPP's 60 day response, dated July 11, 2011. The response was divided into certain categories that had been predetermined in the NRC's May 11 letter, as follows:

- Periodicity of preventive maintenance activities pertaining to various types of listed portable equipment that would be employed to mitigate the effects of severe accidents which could cause extreme damage to the plant
- Periodicity for testing the above described types of equipment (The testing is required to be performed using non-permanently installed plant equipment.)
- Descriptions of the controls for assuring that the above equipment is available when needed - this included inventory frequencies, special storage controls, and types of equipment
- Descriptions of how configuration and guidance management is assured so that strategies remain feasible. Examples included:
    - Measures taken to evaluate any plant configuration changes for their effect on feasibility of the mitigating strategies
    - Measures taken to validate that the procedures or guidelines developed to support the

strategies can be executed, e.g. drills, exercises, procedure walk-throughs

- Measures taken to ensure procedures remain up-to-date an consistent with the current configuration of the plant
- Description of the training program implemented in support of the mitigating strategies and the manner in which its effectiveness is evaluated

DCPP and the industry are in the process of identifying near term and longer term actions that could be performed to assess station capabilities for mitigating accidents that go beyond the design bases of the plants. Examples of possible short-term actions:

- Evaluate instrumentation and equipment needed to monitor spent fuel level, temperature, and area radiation levels including situations in which existing battery power is depleted
- Evaluate possible additional methods for adding water to the spent fuel pool or other means of cooling spent fuel
- Evaluate additional instrumentation needed for monitoring the condition of the reactor core
- Evaluate the capability of providing fuel to power equipment needed in emergencies
- Perform seismic and flood protection walkdowns to identify any plant specific vulnerabilities and verify adequacy of monitoring and maintenance practices for protective features
- Examine potential effects on multi-unit stations
- Procure additional needed equipment as necessary
- Evaluate existing Emergency Operating Procedures, Severe Accident Management Guidelines, and Extensive Damage Mitigation Guidelines for Possible Appropriate Changes in the aftermath of Fukushima.

Examples of longer-term actions would include implementing the appropriate responses dictated by the above short term actions plus actions dictated by future NRC Rulemaking activities or Orders.

The U.S. nuclear industry has developed a strategy termed “FLEX” which is a sequence of actions the industry believes will provide a strategy to promptly improve margins for significant events such as Fukushima. The term FLEX comes from the fact that the strategy relies on a diverse and flexible mitigation capability to provide backup to permanently installed equipment.

DCPP has been actively involved in the following post-Fukushima activities:

- Response to industry position on 24-hour station blackout
- Development of procedural steps to assure Control Room and Battery Room ventilation adequacy
- Purchase of portable diesel-driven electric generators with a protected fuel supply to augment the existing gasoline-driven portable units

- Development of a procedure to switch Auxiliary Feedwater Pump suction from the Condensate Storage Tank to Firewater
- Development of a power stripping plan to help the station batteries last 8-12 hours
- Development of a plan to reduce Reactor Coolant System (RCS) pressure to prevent/limit Reactor Coolant Pump (RCP) seal leakage
- Procurement of the new design RCP seals, which have reduced leakage following pump shut down
- Methods of providing make-up to the RCS
- Procurement of a Backup Auxiliary Feedwater Pump
- Configuration management and maintenance of beyond-design-basis mitigation equipment (e.g., portable pumps, generators, etc.)
- Augmented support from offsite agencies
- Training/drilling of personnel on Extensive Damage Management Guidelines (EDMGs) and Severe Accident Management Guidelines (SAMGs)
- Consolidation of EDMGs, SAMGs, and B.5.b procedures and equipment
- Development of regional center for inventories of portable emergency equipment and supplies
- Maintenance and testing of fire hose nozzles used for emergency cooling and water make-up
- Assurance of fuel supply for portable equipment and fire trucks, etc.

DCPP is continuing to evaluate NRC, industry, and its own needs for planning to cope with Fukushima-type beyond-design-basis events in a satisfactory way.

DCPP is appropriately assessing and fulfilling its mitigation needs for responding to Fukushima-type events such as enhancements to the ability to cope with extended station blackout and loss of installed safety equipment.

The DCISC met with the Director of the DCPP Fukushima Project and the members of the Project for an update on DCPP's actions on implementing changes in response to the March 2011 Fukushima accident.

DCPP has committed substantial resources to their Fukushima Project. The Project is organized with the following elements:

- Executive Oversight Board – DCPP officers and senior directors
- Integrate emergency procedures and guidelines
    - Severe Accident Management Guidelines (SAMGs)
    - Emergency Operating Procedures (EOPs)

    - Extensive Damage Mitigation Guidelines (EDMGs)

- External Hazards – Seismic
- External Hazards – Flooding
- Mitigating Strategies for Beyond Design Basis Events (BDBEs)
- Spent Fuel Pool Level Instrumentation
- Emergency Preparedness (EP) Communications
- EP Staffing
- Project Support – Licensing & Seismic Analysis
- Quality Assurance

The Project is formulating DCPP's position, responses, and actions in response to the following industry/regulatory requirements:

- U.S. Nuclear Regulatory Commission (NRC) Orders
- Nuclear Energy Institute (NEI) Guidance
- Institute of Nuclear Power Operations (INPO) Guidance

The Project has the following major milestones scheduled:

- 60-Day EP Alternative Response – May 2012
- 90-Day EP Requested Information Response – June 2012
- Mitigation and SFP Orders Initial Status Report – October 2012
- Seismic and Flooding Analysis Approach Plan – January 2013
- Mitigation and SFP Orders Integrated Plan – February 2013

DCPP is working with two industry groups to develop its Fukushima positions and new equipment, procedures, and emergency preparedness strategies. One is the Westinghouse Owners' Group (WOG), which is employing Westinghouse, the DCPP reactor supplier. Westinghouse is developing generic positions for all of its reactors. The other group is the STARS (Strategic Teaming and Resource Sharing) Alliance. STARS is an association of the following seven nuclear plants from seven different companies:

1. Callaway
2. Comanche Peak
3. Diablo Canyon
4. Palo Verde
5. South Texas

6. Wolf Creek
7. San Onofre

The association was formed "to capitalize on the collective abilities of the seven companies to support each other's efforts in achieving and maintaining operational excellence ... "

The DCPP Project Team presented a comprehensive Fukushima matrix with the following entries. The list of safety functions being considered was comprehensive. This exercise was basically a gap analysis identifying the differences existing capability and needed capability and what is needed to close the gap.

- Safety Function (e.g., reactor core cooling & heat removal, SFP level, etc.)
- Method (e.g., natural circulation with auxiliary feedwater to SGs, SFP level, etc.)
- Baseline Capability (e.g., installed equipment, portable equipment, etc.)
- Existing/Purchased e.g., (backup fire truck, none, etc.)
- Additional Needs (e.g., two pumps, Westinghouse SFP level recommendation, etc.)
- Procedure Notes (e.g., flow/temperature limits, acceptance testing, etc.)
- Comments/Notes (e.g., connection needed, etc.)

Each Safety Function will undergo an extensive analysis to assure DCPP has the capability to effectively and safely cope with any of the Fukushima (and related) hazards such as earthquake, tsunami, flooding, and extended loss of electric power. The capability includes equipment, procedures, training, staffing, plant access, emergency preparedness, communications, offsite assistance, testing, preventive maintenance, etc. aspects. The analyses are underway at this time, and, except for existing capabilities, no final results are yet available. The DCISC will follow up periodically to review progress.

The DCPP Fukushima Project organization, plans and accomplishments to-date for responding to regulatory orders and industry guidance are extensive and impressive. The DCISC will follow up periodically to assess DCPP's progress.

Operation of the Turbine Driven Auxiliary Feedwater Pump during Station Blackout Conditions (Volume II, Exhibit D.6, Section 3.6)

The DCISC met with DCPP personnel for a review of the Turbine Driven Auxiliary Feedwater (AFW) Pumps to verify that these pumps could be manually operated and perform their design function under Station Blackout conditions. The Fukushima Plant in Japan experienced these conditions as the accident progressed following the earthquake and tsunami that occurred in March 2011. Under such blackout conditions (which are defined to be the loss of all onsite A/C electrical power), the Turbine Driven Auxiliary Feedwater Pumps would have to be manually operated locally. Also, the operators performing that task would need to be in communication with the licensed operators in the Control Room.

The DCPP station operators who would be responsible for operating those pumps are extremely familiar with the locations of those pumps and their controls, and the operators could be relied upon to access and operate the pumps while communicating with the Control Room personnel via hand held radios. The Motor Operated Feedwater Discharge Valves to each Turbine Driven Auxiliary Feedwater Pump (one pump for each DCPP Operating Unit) are kept in the open position during normal plant operation and they would remain in that position during a loss of all electrical power. Additionally, the Turbine Driven Auxiliary Pump is driven by steam. The Steam Isolation Valve to the turbine is shut during normal plant operation, but it would automatically open upon a loss of A/C electrical power.

As steam from the Steam Generators spins the Turbine Driven Auxiliary Feedwater Pump, water would be pumped from the Condensate Storage Tank back to the Steam Generators, and the water would be turned into steam that would continue to propel the Turbine Driven Pump. The process of continuing to generate steam would serve to cool the reactor coolant passing through the Steam Generator, and this reactor coolant would circulate back through the reactor through natural circulation, thereby cooling the nuclear fuel.

As the water level in the Steam Generator increased, the Control Room Operator would communicate this information to the local operator at the pump. The local station operator would then manually throttle down the pump discharge valve. The turbine driven pump and the controller for the pump would automatically respond to this change. First, the design characteristics of the pump itself would cause the pump to speed up as its flow is reduced. This would then be offset, however, by the operation of its spring loaded and oil controlled governor (a speed control mechanism) that would respond to the pump's increasing speed and would lower the pump's speed to the appropriate level.

The risk is very small of the likelihood that the water level in the Steam Generator could decrease to the point of affecting the station's ability to cool the reactor. The primary caution would be to prevent overfilling the steam generator in order to keep the feedwater from entering the steam lines and overloading that piping.

The designs of the Turbine Driven Auxiliary Feedwater Pump and the Auxiliary Feedwater System, as well as the training and capabilities of station operators, provide assurances that water can be pumped to a steam generator by the Turbine Driven Auxiliary Feedwater Pump in order to achieve cooling of the nuclear fuel during a Station Blackout condition.

Update on the Status of Issues Related to the Events at the Fukushima Dai-ichi Power Plant in Japan following the March 11, 2011 Earthquake and Tsunami; Summary of DCPP Actions Taken to Date and Planned (Volume II, Exhibit B.9)

This presentation focused on aspects of the actions PG&E has taken at DCPP during 2012 as well as on industry and regulatory response, longer term actions, and the scope of the NRC's Near Term Task Force's Tier 1 Recommendations following the March 11, 2011, earthquake and tsunami and the resulting accident at the Fukushima Dai-ichi Nuclear Power Plant (Fukushima) in Japan. The

topography at Fukushima is very flat and the plant was protected by a breakwater structure separating it from the ocean. DCPP is located on a mountainous coastline and has its ocean water intake structure located 45 feet above sea level, while the power block facilities and the emergency diesel generators are located 85 feet above sea level. The spent fuel pools at DCPP, located within the Auxiliary Building behind the containment structures, are 115 feet above sea level with the tops of the spent fuel pools being 140 feet above sea level. The dry cask storage facility is located some distance from the plant at 310 feet above sea level.

The Nuclear Strategic Issues Advisory Committee's (NSIAC) initiative was developed by the chief nuclear officers of all U.S. utilities to assess strategies for beyond design basis events. Many of these events were previously reviewed in context of the NRC's B.5.b order requiring review of security aspects, but the NSIAC initiative goes beyond B.5.b to require review of the ability of a plant to provide additional assurance it is able to respond to multiple unit events, including the availability of portable equipment and instrumentation. The NSIAC initiative employs a "N+1" concept meaning that for two operating units there must be assurance that at least three sets of equipment are available, tested and ready for deployment.

DCPP has accordingly ordered three new communication trailers and two of them will be stationed onsite at the plant, with the other being located in San Luis Obispo as a backup. This will provide DCPP with the full ability to provide a communication command center to communicate both off site and within the power plant.

The NRC's Tier 1 Recommendations issued on March 12, 2012, including the following:

- Seismic Hazard
- Flooding Hazard
- Seismic Walkdowns
- Flooding Walkdowns
- FLEX*
- Spent Fuel Pool Instrumentation
- Emergency Planning Staffing
- Emergency Planning Communication

* FLEX is not an acronym but rather a term used to describe a strategy for a flexible response to providing backup capabilities.

Regarding the NRC recommendation concerning flooding evaluations, DCPP is considered to be a dry site as it has no issues with upstream dams or other significant hazards. The site characterization could change if DCPP were required by the State of California to install cooling towers at the same elevation as the power block. The re-characterization of the DCPP Tsunami Hazard Analysis as a possible component of the flooding evaluation process for the plant; PG&E's Geosciences Department began that process approximately three years ago. DCPP is due to submit

its Flooding Evaluation response to the NRC on or before March 12, 2015.

On the seismic hazard analysis, nuclear power plants located in the central and eastern portion of the U.S. have a different rating assigned by the Senior Seismic Hazard Analysis Committee (SSHAC) which enables them to shorten the timeline for evaluation of their seismic hazards. While central and eastern U.S. plants had a Level 2 rating for regional analysis, the individual western plants must review their sites on a more rigorous Level 3 basis. DCPP will require three years to complete its SSHAC analysis and has partnered with SONGS and the Palo Verde Nuclear Generating Station in Arizona (Palo Verde) in this effort. DCPP is due to submit its response to the Seismic Hazard Evaluation on or before March 12, 2015. The NRC will then review PG&E's submission for acceptability and to determine if the seismic licensing basis for the plant is met and a review process could then follow.

For Seismic Walkdowns, the NRC issued interim staff guidance this year and will issue confirmation in July 2012. DCPP has developed a critical component list in excess of 150 components per unit. The requirements include seismic hazard review of an area within 35 feet of a targeted pieced of equipment and a review, termed "two over one," to assess whether non safety-related equipment could potentially interact with safety-related equipment. Quality of construction and maintenance over the life of the plant will also be assessed. The assessment includes review of potential personnel safety hazards, which could block access to safety-related equipment. The assessment of such hazards was a part of this process as well as a part of the FLEX strategies. A report is due to be completed and provided to the NRC by November 30, 2012.

The need for FLEX equipment, with final interim staff guidance from the NRC is expected to be issued in August 2012. DCPP has taken action to identify the number of B.5.b types of equipment on which redundancy needs to be provided and which needs to be spread throughout the plant. The next step will be to undertake a gap analysis to identify areas where the appropriate type of equipment may not be available to provide both power and fluid sources under beyond design basis conditions. DCPP is working with its STARS partners in this effort and with Westinghouse. These efforts may include design features to be able to put new pumps in place and new power sources, which, while essentially anchored within the plant, are not connected to the plant systems in order that they would be available after a postulated event.

The DCISC observed that despite having essentially no training, inadequate equipment, and poor leadership, the operators at Fukushima performed heroically and managed to bring the reactors under control albeit with a substantive release of radioactive material into the environment, and they observed that never again should plant operators be faced with that situation. The consequences of Fukushima could have been much less if there had been even a moderate amount of adequate preparation for those events. There must be assurance that operators will have sufficient and adequate training and all the resources they need, together with appropriate leadership and decision making. In the U.S. this is delegated much more to the plant level than was the case in Japan where decisions were often delayed and may have resulted in two of the hydrogen explosions at Fukushima given that venting of containments could have, with better and more timely decision making, occurred earlier and thereby prevented the explosions.

Because of its isolated location, DCPP may already have more equipment onsite than other nuclear power plants. DCPP is reviewing FLEX strategies from a global perspective to assess the effect of loss of local infrastructure and the resulting impact on the ability to move equipment within the power plant and also outside within the plant site. During the evacuation of Avila Beach following the tsunami of March 11, 2011, DCPP personnel went to the plant using the north access road which although unpaved is passable for normal vehicles for most of the year.

DCPP will again partner with STARS and be developing a contract with Westinghouse for Westinghouse to provide the appropriate level indication in the spent fuel pools. DCPP is looking to have fixed equipment that is redundant so that results would display at remote locations including the control room to prevent operators from having to enter the Fuel Handling Building to be able to validate spent fuel pool levels. Full implementation of 7.1 Spent Fuel Pool Instrumentation will not be until 2015 or 2016.

The final interim NRC staff guidance Emergency Planning, Communication and Staffing is still being developed and will not be issued until August 2012. DCPP has made its 60-day near term response to this recommendation, and it has been accepted by the NRC. Under the Emergency Planning Rule, a separate rule, DCPP is required to have alternate interim facilities for its Technical Support Center (TSC) and Operational Support Center (OSC) functions.

PG&E made the decision to be able to establish a dedicated team with appropriate resources in place to adequately address the above Fukushima matters. The team has a good understanding of what is required under Tier 1 and is actively involved in monitoring what the requirements for Tier 2 and Tier 3 may be as they are developed.

4.25.3 Conclusions and Recommendations

Conclusion:

The DCPP Fukushima Project organization, plans and accomplishments to-date for responding to regulatory orders and industry guidance are extensive and impressive. The DCISC will follow up periodically to assess DCPP's progress.

Recommendations:

None

22nd Annual Report, Volume 1, Exhibit 8.1, Telephone Calls and E-mails Received by the DCISC

Telephone calls and e-mails have been received by the DCISC Legal Counsel's office with questions, concerns and requests for information. During this reporting period, 100 calls and 13 e-mails were received from individuals. The breakdown of these calls and e-mails is as follows:

Number of Calls	Number of E-mails	Reason for Contact
3	9	DCPP issues or nuclear information requests
100	12	Other (administrative, document requests, media, tour requests and miscellaneous)

When requested, answers, responses or documents were provided either during the call, a return call, or by a letter, email or documents from the Committee. The DCISC Telephone/ Correspondence Log is included as Exhibit G.1 and correspondence with the public is included with Exhibit G.2.

The Committee maintains a California toll-free telephone number (800-439-4688), an E-mail address (dcsafety@dcisc.org) and a site on the worldwide web at www.dcisc.org for receiving questions, concerns or information to and from the public. The DCISC has developed an information pamphlet describing the Committee and its function. The Pamphlet is provided to attendees at DCISC public meetings and plant tours.

22nd Annual Report, Volume 1, Exhibit 8.2, DCISC Internet – Worldwide Web Page Activity

The DCISC maintains a frequently updated web page on the worldwide web. The DCISC established its web page and presence on the internet to provide a convenient and accessible forum for interested members of the public to learn about the Committee, its history, background and role in safety oversight at DCPP; its current members and consultants; Volumes I and II of the Committee's latest Annual Report; previous annual reports; the current schedule of future DCISC public meetings; and the agenda for the Committee's next public meeting, which is posted on the website prior to the meeting.

The web page also provides visitors with an opportunity to download or print pages from the DCISC web site and offers a convenient email link to permit interested persons to communicate directly with the Committee and to receive an expedited response to questions and concerns. When the Annual Report is finalized, the entire report is published on the website and is also published and distributed to local public libraries and interested persons on compact disk.

The DCISC's site on the worldwide web has been further developed during this report period with the addition of a video concerning the replacement of Diablo Canyon's steam generators and information on how to sign up for the Committee tours of Diablo Canyon and continues to provide a convenient and accessible forum for interested members of the public. The Committee continues to post the agendas for all its public meetings on the website, as well as general information about the Committee, its members and consultants. A list of useful links is included to topics of interest to the general public, to PG&E's website for information concerning Diablo Canyon Power Plant, to the NRC and to the International Atomic Energy Agency for agency and industry-related information and to an indexed webcast of streaming video of its past public meetings through electronic archives and to the public meetings in real time when they are in session. During the DCISC's October 5–6, 2011 public meeting, the live-streaming video of the meetings was accessed 96 times. The live streaming video feed of the DCISC's February 8–9, 2012 public meeting was accessed 76 times. During the DCISC's public meeting on June 19–20, 2012, the live stream video was accessed 59 times. These data represent the total number of times visitors entered the site including those visitors who may have come and gone from the site more than once. The website also provides access to a convenient glossary of nuclear power terms and a list of acronyms in common use in the industry. Both Volumes of this Annual Report are available on the website in fully-linked php-text format, as is an animated depiction of the operation of a pressurized water nuclear reactor such as those in operation at Diablo Canyon.

The most meaningful statistics provided for July 1, 2011 through June 30, 2012 were the actual "visits", the actual, unique visitor numbers, regardless of how many pages that visitor actually viewed on the DCISC's website during the period of this report included the following:

Month	Visits
July 2011	883
August 2011	829
September 2011	791
October 2011	873
November 2011	844
December 2011	810
January 2012	739
February 2012	569
March 2012	516
April 2012	517
May 2012	467
June 2012	533

Among the most common "key phrases" typed into internet search engines, such as MS Internet Explorer, Firefox, Google Chrome, Safari, Mozilla, Opera and Netscape were: "dcisc", "Diablo canyon independent safety committee", "iaea fuel storage holtec", "pressurized water reactor how it works", "pa-psc-0578", "boric acid corrosion control program" and "extensive damage mitigation guideline".

The most visited pages were:

/index.php
/references/alphabet/n.php
/public-tour.php
Animation-reactor.php
/agendas/21-b8-2011-06.php
/about/general-information.php
/contact.php
/about/committee/member-lam/php
/about/committee/member-peterson.php
/about/committee/member-budnitz.php
/search.php
/about/history.php
/about/committee-appointmnets.php
/annual-report-10-2008-2009/19th-preface.php
/annual-report-19-2008-2009/18th-Volume 1/19th-4-18-plant-securit
/annual-report-18-2007-2008/18th-preface.php
/annual-report-20-2009-2010/20th-volume2/20thexhibit-j-gloosary
/pts-public-release.php
/annual-report-20-2009-2010/20th-preface.php

/public-meeting.php

22nd Annual Report, Volume 1, Exhibit 8.3, Comments Received at DCISC public meetings

As is its pattern, during this period (July 1, 2011 – June 30, 2012), the Diablo Canyon Independent Safety Committee (DCISC) held three public meetings in the vicinity of Diablo Canyon Power Plant (DCPP). The meetings included numerous informational, programmatic and plant status presentations by PG&E and by Committee Consultants and questions and comments from the public. The Committee always holds an evening session on the first of the two days of the public meeting for the convenience of the public. During each public meeting in this report period the Committee arranged for presentations by PG&E on the events at the Fukushima Daiichi Nuclear Power Plant in Japan following the 9.0 magnitude earthquake at tsunami on March 11, 2011. The meetings are webcast in real time, videotaped, archived and cablecast afterwards on the local public access television station and by indexed webcast.

The DCISC encourages members of the public to attend and speak at its three public meetings. Times are set aside throughout the meetings for public questions and comments. During the reporting period July 1, 2011 – June 30, 2012, seventeen different individuals spoke a total of fifty-two times. Four individuals appeared and spoke at the October 5–6, 2011, meeting; nine individuals appeared and spoke at the February 8–9, 2012, meeting; and eight individuals appeared and spoke at the June 19–20, 2012 meeting. Four persons addressed the Committee during more than one of its public meetings.

These comments are summarized in Volume II, Exhibit G.3 and the comments and questions, together with the Committee's and PG&E's responses, are contained in the meeting minutes included in Volume II, Exhibits B.3, B.6 and B.9.

22nd Annual Report, Volume 1, Exhibit 8.4, DCISC Public Tours of DCPP

The DCISC holds public tours in conjunction with its three public meetings each year. As part of the DCISC outreach program, each tour now provides an opportunity for interested persons to see the plant and interact with DCISC Members and Consultants. These tours are described below.

8.4.1 October 5, 2011 Public Tour

The members of the DCISC accompanied by 43 members of the public, a PG&E tour guide and the Committee's consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and a short presentation on the background and role of the Committee. A PG&E representative provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security. PG&E discussed how the plant's cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

The bus first drove by the site of the ISFSI for a description of its purpose and features and then stopped at the plant overlook site and the group received a briefing from PG&E representatives on the various external features and buildings. The members of the public were then divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Control Room Simulator Facility, a full scale mock-up of the Unit-1 (U-1) Control Room; and observed the plant's Intake and Discharge structures where DCPP pulls in and expels cooling water from and into the Pacific Ocean and then visited the lobby of the Security Building for a demonstration of screening of personnel entering the protected areas of the plant.

8.4.2 February 8, 2012 Public Tour

The members of the DCISC accompanied by 37 members of the public, a PG&E tour guide and the Committee's consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and received a short presentation on the background of the DCISC's Members, its Technical Consultants and Legal Counsel and the role of the Committee. PG&E representatives provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security and an opportunity was provided to ask questions. PG&E discussed how the plant's cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

The bus entered the plant site through the Avila Gate and the group received a briefing from PG&E representatives on the various external features and buildings. The group then arrived at the Nuclear Power Generation Training Building. The members of the public were divided into two

groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Control Room Simulator Facility, a full scale mockup of the Unit-1 (U-1) control room, and the lobby of the Security Building, for a demonstration of screening of personnel entering the protected areas of the plant. There was also an opportunity afforded to both groups to view the Intake and Outfall structures where the plant pulls in and discharges cooling water from and to the Pacific Ocean. The bus then drove by plant overlook and the site of the Independent Spent Fuel Storage Installation (ISFSI) before departing DCPP and returning to the Energy Education Center.

8.4.3 June 20, 2012 Public Tour

The members of the DCISC accompanied by 29 members of the public, a PG&E tour guide and the Committee's consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and a short presentation on the background and role of the Committee. A PG&E representative provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security. PG&E discussed how the plant's cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

After entering the plant through the Avila Gate, the members of the public were divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Control Room Simulator Facility, a full scale mock-up of the Unit-1 (U-1) Control Room; and observed the plant's Intake and Discharge structures where DCPP pulls in and expels cooling water from and into the Pacific Ocean and then visited the lobby of the Security Building for a demonstration of screening of personnel entering the protected areas of the plant. The bus then drove by the site of the ISFSI for a description of its purpose and features and then stopped at the plant overlook site and the group receive

22nd Annual Report, Volume 1, Exhibit 8.5, DCISC Evaluation

The DCISC has been successful in implementing its Public Outreach Program as demonstrated by the descriptions above. The public tours of DCPP have continued to be popular with members of the public within the local area. The website, e-mail and telephone channels are used frequently as indicated above. The public meetings now usually have from four to ten people attending and speaking, usually including representatives of the San Luis Obispo Mothers for Peace.

22nd Annual Report, Volume 2, Exhibit B1, Notice of Public Meeting on October 5, 2011

The Diablo Canyon Independent Safety Committee Notice of Plant Tour and Public Meeting

NOTICE IS HEREBY GIVEN that on October 5, 2011, at 8:00 a.m., the members of the Diablo Canyon Independent Safety Committee ("DCISC") will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant ("DCPP"). This tour, which will take approximately three and one-half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission ("NRC").

In the alternative if security considerations preclude the public tour on October 5th, the DCISC may convene an informal power point presentation and question and answer session at the Pacific Gas and Electric Company ("PG&E") Energy Education Center, 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY GIVEN that on October 5–6, 2011, at the Embassy Suites, located at 333 Madonna Road, San Luis Obispo, California, a public meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Afternoon Session (10/05/2011) – 1:30 p.m.** Opening comments and remarks; receive public comments and communications to the Committee; approve minutes of June 21–22, 2011, public meeting; discussion of administrative matters, including review and approval of the DCISC 21st Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations for the period July 1, 2010 - June 30, 2011; an update on financial matters and activities during 2011 and 2012; review of the Open Items List; reports by Committee members, consultants and legal counsel; receive, approve and authorize transmittal of fact-finding reports to PG&E; and review of Committee correspondence and documents received.
2. **Evening Session (10/05/2011) – 5:15 p.m.** Committee Member Comments; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including review of plant events, operational status and station performance indicators; recent NRC Reportable Events, Notices of Violation, and NRC Performance Indicators; and a report on the status of the Independent Spent Fuel Storage Installation and the future of spent fuel at DCPP.
3. **Morning Session (10/06/2011) – 8:00 a.m.** Comments by Committee members; receive public

comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including an update on the lessons learned by DCPP and the industry from the events following the March 11, 2011, earthquake and tsunami at the Fukushima Daiichi Nuclear Plant in Japan and resulting actions; an update on seismic issues; and an overview of the DCPP electrical systems.

4. **Afternoon Session (11/18/2010) – 12:45 p.m.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including an overview of Containment sump issues; and an overview of Nuclear Safety Culture at DCPP and in the nuclear industry; wrap-up discussion by Committee members, and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review at the Reference Department of the Cal Poly Library in San Luis Obispo.

For further information regarding the Public Meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda on line by visiting the Committee's website at www.dcisc.org.

Dated: September 25, 2011.

22nd Annual Report, Volume 2, Exhibit B2, DCISC Agenda for the October 5–6, 2011 Public Meeting

Committee Members:

Robert J. Budnitz

Peter Lam

Per F. Peterson

Wednesday and Thursday, October 5–6, 2011

Embassy Suites, San Luis Obispo Ballroom-North, 333 Madonna Road, San Luis Obispo, California

Public Tour – 10/05/2011 – 8:00 a.m.

Public Tour of Diablo Canyon Nuclear Power Plant to assemble at the PG&E Community Center *(Prior registration and security clearance required of all public participants.)*

The Members of the Independent Safety Committee, accompanied by members of the public, will conduct a tour of the Plant.

Following the tour, or in the alternative if the tour must be cancelled for any reason, the Committee may convene an informal question and answer session at the PG&E Energy Education Center (formerly the PG&E Community Center), 6588 Ontario Road, San Luis Obispo.

Afternoon Session – 10/05/2011 – 1:30 p.m.

I. Call To Order – Roll Call

II. Introductions

III. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action. (Please Note: (a) The Committee may consider at any time requests to change the order of a listed agenda item; (b) Information distributed to the Committee at a Public Meeting becomes part of the public record of the DCISC. A copy of*

written material, pictures, etc. must be provided to the Committee's Legal Counsel for this purpose.)

IV. Consent Agenda

Routine items which the Committee can approve with a single motion and vote. A member may request that any item be placed on the regular agenda for separate consideration.

A. Minutes of June 21–22, 2011 Public Meeting: Approve

V. Action Items

A. DCISC 21st Annual Report on Safety of Diablo Canyon Operations; July 1, 2010 – June 30, 2011 – Discussion/Approval

B. Update on Financial Matters and Committee Activities during 2011–2012 – Discussion/Action

C. Discussion of Open Items List – Discussion/Action

VI. Committee Member Reports and Discussion

A. Public Outreach, Site Visits and Other Committee Activities; Scheduling and Confirmation of Future Fact-findings and Public Meetings

B. Documents Provided to the Committee

VII. Staff – Consultant Reports and Receive, Approve and Authorize Transmittal of Fact-finding Reports to PG&E.

A. Ferman Wardell:
Fact-finding Topics; Reports on and Approval of August 9–11, 2011 Fact Finding Report

B. David C. Linnen:
Fact-finding Topics; Report on and Approval of July 12–13 and September 7–8, 2011 Fact Finding Reports

C. Robert Rathie:
Administrative, Regulatory and Legal Matters

VIII. Correspondence

IX. Adjourn Afternoon Meeting

Evening Session – 10/05/2011 – 5:15 p.m.

X. Reconvene For Evening Meeting

XI. Committee Member Comments

XII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XIII. Information Items Before the Committee (Cont'd.)

A. Informational Presentations Requested by the Committee of PG&E Representatives

1. Update on Plant Events, Operational Status and Performance Indicators
2. Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators
3. Status Report on the Independent Spent Fuel Storage Installation and the Future of Spent Fuel at DCPP

XIV. Adjourn Evening Meeting

Morning Session – 10/06/2011 – 8:00 a.m.

XV. Reconvene for Morning Meeting

XVI. Committee Member Comments

XVII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XVIII. Information Items Before the Committee (Cont'd.)

4. Update on Lessons Learned from the Events at the Fukushima Daiichi Nuclear Power Plant in Japan Following the March 11, 2011, Earthquake & Tsunami
5. Update on Seismic Issues
6. Overview of the DCPP Electrical Systems

XIX. Adjourn Morning Meeting

Afternoon Session – 10/06/2011 – 12:45 p.m.

XX. Reconvene for Afternoon Meeting

XXI. Committee Member Comments

XXII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XXIII. Information Items Before the Committee (Cont'd.)

7. Overview of the Containment Sump
8. Overview of Nuclear Safety Culture

XXIV. Concluding Remarks and Discussion By Committee Members of Future DCISC Activities

A. Future Actions by the Committee
B. Further Information to Obtain/Review
C. Scheduling of Future Site Visits, Study Sessions and Meetings

XXV. Adjournment of Sixty-fourth Public Meeting

The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. Devices for attendees who may be hearing impaired are available.

22nd Annual Report, Volume 2, Exhibit B3, Minutes of the Diablo Canyon Independent Safety Committee October 5–6, 2011 Public Meeting(Approved at the February 8, 2012, Public Meeting)

Wednesday & Thursday, October 5–6, 201, San Luis Obispo, California

Notice of Meeting

A legal notice of plant tour and public meeting and several display advertisements were published in local newspapers and mailed to the media and those persons on the Committee's service list. A copy of the meeting agenda was also posted on the Committee's website at www.dcisc.org.

Public Tour of Diablo Canyon Nuclear Power Plant

The members of the DCISC accompanied by 43 members of the public, a PG&E tour guide and the Committee's consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The members of the public responded to the DCISC advertisement concerning the public tour placed in a local area newspaper and on the DCISC's website. The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and a short presentation on the background and role of the Committee. PG&E representative Ms. Ellie Ripley provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security. An opportunity was provided to ask questions. PG&E discussed how the plant's cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

The bus first drove by the site of the ISFSI for a description of its purpose and features and then stopped at the plant overlook site and the group received a briefing from PG&E representatives on the various external features and buildings. The members of the public were then divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Control Room Simulator Facility, a full scale mock-up of the Unit-1 (U-1) Control Room; and observed the plant's Intake and Discharge structures where DCPP pulls in and expels cooling water from and into the Pacific Ocean and then visited the lobby of the Security Building for a demonstration of screening of personnel entering the protected areas of the plant.

Questions and Comments From the Public

During the ride back and at the Energy Education Center the group received information on radiation protection and members of the public took the opportunity to ask questions of Committee members and consultants.

Conclude Public Tour

Agenda

I. Call To Order – Roll Call

The October 5, 2011, public meeting of the Diablo Canyon Independent Safety Committee (DCISC) was called to order by Committee Chair, Dr. Peter Lam, at 1:30 p.m. at the Embassy Suites Conference Facility in San Luis Obispo, California. Dr. Lam briefly reviewed the background, establishment and charter of the DCISC and introduced and briefly reviewed the professional background and appointment by the respective state agencies of each member of the Committee.

Roll call was taken.

Present:

Committee Member Robert J. Budnitz

Committee Member Peter Lam

Committee Member Per F. Peterson

Absent:

None

II. Introductions

Dr. Lam introduced the Committee's technical consultants Mr. David C. Linnen, Mr. R. Ferman Wardell and DCISC Assistant Legal Counsel Robert W. Rathie. Dr. Lam introduced Mr. Peter Bedesem of Pacific Gas and Electric Company (PG&E) who serves as the PG&E liaison to the Committee.

III. Public Comments and Communications

The Chair reviewed the procedures and advice from the agenda for the meeting concerning receipt of comments from members of the public wishing to address remarks to the Committee. The Chair advised time would be set aside for members of the public to comment on those matters listed on the agenda at the time the matter was considered by the Committee and inquired whether there were any members of the public present who wished to address remarks to the Committee on items not appearing on the agenda for the public meeting.

Ms. Sherry Lewis stated she resides in the local area and wished again to register her belief that nuclear power is far too dangerous to be used. She stated her opinion that the waste produced by nuclear power operations is so dangerous for so long that it is not worth any gain from the production of electric power by nuclear reactors and all such reactors should be closed down and replaced by renewable energy sources. The Chair thanked Ms. Lewis for her comments.

IV. Consent Agenda

The only item on the Consent Agenda was approval of the Minutes of the Committee's June 21–22, 2011, public meeting held in Avila Beach.

Items were reviewed for follow up action, direction was provided to review the transcript of the June 2011 public meeting and clarification was provided to Assistant Legal Counsel concerning the accuracy of certain references in the draft Minutes provided in the agenda packet for this meeting, and editorial and substantive changes were made to the draft of the June 2011 Minutes.

Minutes of the Committee's public meetings become part of its Annual Reports on Safety of Diablo Canyon Nuclear Power Plant Operations (Annual Report). On a motion by Dr. Budnitz, seconded by Dr. Peterson the Minutes of the Committee's June 2011 public meeting were approved as amended, subject to inclusion of the changes provided to its Assistant Legal Counsel.

V. Action Items

A. DCISC 21st Annual Report on Safety of Diablo Canyon Operations; July 1, 2010 – June 30, 2011. The Chair stated the Annual Report summarizes the Committee's work for the year and is provided to each of the members' appointing entities, the California Public Utilities Commission (CPUC), PG&E and others. Dr. Lam requested Consultant Wardell lead the review of the Committee's 21st Annual Report. Mr. Wardell stated that, two drafts of the Annual Report having been provided to the Members and the other consultants and comments received, the Executive Summary of the report represented the culmination of all comments and he suggested it be used as the basis for Committee approval of the 21st Annual Report.

Dr. Peterson reviewed the Committee's discussion in Section 4.15 of the 21st Annual Report of an engineering decision related to having changed the positional setting of a limit switch on a valve and stated in his view PG&E did not exercise good engineering judgment. Even though the safety significance of the change was small, as a general principle Dr. Peterson observed it is better not to make modifications to the plant that reduce safety margin in order to comply with technical specification requirements. **The members discussed and determined to ensure a fact-finding visit with the DCPP engineers involved in making the decision regarding modifying the limit switch setting is scheduled to further review this issue.**

Dr. Budnitz complimented Mr. Wardell for Mr. Wardell's excellent work in preparing the Annual Report and incorporating comments from the other members and consultants. On a motion by Dr. Budnitz, seconded by Dr. Peterson, the DCISC 21st Annual Report on Safety of Diablo Canyon Operations was unanimously approved. PG&E will have 45 days to respond to the Committee's report and that response will become a part of the final report. The report will be provided to the Governor, the Energy Commission, the California Attorney General, the CPUC and to local libraries in the San Luis Obispo area, as well as available in its entirety on the Committee's website.

B. **Update on Financial Matters and Committee Activities**. Mr. Rathie reported financial statements from the Committee's accountant were provided. He stated that with the balance of funds from the receipt of three of a total of four payments of the 2011 grant funds received from PG&E and provided by its ratepayers, the Committee finances appeared adequate to

complete its scheduled work in 2011. Mr. Rathie directed the members' attention to the pages in the agenda packet which list the Committee's past fact-findings and public meetings and the schedule for future fact-findings and public meetings as well as significant dates for DCPP operational events and meetings of its internal safety organizations.

C. **Discussion of Issues on Open Items List**. Dr. Lam commented that the Open Items List included in the agenda packet for this meeting demonstrates the depth and breadth of the Committee's activities as well as documenting current and previous focus areas and he urged the Committee to examine the speed of resolution of some of the open items. He then requested Consultant Wardell lead a review of items on the Open Items List, used by the Committee to track and follow up on issues, concerns and information identified for subsequent action during fact-finding or public meetings. Mr. Wardell commented that there are certain items on the list which are programmatic in nature and are reviewed periodically and these do tend to stay open for some period of time or remain on the Open Items List permanently, while others are topical requests often generated at public meetings which should not stay on the list very long. Dr. Budnitz and Peterson commented on the need to periodically review and evaluate the frequency of review of continuing items on the Open Items List in order to prioritize and conserve the Committee's resources to focus on those items and areas which are most risk significant. Items discussed or concerning which action was taken at the meeting included the following:

Item	Re:	Action Taken
CO-9	Reactivity Management	Change next review to 1Q13
CO-11	Operator Concerns/Issues	Change next review to 4Q12M
EN-20	Plant Health Committee Meetings	Each member & consultant to attend as FF schedules allow
HS-5	Nuclear Safety Culture	Change next review to 3-4Q12
PI-2	CAP Implementation Issues	Delete as duplicative
RA-5	PRA Program Review	Move to 1Q12 FF w/RJB
RA-6	Shift from ORAM to Safety Monitor	Review after next outage
SE-38	CFCU Modifications	Delete
SC-3	Long-term Seismic Program	Change next review to 3Q12 RJB
SC-4	Tsunami Hazard Analysis	Change next review to 3Q12 RJB
SC-7	Shoreline Fault	Change next review to 3-4Q12
O-8	Review Staffing	Delete
2/10PM	Survey Results Rate-of-Return	Delete
11/10 PM-2	Review Specific Performance Areas	Close
11/10 PM-7	Review Operations Focus Index Metric	Close
10/11	Learning Services Review of	Close

PM-8	Training	
2/11 PM-3	Follow up on Safety-Security Interface	Close
2/11 PM-4	Review EDG Margins re Added Equipment	Close
2/11 PM-8	Precautionary Evacuation/Emergency Drill	Close
2/11 PM-11	Review Changes to MIDAS	Close
2/11 PM-12	Review PRA Staffing	Close
6/11 PM-4	Engineering Evaluation Rigor Self Assess.	Close
6/11 PM-6	Status of Fire Protection System	Close
6/11 PM-9	Lighting System Battery Backup	Close
6/11 PM-10	Catalytic Converters Capacity	Close

Ms. Sherry Lewis was recognized. Ms. Lewis stated her belief that seismic thrust faulting exists within California in the vicinity of DCPP. Dr. Budnitz replied that seismic studies, completed within the last year, of the California coastline year have concluded the largest tsunami which might be expected would be well below DCPP's elevation of 85 feet above sea level, however he stated the studies concluded there is more detailed work to be done which will include a three-dimensional (3D) assessment and measurement of the potential for undersea landslides which could be caused by an earthquake and as a result produce a tsunami. **Dr. Budnitz offered to provide the uniform resource locations (urls) of the reports of the studies completed to date and the PG&E report to Ms. Lewis.**

A short break followed.

VI. Committee Member Reports and Discussion

A. **Public Outreach, Site Visits and Other Committee Activities**: Dr. Peterson commented that the morning public tour of DCPP went very well and although there was considerable rain during the morning, the 43 public participants enjoyed relatively dry conditions at the plant and there were very few no-shows.

The Committee then reviewed, revised and confirmed public meetings and fact finding visits to DCPP for the following dates: public meetings during 2012 are now scheduled for February 8–9, June 19–20 (changed from June 20–21) and October 10–11. Fact finding visits are now scheduled in 2011 for November 15–16 (PL/RFW) and December 6–7 (PFP/RFW); and in 2012

for January 10–11 or 11–12 (PL/DCL); March 13–14 (PL/RFW); April 3–4 (RJB/DCL); May 22–23 (PFP/RFW); July 18–19 (PL/DCL); August 7–8 (PFP/DCL); September 5–6 (RJB/RFW); November 7–8 (RJB/DCL) and December 5–6 (PFP/RFW); and in 2013 for January 16–17 (PL/RFW).

B. **Documents Provided to the Committee**: Dr. Lam directed the Committee's attention to the long list of documents received electronically on a monthly basis by the Committee since its last public meeting in June 2011. A copy of the list was included with the public agenda packet for this meeting.

VII. Staff-Consultant Reports and Receive, Approve and Authorize Transmittal of Fact Finding Reports To PG&E

The Chair requested Consultant Wardell to report on the August 9–11, 2011 fact-finding visit to DCPP. Mr. Wardell reviewed the topics discussed with PG&E during the visit with Dr. Budnitz including:

- Tsunami Hazard and Seismic Hazard – Dr. Budnitz reported the DCISC representatives met at the PG&E Geosciences Department in San Francisco to review the tsunami hazard analysis work which commenced three years ago, before the events in March 2011 at the Fukushima Daiichi nuclear plant in Japan (Fukushima). PG&E completed a report in 2010 which concluded there was no reason to challenge the size of the tsunami believed to be capable of arising from distant seismic events such as those from Chile, Japan or Alaska but the original tsunami hazard analysis did not include near shore seismic events which could produce a slump in the subsurface area and a resulting tsunami. **PG&E has now developed a plan to conduct measurements of the subsurface areas near the shoreline from Port San Luis to Morro Bay to identify anomalies which could challenge the DCPP design basis. The new analysis is expected to identify not only what behavior may be expected but also how much uncertainty exists and whether that degree of uncertainty is acceptable. The DCISC will continue to follow the results of the studies.**

  The DCISC team also reviewed information related to the identification and study of the Shoreline Fault, identified by the U.S. Geological Survey as existing within approximately one kilometer of DCPP, closer than the previously known Hosgri Fault. **Preliminary analysis of the Shoreline Fault has shown that it could not produce motion greater that than produced by an event on the Hosgri Fault, for which DCPP is designed. Dr. Budnitz stated this is an interim conclusion and further studies, including taking three-dimensional measurements, are being undertaken which the Committee will closely follow.**

- Plant Health Committee – Mr. Wardell reported the Plant Health Committee continually reviews and assesses the health of the plant's systems and programs. Systems and major programs at DCPP are rated green, white, yellow or red with green and white being indicative of an acceptable condition and yellow and red a not acceptable condition. All rated systems remain capable of performing their function. For unacceptable systems or programs action plans are developed and the Plant Health Committee focuses mainly on yellow and red systems and programs. During the meeting attended by the DCISC representatives the Steam

Generator Blowdown and Spent Fuel Cooling Systems, both in green status, were reviewed. Currently DCPP has no systems or programs rated as red. There are a total of eight programs or systems currently rated yellow, four for each unit. Mr. Wardell reported the DCISC team found the Plant Health Committee and its program to be effective.

- Santa Barbara County Emergency Planning – DCISC representatives briefed the Santa Barbara County Emergency Planning Director and explained how the DCISC provides an independent review source for assessing DCPP's capabilities to monitor a radioactive plume for emergency response planning purposes and for evaluation of seismic studies impacting DCPP.

- NFPA 805 Implementation Status – Dr. Budnitz reported DCPP is in the process of a voluntary transition from the Nuclear Regulatory Commission's (NRC) fire protection regulations to those of the National Fire Protection Association (NFPA) Standard 805 regulations which employ performance-based standards. This transition required a difficult probabilistic analysis of fire risk at the plant and use of that analysis to demonstrate the plant had certain capabilities and is in compliance with the NFPA Standard 805 regulations. Dr. Budnitz described the risk analysis work undertaken by DCPP as first class and commented the actual transition from NRC to NFPA regulations will not take place for about another 18 months.

- Licensed Operator Training on Extreme Damage Mitigation Guidelines (EDMG) – Mr. Wardell reported on the team's observation of licensed operator continued training on the EDMGs which are designed to protect a plant from, amongst other things, terrorist-type events. He stated that following the classroom presentation the instructors and the operators went into the plant to the locations of the portable equipment to review how that equipment would be assembled and used in an emergency. Dr. Peterson commented these efforts enhance defense-in-depth and lessons learned at Fukushima have reinforced the importance of the availability of portable equipment and for innovative strategies concerning coping with events which may be outside a plant's design basis. Mr. Wardell stated the DCISC representatives found the training was done professionally and very effectively.

- Equipment Reliability – Mr. Wardell reported the Equipment Reliability Program health is currently rated as white, acceptable status. DCPP now projects that the program will be green by the third quarter of 2012. The Equipment Reliability Program is an aggressive program and equipment at DCPP is reliable.

- Training Oversight Committee – this was the DCISC's initial review of this committee. The DCISC representatives observed a meeting to discuss initial operator training, licensed operator continuing training and shift technical advisor training. The Curriculum Review Committee reviews various training program curricula. The DCISC found the Committee to be doing a good job.

- 2010 Radiological Environmental Monitoring Report – this is a report provided to the NRC concerning the effect of DCPP's operation compared to a baseline established prior to the plant beginning nuclear power operations. The most recent report showed no unusual trends when compared to pre operational data, no trends from past years and no significant radiological impact on the surrounding environment.

- Second Quarter 2011 Quality Verification (QV) Site Status Report – the QV organization includes the Quality Assurance (QA) department and this department reviews and audits station programs and reports independently to PG&E's Chief Nuclear Officer in San Francisco. Mr. Wardell identified QV's current top three concerns as the Maintenance organization's untimely and undocumented responses to QV audits; human performance during the 16th refueling outage for Unit-2 (2R16); and in Security organization training. Mr. Wardell stated QV is doing a good job identifying problems and actions to resolve them and following through on the effectiveness of those actions.

- Premier Survey – this is a corporate-wide survey, which had a 57‰ participation rate at DCPP, concerning employees satisfaction with their jobs, work, management, etc., to enhance company-wide communications between managers, supervisors and employees. DCPP measures the response on its Employee Engagement Index which showed a 6‰ improvement since the last Premier Survey conducted in 2009.

- Dr. Budnitz met with Vice President of Engineering Services at DCPP, Mr. Ken Peters, to provide a report on the DCISC's team's observations.

- Operator "No Solo" Status – Mr. Wardell reported a "no solo" status indicates an operator is not allowed to work alone due to health reasons generally associated with cardiovascular issues. Since 2001 there has been a drop in the number of DCPP operators designated as being in "no solo" status and only six operators are now so designated.

- Reactivity Management – reactivity management is the procedure to carefully control the potential for a nuclear core to increase or decrease its power. The DCISC team reviewed DCPP's Reactivity Management procedures and found them to be sound with the program currently rated as being in green status.

Following Mr. Wardell's report, on a motion made by Dr. Peterson, seconded by Dr. Lam the August 9–11, 2011 Fact Finding Report was approved and its transmittal to PG&E was authorized.

The Chair requested Consultant Linnen to report on the July 6–7 and September 7–8, 2011, fact-finding visits to DCPP. Mr. Linnen reviewed the topics discussed with PG&E during the July 6 – 7, 2011, visit with Dr. Peterson including:

- Clearance Process Implementation During 1R16 and 2R16 – the clearance process ensures that work can be performed safely on components and systems and provides indication that equipment being worked on is isolated from operating systems. Tags are hung to identify components on which work is being performed using the Electronic Shift Operations Management System (eSOMS). During the 16th refueling outage for Unit 1 (1R16) there was one instance where a tag was incorrectly hung due to human error which was discovered by Maintenance. During 2R16 a worker received an electric shock when the worker failed to check that the component was de-energized. Neither instance involved a problem with the use of eSOMS. Mr. Linnen stated the DCISC team concluded eSOMS is now fully functional and DCPP is taking appropriate actions on tagging issues.

- Implementation of NRC Rule on Fatigue Management – the purpose of the Fatigue Management Rule is to control and limit numbers of hours worked, especially during refueling outages and thereby minimize susceptibility to fatigue. Because of different shift scheduling, reporting throughout the industry became difficult. An industry-wide working group was formed to work with the NRC. The DCISC team found these efforts to be effective.

- 2010 Annual Radioactive Effluent Release Report – this report monitors the radiation dose a person would receive at the site boundary. Data presented was consistent with 2009 results which found extremely low doses of radiation from liquids or gases and Mr. Linnen stated that the station has done a very good job of maintaining releases to a minimum. It was noted that the dose attributable to radioactive liquid which would be received by an individual standing at the perimeter of the site boundary would be equivalent to what that person would experience by flying in an aircraft for approximately two seconds.

- Single Point Vulnerabilities – involve components, other than safety-related components, whose failure alone could cause a reactor trip, a turbine trip or a 2‰ or greater decrease in power. Approximately 750 such components have been identified and evaluated to determine appropriate preventive maintenance and other methods to maintain the risks to the plant as low as possible. Mr. Linnen stated the plant performance indicators do not record evidence that single point vulnerabilities were being recorded or tracked.

- Unit 2 (U-2) Reactor Manual Trip – in March 2011, U-2 was manually tripped due to a leaking gasket on a relief valve on a feedwater heater which sprayed water onto wiring which caused the main feed pump to trip. The plant, as required by procedure, was manually tripped and this was done safely. Mr. Linnen stated DCPP has performed an excellent root cause evaluation (RCE) which reviewed the issue of the trip in depth from a technical and a cultural perspective.

- Time Critical Operator Actions – involve actions required by operators in order to respond to planned events and emergencies. Process validation demonstrates that the actual manipulation of the equipment required can be done. Mr. Linnen reported this was the first review of this issue by the Committee and there were two instances when operators failed to take timely action. The first involved an operating crew not being able to meet a specific time requirement in response to a spurious safety injection and the second involved one element in responding to a steam generator tube rupture scenario.

- Component Cooling Water (CCW) System Review – the DCISC team reviewed the CCW System which provides cooling water to a number of important plant systems and components including injection cooling to the Reactor Coolant System (RCS) during normal operation and in the event of a loss of coolant accident (LOCA). There are two CCW Systems, one for each unit. The fact-finding team reviewed the system health reports for both units and noted that the systems for both units were rated green. There were no potential issues or significant adverse trends, critical component failures or alerts for either system.

- Component Mispositionings – mispositioning occurs when a component or control is

inadvertently placed out of its correct position. The DCISC has reviewed this issue on a number of occasions and performance at DCPP concerning mispositioning improved from 2008 to 2010. Mr. Linnen reported DCPP now tracks mispositioning events at lower levels than previously including mispositionings which are caught immediately after the mispositioning occurred or whenever an individual identifies an intention to move a component or control to an incorrect position. Since 2010, instances of mispositioning have increased somewhat and DCPP will be benchmarking (i.e., comparing performance and methods used against those of other organizations) with other nuclear plants to determine what actions to take, if any, in the future.

- Discussion with NRC Senior Resident Inspector – Dr. Peterson and Mr. Linnen met with the NRC's Senior Resident Inspector for DCPP to discuss seismic issues at DCPP and the response to the accident at the Fukushima plant.

- Dr. Peterson's met with DCPP's Site Vice President Mr. Jim Becker.

Upon a motion by Dr. Budnitz, seconded by Dr. Peterson, the July 6 – 7, 2011 Fact Finding Report was approved and its transmittal to PG&E authorized.

The Chair requested Consultant Linnen continue his report concerning the fact-finding visit to DCPP on the September 7–8, 2011, with Dr. Budnitz. Topics reviewed with PG&E on that occasion included:

- Operations Group's Use of the Station Probabilistic Risk Assessment; Status of Converting to Safety Monitor – Mr. Linnen stated both are computer-based systems. DCPP is now operational with Safety Monitor and has discontinued its use of the Outage Risk Assessment Management (ORAM) system. No problems were identified with the conversion.

- Critical Equipment Event Clock Resets – the critical equipment clock is reset for an event causing an automatic or manual trip of a reactor, the submission of a licensee event report (LER) to the NRC, the need to shut down within 24 hours, or an unplanned reduction in power greater than 2‰. These activities are being closely tracked and the DCISC team identified no major problems.

- Benchmarking Activities – DCPP actively uses benchmarking extensively to compare DCPP performance with methods used to achieve performance at other nuclear plants or industrial organizations.

- Auxiliary Feedwater (AFW) System Review – this is a safety-related system to prevent damage to nuclear fuel and over pressurization of the RCS in the event of loss of normal feedwater. There is a single, separate AFW System for each operating unit and each has its own health report. The AFW System Health Report for U-1 was yellow while that for U-2 was green. U-1 system health recently changed from white to yellow due to a leak on the outboard seal of one of the auxiliary feedwater pumps. Each unit has three auxiliary feedwater pumps, one is turbine driven while two are motor driven. Mr. Linnen reported the DCISC team identified a deficiency pertaining to outdated control systems for the AFW

Systems which affect the ability to obtain spare parts. U-1 AFW System also has problems pertaining to the governor of its turbine driven AFW pump.

- Emergency Diesel Generators (EDG) System Review – this is safety-related equipment which Mr. Linnen reported has no direct non safety-related purpose. Each unit has three EDGs which function to furnish power in the event electric power cannot be supplied from either offsite or from the operating turbine generators. Current health of the EDG System for each unit is rated as yellow. The significant issue is equipment obsolescence including control system components which are more than 40 years old. Replacement control systems were requested in 1996 and replacement was approved in the 2010 budget, however, refueling outage 1R17 milestones could not support the changes. DCPP now plans to implement design changes to the EDGs to be completed by 2015, during the 18th refueling outage for each unit. The DCISC team concluded DCPP's actions appear to address the issues, however, the schedule is protracted. Mr. Linnen commented that maintenance activities during a recent outage on three separate occasions caused an automatic start of all three EDGs for each unit and they all functioned as designed but obsolescence issues must be addressed.

- Unit 1 Containment Concrete Inspection Results – a **ten-year inspection conducted in June, July and October 2010. At the time of the fact-finding, the inspection report for U-2 was not available and is expected to be provided soon.** Possible problems were identified and there were no indications that were not addressed by repairs.

- Status of Large Station Transformers – system health for both units is rated green. The system health report assesses the status of 27 different indicators for transformer system performance. For U-1 all but three were in green status and those not green were rated white. For U-2 all but one were in green status and that single indicator was rated white. DCPP has experienced no forced outages or power reductions due to large transformers in 2011.

- Status of Problem Evaluation Action Plan – previously the NRC identified a significant cross-cutting aspect (c-c aspect) of performance degradation due to lack of thoroughness in engineering evaluations. The fact-finding team reviewed the most recent problem evaluation status report and found progress to be satisfactory. The DCPP Licensing Basis Verification Project (LBVP), scheduled to be completed by 2015, should be a major contributor to the resolution of the issues which gave rise to the c-c aspect.

- Engineering Organization Status – Mr. Linnen reported the relationship between engineers and management appears to have improved. DCPP is also addressing staffing in its Engineering organization and since 2009 has hired a number of new engineers to replace those retiring. The new engineers go through a two-year period of indoctrination and during that period serve in rotational assignments. Mr. Linnen commented during the DCISC team's meetings with DCPP representatives many of those representatives were younger engineers who displayed good knowledge and a professional attitude.

- Update on Actions Stemming from Fukushima – the DCISC met with DCPP representatives to review the station's response to the NRC's directive that required all nuclear plants to

describe the inventory controls, preventive maintenance activities, and periodic testing performed on various equipment used to respond to an accident that goes beyond the plant's design basis. PG&E will make a presentation on this topic at this public meeting.

- Status of Performance Improvement Action Plan – the Performance Improvement Action Plan focuses on leadership, self assessment and benchmarking, operating experience, trending, human performance, management observations and the Corrective Action Program (CAP). All performance areas except leadership are tracked in the Performance Improvement Report issued monthly. The CAP was rated yellow while self assessment and benchmarking did not receive an overall grade. Human performance in Operations was rated as red for the current month as was Engineering. The DCISC representatives concluded the Performance Improvement Action Plan has been restructured to a logical organizational framework and the number of assigned actions has been considerably increased. The majority of actions have been completed with the remainder on track to complete this year.

- Quality Verification's Assessment of Primary Equipment and Support Load Combinations Regarding Seismicity – Dr. Budnitz reported on his review with the QV organization of an error discovered in the way DCPP had analyzed load combinations in certain accident scenarios involving a large LOCA. The large loads on vessel piping from such events must be considered in combination with their normal in-service loads. DCPP did a thorough review to determine whether the plant was in compliance and determined that although an error was made the plant was still in compliance with current codes. Dr. Budnitz reported he directed PG&E's attention to the need for an extent of condition review by submitting his summary of the issue into the CAP.

- Meeting with NRC Senior Resident Inspector – The DCISC team met with the NRC Senior Resident Inspector to review seismic issues and those related to the events at Fukushima.

- Dr. Budnitz met with Site Vice President Becker.

Upon a motion by Dr. Peterson, seconded Dr. Lam, the September 7–8, 2011 Fact Finding Report was approved and its transmittal to PG&E authorized.

Once the Committee's fact finding reports are approved at a public meeting they are no longer considered to be in draft form and are made available in a binder for inspection by members of the public, together with information concerning the professional backgrounds of the Committee's technical consultants involved with preparation of its fact finding reports.

Assistant Legal Counsel Rathie reported the Committee has not received a reply to a letter sent to the State Water Resources Control Board (SWRCB) regarding the possible elimination of once-through cooling and the review by the SWRCB Nuclear Review Committee of this issue. Agendas and minutes for the SWRCB Nuclear Review Committee meetings are available on the website for that committee: (http://www.swrcb.ca.gov/water_issues/programs/ocean/cwa316/rcnfpp/). Mr. Rathie briefly reported on a visit to Sacramento CA with Dr. Lam in July 2011 to meet with the Vice Chair and the Senior Nuclear Policy Advisor to California Energy Commission (CEC). At that time the DCISC's representatives also met very briefly with one of the current serving members of the

SWRCB, appointed by the CEC, Dr. Michael R. Jaske, PhD. Dr. Budnitz explained that if elimination of once-through cooling were approved it would require DCPP to replace its once-through ocean cooling water system with cooling towers or other closed cycle systems and the DCISC's remit is to evaluate the safety significance of that proposal. Mr. Rathie reported the Legal Counsel's office continues to work closely with PG&E on developing guidance on the use of and references to information from the reports of the Institute of Nuclear Power Operations (INPO). He reviewed the activity on the Committee's website since the last public meeting of the Committee in June and reported that shortly after the events at Fukushima in March 2011 the website received 1,850 visits which represented the greatest number of monthly visits to the Committee's website.

Dr. Budnitz commended the Legal Counsel's office for their fine work, particularly concerning the technical detail in the Minutes of the June 2011 public meeting.

Ms. Sherry Lewis was recognized. Ms. Lewis identified herself as a member of the group San Luis Obispo Mothers for Peace (MFP). She remarked that a 57‰ response rate from DCPP employees to the Premier Survey was not high and Dr. Budnitz replied that survey data would not be valid if responses were forced from employees. In response to Ms. Lewis' request, Dr. Budnitz provided data from the radiological environmental monitoring reports issued during 2010. Ms. Lewis stated that the surveys to be conducted of the coastline offshore from DCPP should go beyond the three-mile limit to include the entire shelf to better understand what conditions may exist there.

Mr. Stanley Yucikas was recognized. Mr. Yucikas thanked the Committee for the work it is doing. He inquired whether, with all the attention now on earthquakes and tsunamis, studies have been done relative to disasters involving fire or mud slides in connection with earthquakes, where the plant due to its isolated location and limited harbor facilities nearby, might find itself isolated and inaccessible by road for some considerable period of time. Dr. Peterson stated that accessibility to the Fukushima plant site was a major problem during the accident at Fukushima. Dr. Peterson stated DCPP has agreements with the U.S. Coast Guard and the California National Guard to provide access and supplies for DCPP if required during emergency conditions. Mr. Bedesem reported there is a stranded plant procedure in place and DCPP maintains a dump truck and a loader inside the gate in the event of a landslide affecting the access roads. There are sleeping bags for personnel and critical supplies to keep equipment running in the event access was unavailable to personnel and supplies for some time. Mr. Bedesem confirmed there is a seven-day supply of diesel fuel for the EDGs on site at DCPP at all times. Dr. Budnitz remarked that there are two access roads to the plant which could be impacted by a fire and this situation has been analyzed and contingencies have been developed.

The Chair thanked the members of the public for their comments and remarked their comments will become a part of the Minutes of this pubic meeting and will be a part of the DCISC's next Annual Report.

VIII. Correspondence

The Chair directed the members and consultants to the copies of correspondence sent and received at the office of the Committee's Legal Counsel which were included with the public

agenda packet for this meeting.

IX. Adjourn Afternoon Meeting

The Chair adjourned the afternoon meeting of the DCISC at 5:00 p.m.

X. Reconvene for Evening Meeting

Dr. Lam convened the evening meeting of the DCISC at 5:15 p.m.

XI. Committee Member Comments

There were no comments at this time from the Committee members.

XII. Public Comments and Communications

Dr. Lam invited any member of the public to attend this public meeting and to address comments to the Committee.

Ms. Sherry Lewis was recognized. Ms. Lewis inquired concerning a presentation during the June 2011 DCISC public meeting on the events at Fukushima and asked if there was any new information on the condition of the spent fuel pools at that plant following the accident on March 11, 2011. Dr. Peterson replied it appears from investigations conducted by the Tokyo Electric Power Company, the owner of the plant, that there was never any damage to the fuel in the spent fuel pool for Reactor No. 4 and the cause of the explosion at Reactor No. 4 was due to a backflow of hydrogen vented out of Reactor No. 3. He commented a significant problem at Fukushima was that none of its reactors had operable level instrumentation capable of measuring the water inventory in their spent fuel pools but none of the spent fuel pools appear to have developed significant leaks or to have uncovered any fuel. Dr. Peterson commented that had such instrumentation been available it would have allowed more resources to be focused on the more significant problems involving damage to the reactors. The Chair thanked Ms. Lewis for her question.

XIII. Information Items Before the Committee

The Chair introduced PG&E Vice President and DCPP Site Director Mr. Jim Becker and asked Mr. Becker to commence the informational presentations requested by the Committee for this public meeting. Mr. Becker requested and introduced DCPP Director of Site Services Steve David to make that presentation.

Update on Plant Events, Operational Status and Performance Indicators.

Mr. David reviewed the current year generation history for both DCPP units. U-1 experienced power decreases early in 2011 associated with a failure of one of its intercept reheat stop valves during turbine testing which he described as an industry issue. In April 2011, U-1 was reduced to 85‰ power to perform work on a leak in feedwater heater 1-3A and in September 2011 power was curtailed to do planned tunnel scraping. For U-2 power was curtailed in January 2011 to repair a steam leak on a feedwater heater control valve and power was again curtailed in March to address a leak on a relief

valve. Prior to repair of that leak, water sprayed onto the main feedwater pump resulting in a trip of the pump at 100‰ power and, based on procedural guidance, operators initiated a manual reactor trip of U-2. The leak was then fixed and U-2 returned to power after four and one half days off line. In May and early June 2011, U-2 was refueled during its planned 2R16 outage. In September 2011, power was reduced from U-2 to do tunnel scraping due to large amounts of kelp in Diablo Cove. Mr. David reviewed generation history for both units for the last four months and remarked for U-1 only the tunnel scraping affected generation, while U-2 returned to full power in June following 2R16.

Mr. David reported on and discussed with the Committee certain areas of improved and declining performance at DCPP as follows:

- **Areas Improving from Yellow to Green Status**: Human Performance error rate per 10,000 hours; Cause Analysis performance; and Preventive Maintenance performance regarding deferrals.
- **Areas of Declining Performance Green to Yellow Status**: Total Plant Leaks; Site Service Human Performance Error Rate; Reportability Determinations; Training Attendance; and Foreign Material Exclusion (FME) Program Health.
- **Area of Declining Performance Green to Red Status**: Record Submittal Timeliness.
- **Areas of Declining Performance Yellow to Red Status**: Capital Budget; and Protective Tagging Index.

Dr. Lam requested that Mr. David during his presentation focus particularly on items which are material to the claim made by PG&E that DCPP is one of the best performing plants in the industry. Mr. David replied that often performance is measured against INPO performance indicators which are confidential within the nuclear industry.

Mr. David reviewed the QV Top Quality Performance Issues List reviewed during the Performance Management Review meetings. He identified and briefly discussed three categories currently shown as being in red status on that list including: Inadequate Safety Measures Established; Station Equipment Status Control; and Shoreline Fault Evaluation.

Mr. David reviewed a graph which showed system health, measuring the age of red and yellow systems for greater than one refueling cycle, and remarked DCPP has worked diligently to reduce the number of such systems and, for the third quarter of 2010 through the first quarter of 2011, the only such system for either unit was the 230kV System which was returned to acceptable health and, therefore, during the second and third quarters of 2011 there have been no systems in red or yellow status that have gone beyond one refueling cycle. In response to Dr. Lam's question, Mr. David stated there were approximately 80-90 systems which are tracked for purposes of the System Health index.

Mr. David reviewed the CAP index for the station which has been recently changed to conform to industry norms. For August 2011 the station is at 92.5 on the index and for September he stated that number would be 97.5 and the index would remain green. In response to Dr. Peterson's inquiry

Mr. David confirmed one of the indices tracks repeat events which are identified by root cause (RCE) or apparent cause (ACE) evaluations and through review of operating experience (OE). Mr. David reported the CAP index was impacted in August 2011 by the time taken to complete ACEs in Maintenance Services. ACE timeliness is now tracked weekly by the Corrective Action Review Board (CARB).

Mr. David reviewed and explained the Human Performance Error Rate for the station and observed the twelve-month average for current month performance is green with the indicator at 0.168. He confirmed that the averages used to determine the error rate are rolling averages.

Mr. David reported the Operational Focus index, a combination of maintenance items open in the plant on important components and the number of deficiencies identified in the control room which cause operators to use alternate indications or take actions they otherwise would not, is currently green overall. One of the indicators for clearances with tags hanging in the plant for more than 90 days has now returned to green. DCPP is a pilot plant in addressing issues with the Deficient Critical Components Backlog Order indicator and is striving to achieve 50 per unit. Mr. David commented the work management manager is currently at INPO in Atlanta GA working with a team to develop an industry-wide metric. In response to Mr. Linnen's inquiry concerning the difference between the indices for Corrective Critical Components Backlog Orders and Deficient Critical Components Backlog Orders Mr. David replied a corrective maintenance designation indicates an item is broken and requires immediate attention while a deficiency designation for a critical component indicates there is more time to address the issue. Consultant Linnen stated he was impressed in his review of the Operation Focus index by how focused the station is on operations.

Mr. David reviewed the Reactivity Management Program which shows control room performance in controlling reactivity and reported the indicator is green for U-2 and white for U-1 and he briefly reviewed the detail from the past year for different events which contribute to the index and the significance level of each. He reported that an industry issue has been identified with bias which affects isothermal temperature coefficient calculations during sub critical power testing physics testing.

Concerning resets of the Critical Equipment Clock Mr. David reported the goal for green status is six and the station is now in white status with eight such resets. However, Mr. David stated corrective actions have been taken and it has been four months since the last clock reset.

Engineering Program Health tracks performance of 20 engineering programs against performance 'cornerstones' for personnel, infrastructure, implementation and equipment. He reviewed and discussed the engineering programs which are currently in overall yellow system health status and the reasons for that status which include the air operated valves, cable maintenance, large motors, and preventive maintenance.

Finally, Mr. David reviewed data from the Recordable Injuries index which tracks injuries to both PG&E and contractor personnel. He commented contractor personnel are provided with human performance training to make sure they understand DCPP's safety standards and are held accountable to those standards. He observed the index demonstrates overall good performance and has been green for the last three months with a declining rate of injuries. In response to Dr.

Peterson's inquiry, Mr. David confirmed DCPP tracks first aid requests but does not include that information in the metric with a specific goal in order to encourage reporting of low level types of injuries.

In response to Dr. Lam's follow up request for attributes which identify DCPP as one of the leading performing plants in the industry, Mr. David identified the high capacity factors for both units and he observed U-1 is the number one plant out of 104 U.S. nuclear power plants with regard to runtime since its last automatic reactor trip from power with more than 3,400 days since the last U-1 automatic trip. He also identified the rate of critical equipment failures as an indication of strong equipment performance on both primary and secondary systems. Concerning NRC performance indicators, Mr. David identified DCPP's performance on the reactor scrams per 7,000 hours of operation and unanticipated down-power indicators as evidencing strong performance by DCPP's two units. In response to Consultant Linnen's inquiry, Mr. David stated DCPP has made significant changes with regard to CAP oversight. The CARB is now chaired by the Site Vice President, Mr. Becker, and has consistent membership between Maintenance, Engineering, Operations, Site Services and Learning Services which contributes to reinforcing the same message. He stated that training has been done to provide the CARB with a more consistent product and department level review has been implemented. As a result, Mr. David stated the CAP Index has improved and DCPP has had fewer failures of its cause analysis products. He confirmed that DCPP has no plans to back away from these changes to the CAP.

Mr. Becker requested DCPP Manager of Regulatory Services, Mr. Tom Baldwin, to make the next informational presentation to the Committee.

Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators.

Mr. Baldwin reported during the period July 2011 through September 2011, there were two Licensee Event Reports (LER) submitted by DCPP as follows:

- LER 1-2011-004-00 was issued June 30, 2011, to report U-1 emergency diesel generator automatic actuation upon 230 kV startup power isolation due to maintenance activities on a U-2 relay panel. A LER was required for this automatic actuation of emergency safeguards equipment. Mr. Baldwin reported DCPP considered this event to be a loss of off-site power supply system that would have been mitigating an accident should it have been required.

- LER 1-2011-005-00 was issued July 22, 2011, to report emergency diesel generator automatic actuations upon 230 kV startup power isolation to U-1 due to human performance error while conducting electrical maintenance testing activities. Mr. Baldwin stated the EDGs started successfully.

Mr. Baldwin reported on three NCVs and three findings during the period July through September 2011. All NCVs and findings were determined to be of very low or minor safety significance (i.e., green) and were described as follows:

- NCV (Green) – Inadequate Fire Hazard Evaluations (C-C Aspect P.1(c) Evaluation) for doors

being left open thereby impairing the required fire barriers. Mr. Baldwin reported the fire detection and suppression systems remained fully capable.

- NCV (Green) – Failure to Follow Procedures for Testing HEPA Ventilation Units (C-C Aspect H.4(b) Procedural Compliance). Mr. Baldwin stated these were portable filtration units for which the procedural test requirements were found not to have been followed.

- NCV (Green) – Less than Adequate Evaluation of New Security Modifications (C-C Aspect P.1(c) Evaluation). Mr. Baldwin stated following installation of perimeter fencing, a potential water source was identified to be located outside the fence line which, in a beyond design basis event, might be utilized to provide water to the steam generators via portable pumps. Immediate action was taken to establish a means of routing hoses through an opening in the new fence to the plant. Mr. Baldwin confirmed, in response to Mr. Linnen's question, that C-C Aspect P.1(c) is applicable to security-type work and in this case the modification had the potential to impact commitments to the Auxiliary Feedwater System, one of the plant's safety systems.

- Finding (Green) – Inadequate Review of Severe Accident Management Guidelines (SAMGs). This review was required following the events at the Fukushima. Mr. Baldwin stated that it was discovered the SAMGs were not being reviewed every two years as required by procedural guidelines. In response to Dr. Peterson's inquiry whether DCPP is considering integrating the SAMGs with the Extreme Damage Mitigation Guidelines (EDMGs) Mr. Baldwin replied this is taking place at an industry level and he observed this integration would not affect the plant's commitments to review the SAMGs.

- Finding (Green) – Unplanned Loss of Preferred Offsite Power Due to Less than Adequate Work Planning (C-C Aspect H.3(a) Planning). Related to LER 1-2011-004-00.

- Finding (Green) – Unplanned Loss of Preferred Offsite Power Due to the Failure to Follow Work Instructions (C-C Aspect H.4(a) Human Error Techniques). Related to LER 1-2011-005-00.

Summarizing NRC enforcement, Mr. Baldwin stated inspection reports were issued for:

- Integrated Inspection Report (IR 2011-003, 8/10/11) – 6/0.

- NRC Operator Examination Report (IR 2011-301, 9/20/11) – 0/0 no deficiencies were identified.

A total of six NCVs and findings were reported since the last meeting of the DCISC. All were determined to be of very low safety significance. Currently, seven NCVs in the last four quarters all have a C-C Aspect of P.1(c) Evaluation. In response to Mr. Linnen's question, Mr. Baldwin stated the seven NCVs in the last four quarters represent an improving trend for DCPP.

Mr. Baldwin reviewed the NRC Performance Indicators with the Committee and stated that those indicating yellow status represented unacceptable performance when assessed against station thresholds and all DCPP performance indicators are currently meeting NRC criteria. He observed that the metrics cover a long time-frame and a single event can have a significant impact for some time. In response to Dr. Lam's question, Mr. Baldwin stated he agreed with the comment made

previously by Mr. David that the NRC Performance Indicators provide an indication that the plant is performing well and are an indication of an effective CAP at DCPP. He confirmed Dr. Lam's observation that most of the performance indicators show the plant is within the top quartile of performance amongst the nation's 104 nuclear power plants. Mr. Baldwin replied, in response to Dr. Lam's question, that white status on an NRC performance indicator means that the NRC has identified that additional inspection and inquiry into a station's performance is warranted. The NRC would visit the plant to review the root cause evaluation of why the performance indicator degraded. Mr. Baldwin reviewed the effects on the NRC performance indicators of the U-2 reactor trip in March 2011 and a curtailment of power on U-1 to address the leaking flange. He stated the events impacting the Safety System Functional Failure indicator relate to the loss of offsite power events reported previously and a RCE is being performed for those events.

Mr. Baldwin reviewed the NRC Cross-Cutting Issue Matrix and observed DCPP is currently at seven events for P.1(c), Problem Identification, Resolution, Evaluation - Extent of Performance. He reported another area of focus on this matrix is Conservative Assumptions and Decision Making, H.1(b), for which a cause analysis was performed and corrective actions taken which have proved effective with no violations in that area for the last two quarters. Mr. Baldwin stated DCPP has identified issues with respect to Human Error Prevention which go to the use of human performance tools and error prevention techniques. Documentation is another area identified as a potential vulnerability and the Licensing Basis Verification Project is underway which will address an aspect of the documentation process.

In response to Dr. Budnitz' question, Mr. Baldwin stated as a part of DCPP's efforts to improve performance for C-C Aspect P.1(c) the plant has taken a broad scale approach to review station programs and processes and has established an additional level of rigor, monitoring and oversight of all related programs. These include the 50.59 Evaluation, the Corrective Action, and Cause Analysis Programs. These programs are reviewed on a daily basis and performance is graded and reported to the plant's leadership team on a quarterly basis. Self assessments are performed periodically, typically every two to three years. Action is taken if adverse trends are identified. With respect to the 50.59 Evaluation Program, where some minor deficiencies were identified, Mr. Baldwin reported that training was provided to all qualified personnel who perform 50.59 evaluations not just to those individuals who made the errors.

Vice President Becker requested the Used Fuel Storage Project Manager Mr. Lawrence Pulley to make the next informational presentation.

Status and Report on the Independent Spent Fuel Storage Installation and Future of Spent Fuel at DCPP.

Mr. Pulley displayed a photo showing an aerial view of the Independent Spent Fuel Storage Installation (ISFSI) and reported the ISFSI presently consists of two pads with space for 20 casks on each, with room for an additional five pads which would provide space for 140 casks, of which 138 spaces could be utilized for spent fuel storage. He then provided a short recapitulation of the Used Fuel Storage Project:

- Dry Storage Program Initiated in 1999
- In 2000, selected Holtec to provide the Anchored HI- STORM storage system
- Site Specific License granted by the NRC in April 2004
- Coastal Development Permit received in January 2005
- Construction started in April 2005
- Facility operational in Spring 2009
- First 8 casks loaded Summer 2009
- Second 8 casks loaded Summer 2010
- Third loading for 7 casks scheduled for January 2012

Mr. Pulley provided the following statistics on DCPP used fuel:

- Used Fuel Generation
  - 3062 used fuel assemblies generated through 2011
  - 1248 to be generated 2011 through end of initial license
  - 2112 to be generated for 20 year license extension
  - Currently 1068 assemblies in Unit 1 spent fuel pool, and 1096 in Unit 2 spent fuel pool
  - Fuel cools in spent fuel pool for a minimum of five years before loading
- ISFSI Storage
  - 16 casks loaded for a total of 512 assemblies
  - Goal to load 22 additional casks by 3Q 2013
  - Build additional 5 pads for 100 casks in 2014
  - Design capacity is 138 casks for 4416 assemblies

In response to Dr. Lam's question, Mr. Pulley stated that the ISFSI is currently planned to provide capacity for 40 years of current licensed operation by DCPP. If a license extension were to be granted for an additional 20 years of operation, additional capacity may have to be developed.

- ISFSI Cask Operation
  - Fuel is stored in a multipurpose canister (MPC)
  - 32 assemblies in each MPC
  - MPC is helium filled for heat transfer
  - MPC is stored in a HI-STORM overpack
  - Air circulates through the annulus between the MPC and HI-STORM

- This natural circulation transfers the heat to the environment

In response to Dr. Peterson's inquiry, Mr. Pulley stated the storage system vendor for DCPP, Holtec Inc., is reviewing new designs but he stated DCPP believes its current Holtec MPC 32 System provides the most robust design currently available. In response to Dr. Lam's inquiry, Mr. Pulley confirmed that DCPP is the only facility which utilizes a seismic anchoring system for its used fuel casks.

- ISFSI Radiation Dose

Mr. Pulley cited an excerpt from the 2010 REMP report submitted to the NRC:

> "Direct radiation is continuously measured at 8 locations surrounding the Independent Spent Fuel Storage Installation (ISFSI) using thermoluminescent dosimeters (TLDs). These 8 locations are located directly adjacent to the ISFSI protected area, with 2 stations on each of the four sides of the ISFSI pad. It should be noted that these stations and the ISFSI are well within the site boundary. These dosimeters are collected every calendar quarter for readout at the DCPP TLD Lab. The first spent fuel canister was loaded onto the ISFSI pad in June 2009. In May 2010, DCPP began the second ISFSI loading of spent fuel canisters. No adverse trends were noted at the DCPP inner ring stations due to ISFSI for 2010. It should be noted that the DCPP inner ring TLD results tracked in correlation with normal Environmental TLD outer ring, special interest, and control location fluctuations. It should also be noted that DCPP inner ring TLD results remain within pre-operational ranges."

He stated that the dose contribution of the ISFSI is essentially invisible and does not contribute to the dose at the site boundary.

Mr. Pulley then displayed, described and discussed a number of slides showing the procedures, processes and activities related to loading a cask and transporting it to the ISFSI.

Mr. Pulley discussed the storage of spent fuel in the spent fuel pools at DCPP:

- Spent Fuel Pool Storage
  - DCPP continues to store fuel assemblies in compliance with the requirements of the NRC compensatory measures, namely to checkerboard more radioactive fuel assemblies within less radioactive assemblies.
  - The National Academy of Sciences reported in 2006 that a mix of older fuel surrounding freshly discharged fuel might be the most effective storage method.
  - DCPP continues to evaluate all industry recommendations regarding spent fuel storage.

In response to Dr. Budnitz' observation, Mr. Pulley confirmed the storage of spent fuel in the spent fuel pools at DCPP is in accordance with the advice of the National Academy of Sciences. Dr. Lam

stated that as a result of the National Academy's report, the California Energy Commission issued a recommendation in its 2008 Integrated Energy Policy Report that the spent fuel pools at DCPP should be returned to their original racking configurations as soon as feasible. Dr. Lam remarked he is aware, from his discussions with Mr. Becker and others at DCPP, that significant technical barriers exist to returning the pools to their original configurations, including the failure of the federal government to provide a central waste storage facility as it has committed to do, but Dr. Lam stated the Energy Commission is still awaiting a response from PG&E to its recommendation and he observed that the Energy Commission's recommendation should be reviewed in light of what happened at the Fukushima plant in Japan following the March 11, 2011, earthquake and the resulting tsunami. Mr. Pulley replied that DCPP has been studying the issue, however, if all fuel that is more than five years old is removed from the spent fuel pools, that may not be the safest configuration for the pools and he stated the point of the National Academy's advice is to retain some older fuel in order to provide safer storage because, if a pool is left with only newer more radioactive fuel the plant would lose a portion of its heat sink capabilities in the event water were to be lost in a pool. He confirmed Dr. Lam's comment that it is both the age of the fuel and the density of the fuel in the spent fuel pools which are relevant to their safest possible configuration.

Mr. Pulley reviewed some of the acts of nature for which the ISFSI is designed:

- ISFSI Acts of Nature - as described in Chapter 8 of the ISFSI Final Safety Analysis Report, the ISFSI is designed for the following acts of nature:
    - Earthquake; spectra bounding the Hosgri spectra for the plant
    - Tsunami; located well above tsunami level
    - Flooding; elevation and lack of flood source
    - Tornado; robust steel/concrete structure
    - Lightning; grounded metal structures
    - Wildfire; minimal grassland impact
    - Extreme environmental temperature

Dr. Lam observed a member of the public expressed concern about a channeling effect of water during a tsunami which could have the potential to exaggerate the height of the tsunami. Dr. Peterson responded that at Fukushima it was a run-up in water levels inside the plant which created higher levels than what water came over the barriers but he observed the DCPP ISFSI is located at a very high elevation above sea level and it was implausible that a tsunami could reach the level of the ISFSI.

Dr. Lam remarked that as an Administrative Law Judge with the NRC, he sat on the licensing board that approved the DCPP ISFSI facility for dry cask storage and he commended Mr. Pulley for an excellent overview of the facility. The Chair also thanked Vice President Becker and commented that all the PG&E presentations have been prepared with a very high level of professionalism in both their content and format and have been very informative.

Ms. Sherry Lewis, present in the audience, was recognized to address comments to the Committee. Ms. Lewis inquired about precautions being taken to prevent damage or release of fuel from human acts such as from terrorist or missile attacks. She stated her belief the ISFSI was not protected from attacks from the air. She stated the fact that certain fuel rods could not be removed from the spent fuel pools did not alter that fact that there was way too much spent fuel in the pools. She stated her opinion that the density was too much and the pools should be returned to their original racking configuration.

Ms. Lewis stated her opinion that continuing to produce radioactive waste year after year when that waste will require storage for thousands of years is too dangerous and a huge mistake. Dr. Budnitz replied that the ISFSI is licensed only for 40 years and although the facility will undoubtedly fulfill its intended function for far longer, it is not within the mandate of the DCISC to review nor is it the role of the DCISC to comment on issues of national policy. Mr. Lewis replied that the members of the Committee are closely associated with the nuclear industry and to maintain that the DCISC's oversight role concerning the ISFSI should be limited to 40 years was absurd. Dr. Budnitz replied the mandate of the Committee from the CPUC charges the DCISC with reviewing the safety of the power plant, including the ISFSI and reporting to the citizens of California concerning the adequacy of the operational safety of DCPP and the Committee continues to fulfill that role.

Ms. Lewis replied that as human beings on the earth, the members of the DCISC have more than simply their mandate from the state and to claim that the DCISC's responsibility concerning the ISFSI does not extend beyond 40 years is absolutely ridiculous and the fuel is going to be dangerous for far longer than that and will need to be stored somewhere and that should be of concern to the DCISC and its members. Dr. Budnitz stated he has a view concerning Ms. Lewis' observations but that his view is not part of what the Committee is charged to do and he has reviewed the ISFSI and judged it to be safe for 40 years as it is sited, licensed and operated, although the stored fuel is going to be toxic for far longer.

Ms. Lewis insisted the Committee's view was much too narrow and people are personally responsible for what goes on within their purview and she stated Dr. Budnitz' and the DCISC's position is furthering policies already in place with which she strongly disagrees. Dr. Lam commented Ms. Lewis' concerns were well received. He stated that the issue of storage of spent fuel at DCPP has been litigated and the DCPP spent fuel storage cask facility was reviewed and approved by an NRC licensing board, where he submitted a dissenting opinion that acts of malice were no longer unforeseeable. The criteria initially used to review consideration of acts of malice was successfully challenged by Mothers for Peace as an intervening organization and the legal system and the Ninth Circuit of the Appellate Court of the U.S. made a ruling on the issue and he stated that he hoped this might provide some comfort to Ms. Lewis regarding her concerns.

Dr. Peterson remarked the DCISC does not have the expertise, the capability or the security clearances necessary to evaluate all security-related issues relative to DCPP and therefore must limit its review to the impact of the security systems and issues on operational safety. Similarly, issues of what should be done with spent nuclear fuel are issues of national policy which also fall outside the competence and capability of the Committee to render judgment. He stated it is the Committee's obligation to assure that the plant, as long as it runs, is run as safely as possible by

assuring the practices used at DCPP are the best used by any nuclear facility. Dr. Lam remarked that Ms. Lewis' comments and the Committee members' replies will be part of the Minutes of this public meeting and included in the DCISC's 22nd Annual Report.

XIV. Adjourn Evening Meeting

The Chair remarked that the Committee will convene for its next session of this public meeting at 8:00 a.m. on the following day and, after thanking Vice President Becker and the members of the public in attendance, he adjourned the evening meeting of the Committee at 7:00 p.m.

XV. Reconvene For Morning Meeting

The morning public meeting of the Diablo Canyon Independent Safety Committee was called to order by its Chair, Dr. Peter Lam, at 8:00 a.m. Dr. Lam introduced the other members and the Committee's Technical Consultants and Assistant Legal Counsel and briefly reviewed their professional backgrounds, qualifications and experience with the DCISC.

XVI. Committee Member Comments

There were no comments by the members at this time.

XVII. Public Comments and Communication

Ms. Sherry Lewis identified herself as a member of the group San Luis Obispo Mothers for Peace and was recognized to address comments to the Committee. Ms. Lewis stated she appreciated the DCISC's interest in keeping nuclear power safe and stated her belief the Committee was doing a good job, but she reiterated her belief that nuclear power is too inherently unsafe and unforgiving a technology particularly when coupled with human error and mistakes, the effect of which cannot be minimized. She stated the waste created by nuclear power operations remains dangerous for a very long period of time and human error is bound to occur and she questioned who will take responsibility for the waste in the future. Ms. Lewis stated her belief that nuclear power needs to be phased out as quickly as possible.

Dr. Peterson replied he appreciated Ms. Lewis' comments and he affirmed the obligation of the DCISC is to assure the plant is run as safely as possible, is meeting the highest standards and to identify and make recommendations to those ends. He confirmed the Committee's scope does not include policy questions concerning the long term storage of nuclear waste but Dr. Peterson stated that he also serves as a member of the President's Blue Ribbon Commission on America's Nuclear Future and that Commission issued a draft report on July 29, 2011, now available for public comment, wherein the Commission concluded that U.S. policy for managing nuclear materials has completely broken down and has failed. Accordingly, major changes are needed and the Commission has proposed a set of recommendations, however, it is up to the President and Congress to act upon and implement the Commission's recommendations. Dr. Peterson stated it is technically possible to provide for the safe, long-term isolation of nuclear material if an appropriate deep geologic disposal capacity is developed but to do so will take policy leadership. Dr. Lam observed the DCISC's scope of safety review is broad and deep but it is also limited by the NRC's

rules and regulations.

The Chair requested PG&E to continue with the informational presentations for this public meeting.

XVIII. Information Items Before the Committee

Update on Lessons Learned from the Events at Fukushima Daiichi Nuclear Power Plant in Japan Following the March 11, 2011, Earthquake and Tsunami.

DCPP Director Mr. Bill Guldemond stated he was the person at DCPP with responsibility for implementing actions in response to the events at Fukushima in Japan following the severe accident and events as a result of the March 11, 2011, earthquake and tsunami. Mr. Guldemond reviewed information presented to the DCISC at its last meeting in June 2011.

- Fukushima – What Is Known:
  - Magnitude 9 earthquake caused automatic shutdown of all 6 reactors and loss of offsite power to all 6 reactors.
  - Emergency diesel generators and other safety systems actuated as expected to stabilize plants.
  - Large tsunami wave struck the plant ~1 hour later (anticipated).
  - Water entered the plant, disabling nearly all plant electrical and safety systems in Reactors 1-5. One air-cooled emergency diesel generator continued to operate in Reactor 6. In response to Consultant Wardell's question, Mr. Guldemond stated the air-cooled diesel generator which provided power in Reactors 5 and 6, which were shutdown for refueling, did not get flooded by the tsunami due to its elevation and, as it did not require cooling water, it was capable of continued function. However, he stated that with regard to the other Fukushima reactors, air-cooled diesel generators would have had to have been located in a location not subject to inundation by the tsunami in order to be capable of continuing to provide power. Mr. Guldemond confirmed Mr. Wardell's observation that all DCPP's EDGs are air-cooled, which is an advantage over the situation at Fukushima. Dr. Peterson observed that air-cooled diesel generators are substantively better technology as they have a reliable heat sink. Mr. Guldemond commented the ultimate heat sink pumps at DCPP are the auxiliary saltwater (ASW) pumps which are located within the Intake Structure in watertight enclosures and equipped with snorkels which extend above the level of the design-basis tsunami for the plant. Dr. Peterson observed that of the four nuclear stations in Japan which were subject to the effects of the tsunami on March 11, 2011, all of the plants lost ASW capacity which was presumably due to the impact of debris produced by the tsunami.
  - Plant monitoring instrumentation was lost, which Mr. Guldemond stated significantly complicated the ability of the plant operators to monitor plant conditions and control plant status particularly concerning the reactor core isolation cooling systems on all the reactors. That prevented injection into the reactors at substantially high reactor system

pressure. Water levels dropped below the top of the active fuel and rapidly proceeded to a fuel melt event in Reactors 1, 2 and 3.

- Remaining core cooling systems failed leading to substantial core damage (core melts in Reactors 1-3).
- Seawater was injected to provide cooling which was ultimately successful in reducing pressure in containment. Mr. Guldemond stated the reactors are currently being cooled using fresh water and all are now below approximately 200°F. Drs. Budnitz and Peterson commented it was crucial that the temperature stay below 212° F as boiling of the water in containment at that temperature produces steam which provides a mechanism for transport of radioactive material. Dr. Lam commented that Drs. Budnitz and Peterson are both members of an advisory panel created by U.S. Secretary of Energy Steven Chu to review the events at Fukushima.
- Explosions occurred in Reactors 1-4 caused by hydrogen generated by the zirconium-water reaction which occurred with the fuel as it overheated. Hydrogen escaped primary containment into the reactor buildings by various pathways in a process which is not yet fully understood.
- Spent fuel pools heated up owing to loss of cooling when electricity was lost to the station.

Mr. Guldemond then reviewed what is believed to be known about the events at Fukushima.

- Fukushima – What Is Believed to be Known
  - The seismic events did not cause significant plant damage.
  - Containment venting did not occur on one unit until well after design pressure was exceeded. This may have contributed to one or more of the explosions.
  - Fuel damage due to overheating in the spent fuel pools is not believed to have occurred. Fission production in the spent fuel pools is believed to have been due to debris failing into the pools causing mechanical damage to the fuel.

Mr. Guldemond reviewed the significant lessons to be taken from the events at Fukushima as they are known at this point in time.

- Fukushima – Preliminary Lessons
  - Susceptibility of stations to multiple unit events from beyond design basis natural phenomena. He stated the design criteria in the U.S. have historically been to consider single unit events with the other unit available to supply support.
  - Importance of robust capability to prevent or recover from station black out (SBO) conditions. The loss of AC and DC power led directly to the core melt events which occurred at Fukushima.
  - Importance of preserving DC power for plant monitoring.

- Importance of managing spent fuel pool conditions under upset conditions. Dr. Peterson commented that lack of preparations to assess and monitor the condition of the spent fuel diverted important resources from work required to keep the reactors safe

Mr. Guldemond reported on emergency power capabilities and capacities at DCPP.

- DCPP Emergency Power
  - Six air cooled EDGs; three per unit with cross-ties to allow a generator from one unit to supply both units. This was designed as a mechanism to cope with SBO.
  - Two underground diesel fuel storage tanks with a seven-day supply of fuel for each EDG and the capability to provide additional fuel by barge in the event there is limited access to the plant site. In response to Mr. Wardell's inquiry, Mr. Guldemond stated the current regulation governing response to SBO is 10 CFR 50.63 which provides each station must provide coping studies to demonstrate how long the individual stations can cope with SBO. Most U.S. nuclear stations are licensed to cope with SBO for either four or eight hours. Other stations, like DCPP, chose to install additional diesels or to do an analysis that they have sufficient diesel generators and the likelihood of SBO is acceptably low. In response to Dr. Lam's inquiry, Mr. Guldemond confirmed the diesel oil fuel tanks are vented and the vents are above the 85-foot tsunami design basis elevation. In response to Dr. Peterson's observation, Mr. Guldemond confirmed that a requirement that DCPP provide a closed-loop cooling system could create, among other issues, a potential flooding hazard.
  - Protected from tsunami by 85 foot bluff

Mr. Guldemond briefly touched upon some material presented to the DCISC at its June 2011 public meeting concerning preparedness for significant events and stated the station is satisfied it has the capability to respond to significant events. Walk-downs have been conducted and verification has been made that mitigating equipment for beyond design basis events is available and functional and that QV's verification efforts, as entered into the CAP, do not impact its ability to successfully implement strategies which are in place. In response to Dr. Peterson's inquiry, Mr. Guldemond replied walkthrough simulations are conducted to train personnel on how to install and attach portable water injection equipment. **Dr. Peterson commented that with reference to the events at Fukushima there were delays and a lack of timely response to initiating water injection which aggravated and substantially contributed to the severity of the accident. He encouraged DCPP to consider practicing getting pumping equipment actually hooked-up and running. He stated this was, in his opinion, an area where significant attention is merited to provide more realistic training, as mock-up facilities should be fairly simple to create.** Mr. Guldemond commented that there is an industry initiative to try to standardize connections and to utilize quick connect/disconnect adapters as well as to identify additional portable equipment needs. Mr. Wardell commented when training on the Extensive Damage Mitigation Guidelines (EDMGs), mockups are provided for the portable equipment and operators are trained on the procedures in a classroom setting and subsequently in the plant at the site of the equipment. Dr. Peterson stated

the NRC's Fukushima Task Force Report commented on the hazardous and difficult conditions encountered by the Japanese operators.

In response to Consultant Wardell's inquiry about stranded or isolated plant procedures, Mr. Guldemond stated DCPP has such a procedure should vehicular traffic to the station be impeded or disrupted and he confirmed DCPP has the capability of getting materials to the site by other means, including by barge or by the use of helicopters. **Mr. Wardell suggested the DCISC may wish to review DCPP's stranded plant procedure during a future fact-finding.**

Mr. Guldemond continued his presentation by reviewing the continuing industry collective response to Fukushima including that by the Electric Power Research Institute (EPRI), the Institute of Nuclear Power Operations (INPO), and the Nuclear Energy Institute (NEI) in conjunction with senior utility executives on a steering committee. These organizations have created a joint leadership model to integrate and coordinate the U.S. nuclear industry's response to events at the Fukushima (the "Way Forward"). This will ensure that lessons learned are identified and well understood, and that response actions are effectively coordinated and implemented throughout the industry. He reviewed a table which showed the organization of the Fukushima Response Steering Committee and briefly reviewed the seven building blocks of its organizational structures which include:

Block 1 - Existing Plant Performance

Block 2 - Lessons Learned

Block 3 - Improve Effectiveness of Industry Response

Block 4 - Strategic Communications and Outreach

Block 5 - Regulatory Response

Block 6 - Support International Organizations

Block 7- Technical and R&D

Dr. Peterson observed that one of the lessons of Fukushima is that nuclear power plants operated elsewhere in the world under differing regulatory structures can create problems for nuclear power plants everywhere and communication and international collaboration is valuable. Consultant Linnen remarked there is a World Association of Nuclear Operators (WANO) and he inquired concerning WANO's involvement in the response to Fukushima. Mr. Guldemond confirmed the international nuclear community is engaged by WANO and he stated as part of that effort, the NRC has declassified NEI guidance document 06-12 which provides guidance on how to respond to beyond design basis events including large explosion and fire. Dr. Peterson suggested the phrasing used in Block 6 referring to "supporting" international organizations may not be advisable as it may tend to imply a lack of two-way communication and he observed the U.S. nuclear industry can learn from the international nuclear industry. Dr. Budnitz confirmed Dr. Peterson's observation and stated that his long experience with nuclear power plants in many areas of the world, which could not be more different from each other or from U.S. nuclear plants, often provides much valuable insight concerning practices and activities which is directly relevant to operations at U.S. nuclear

power facilities. In response to Mr. Linnen's inquiry about the composition of the Steering Committee, Mr. Guldemond stated that several senior executives, with site vice president experience in operating nuclear power plants, serve on the Steering Committee.

Mr. Guldemond reviewed and discussed with the Committee actions as a result of what is known about Fukushima.

- Near-Term Actions to Improve Safety
  - Engage with NRC on reasonable near-term actions that improve safety margins.
  - Expect NRC will follow disciplined process on other issues identified.
  - Integrate Fukushima regulatory response with other ongoing regulatory actions.
- Continuing Industry Response – Strategic Goals:
  - Focus the nuclear workforce on safety and operational excellence.
  - Establish timelines for emergency response capability to ensure continued core cooling, containment integrity and spent fuel storage pool cooling which are synchronized to preclude fuel damage following SBO.
  - Ensure the U.S. nuclear industry is capable of responding to any significant event in the U.S. with the response being scalable for international events.
  - Integrate Severe Accident Mitigation Guidelines (SAMGs), security response strategies (B.5.b), and external event response plans to effectively ensure nuclear energy facilities are capable of a symptom-based response to events that could impact multiple reactors at a single site. Dr. Peterson remarked on the importance of these efforts and he observed the EDMGs were developed for security-related events and there is no formal linkage for activating them as a result of a natural disaster. Consultant Wardell observed and Mr. Guldemond agreed that most all emergency procedures are symptom-based not cause-based, so just because the plant experienced a tsunami would not mean the EDMGs should be implemented before assessing what actual damage occurred. Mr. Guldemond remarked the SAMGs provide a menu of actions which can be taken when fuel damage may be imminent so they are more deterministic in terms of creating conditions which will result in a successful outcome.

Dr. Peterson remarked that when extensive plant damage occurs instrumentation may not be available and it is therefore important to reevaluate instrumentation for key plant state parameters. He commented on the difference between boiling water reactors (BWRs), such as Fukushima, and pressurized water reactors (PWRs), such as DCPP, with PWRs having the ability to remove decay heat using "feed and bleed" by injecting to the steam generators and then venting steam to the atmosphere. In contrast, BWRs, which lack steam generators, must initially vent steam into containment, thereby depositing large amounts of energy into containment and if the normal cooling heat sink remains unavailable this results in the need to eventually vent containment. Dr. Peterson observed the delay and difficulty in venting containment at Fukushima was a major

contributing factor to the severity of the accident which, in the case of a PWR, would likely not have occurred. However, he commented PWRs currently have issues with seal leakage which cause them to lose primary inventory over time and therefore, if high pressure injection to the primary system is degraded, at some point the capability to transfer heat to the steam generators is lost. Mr. Guldemond stated current analysis for reactor coolant pump seals shows a leak rate as high as 20 gallons-per-minute (gpm) but Westinghouse has designed a new stage one seal assembly with a leak rate of <1 gpm. DCPP has plans to replace seals on all four reactor coolant pumps on each DCPP unit during the next two refueling outages. Dr. Peterson stated the DCISC strongly endorses this plant modification.

- Ensure margins for protection from external events are sufficient based on the latest hazards analyses and historical data. In response to Dr. Lam's inquiry, Mr. Guldemond stated the focus on external events is now on external flooding and seismic, however, he stated severe weather conditions will also be given consideration and re evaluated.
- Ensure spent fuel pool cooling and makeup functions are fully protective during periods of high heat load in the spent fuel pools and during extended station blackout conditions.
- Primary containment protective strategies can effectively manage and mitigate post accident conditions, including elevated pressure and hydrogen concentrations.

Mr. Guldemond reviewed the NRC's response to Fukushima.

- Continuing NRC Response
  - Formed task force focusing on:
    - Protection from design basis natural phenomena
    - Consideration of beyond design basis natural phenomena
    - Mitigation for long-term Station Black Out, including multiple unit events
    - Emergency Preparedness
    - NRC Programs
  - Issued two generic communications:
    - Information Notice 2011-05 providing preliminary information on the events at Fukushima.
    - Bulletin 2011-01, "Mitigating Strategies" requesting information on mitigating strategies to determine if additional assessment of program implementation is needed, if the current inspection program should be enhanced or if further regulatory action is warranted.
  - NRC Task Force's 12 Recommendations
    1. Establish a logical, systematic, and coherent regulatory framework for adequate

protection that appropriately balances defense in-depth and risk considerations.

2. Require licensees to reevaluate and upgrade as necessary the design basis seismic and flooding protection.
3. As part of the longer term review, the NRC should evaluate potential enhancements to the capability to prevent or mitigate seismically induced fires and floods.
4. The NRC should strengthen SBO mitigation capability at all operating and new reactors for design-basis and beyond design basis external events.
5. Require reliable hardened vent designs in BWR facilities with Mark I and Mark II containments.
6. As part of the longer term review, the NRC should identify insights about hydrogen control and mitigation inside containment or in other buildings.
7. Enhance spent fuel pool makeup capability and instrumentation for the spent fuel pool.
8. Strengthen and integrate onsite emergency response capabilities such as Emergency Operating Procedures (EOPs) s, SAMGs, and EDMGs.
9. Require that facility emergency plans address prolonged SBO and multi unit events.
10. As part of the longer term review, pursue additional Emergency Preparedness (EP) topics related to multi-unit events and prolonged SBO.
11. As part of the longer term review, pursue EP topics related to decision making, radiation monitoring, and public education.
12. Strengthen regulatory oversight of licensee safety performance by focusing on defense-in-depth requirements.

Mr. Guldemond stated that NRC staff recommended, concerning prioritizing the above recommendations of the Task Force, that none of the findings rises to the level of an imminent hazard to public health and safety and the objective is to not divert the NRC or industry focus from other important safety-significant activities. To that end, three tiers of prioritization have been created and he reviewed and discussed each with the DCISC:

Tier 1: Recommendations which should be started without delay and for which sufficient resource flexibility, including availability of critical skill sets, exists.

Tier 2: Recommendations needing further assessment, are dependent on Tier 1 issues, or lack the availability of critical skill sets.

Tier 3: Recommendations needing further staff review to support regulatory action, further assessment and alignment, depend on Tier 1 issues, or lack availability of critical skill sets.

Dr. Peterson commented that it was impressive to witness how the NRC has responded to the events at Fukushima. He praised the work of its 90-Day Task Force. He observed that a significant element which contributed to the severity of the accident at Fukushima was a much weaker ability

to prioritize activities by risk significance. Dr. Peterson stated that having reviewed and evaluated the 90-Day Task Force's recommendations, he found them to be well organized and weighted toward actions that will substantively address risk associated with severe external events such as those which occurred at Fukushima. Dr. Lam agreed and stated that at such times resources are limited and there are not an infinite number of things which can be done. Dr. Lam commented that previously severe beyond design basis events tended to be dismissed on the basis they were extremely unlikely to occur. However, now the focus has shifted to assuming such events might occur and then to go on to determine the most cost effective means of mitigation. Dr. Peterson remarked that many of the lessons to be learned from Fukushima may be counter intuitive and in prioritizing actions to take in response.

Mr. Guldemond presented a detailed analysis of the continuing NRC response in accordance with the three identified tiers and the general categories within each tier.

- Tier 1
  - Tier 1– Seismic and Flooding; develop acceptance criteria for conducting a reevaluation of site specific seismic hazards.
    - Evaluate application of the present day regulatory guidance used for early site permit and combined license reviews to the reevaluation of flooding hazards at operating reactors.
    - Within six months, under 10 CFR 50.54(f) request to (1) reevaluate site specific seismic hazards using the methodology discussed above, and (2) identify actions that have been taken or are planned to address plant-specific vulnerabilities associated with the updated seismic hazards.
    - Within eight months, under 10 CFR 50.54(f) request to (1) reevaluate site specific flooding hazards, and (2) identify actions to address vulnerabilities.
    - Within six months for seismic and within eight months for flood protection, request walkdowns under 10 CFR 50.54(f), to identify and address issues and verify the adequacy of monitoring and maintenance for protection features.

Dr. Budnitz observed some time ago the PG&E Geosciences Department began a tsunami study and a first draft of that report has now been issued but further work remains and will be going on over the next year which should provide better measurements and more information on the offshore configuration in the vicinity of DCPP.

  - Tier 1 – Station Blackout Mitigation for Design and Beyond Design Basis Events
    - Within 4.25 years enact rulemaking to enhance the capability to maintain safety through a prolonged SBO.
    - Within six months order licensees to protect equipment used to satisfy the requirements of 10 CFR 50.54(hh)(2) from the effects of external events, maintain

sufficient capacity to mitigate multi unit events, and develop, implement, and maintain strategies and associated training.

Dr. Peterson observed with regard to SBO, some equipment is more important than other equipment. For Fukushima the steam-driven injection pumps, which ultimately failed due to depletion of battery power, was an example of the most important pieces of equipment the plant had from the perspective of delaying the onset of core damage. He inquired, and Mr. Guldemond confirmed, at DCPP, where the turbine driven auxiliary feedwater pumps perform the same type of function, the auxiliary feedwater pumps (AFW) can be operated manually in the event DC power is lost. Dr. Budnitz observed that Fukushima also had a manual capacity that was inaccessible because of the radioactivity afterwards but it is a mystery why the manual capacity failed early on. Dr. Peterson observed and Mr. Guldemond agreed that at Fukushima the steam used to drive the injection pumps was contaminated with radioactivity and that steam had to be then sent back into containment and back pressure could have played a role in the loss of the steam-driven injection pumps at Fukushima.

- Tier 1 – BWR Containment Venting
  - Within six months order licensees with BWR Mark I and Mark II primary containments to take action to ensure reliable hardened wet-well vents.
- Tier 1 – Enhance Spent Fuel Pool Instrumentation.
  - Within six months order licensees to provide reliable SFP instrumentation including parameters to be monitored, review of the locations of instrumentation, qualifications for instrumentation, and makeup strategies. **Dr. Peterson recommended DCPP consider installing a bubbler tube to allow the water level in its spent fuel pools to be checked manually with no need for electrical power.**
- Tier 1 – Strengthening and Integrating Emergency Response Procedures
  - Within 4.25 years issue advanced notice of rulemaking to issue a rule, on integration of emergency response processes, procedures, training, exercises, and clarifying command and control.
- Tier 1 – Emergency Plans
  - Within six months, under 10 CFR 50.54(f), request to determine staff's response to multi-unit event.
  - Within six months, under10 CFR 50.54(f), request for enhancements needed to power communications equipment for prolonged SBO.

Mr. Guldemond reviewed the Tier 2 recommendations.

- Tier 2

- Tier 2 – Enhanced SFP Makeup and Instrumentation.
    - Within 4.25 years, once sufficient technical information is available, rulemaking to issue a rule, for reliable SFP instrumentation and makeup capabilities. Mr. Guldemond remarked that what happened within the spent fuel pools at Fukushima is not fully understood.
    - Tier 2 – Emergency Plans for Prolonged SBO and Multi-Unit Events
    - Within six months, once sufficient staff with critical skill sets are available, address those changes in emergency plans for response to SBO and multi unit events: multi unit dose assessment; multi unit and prolonged SBO exercise scenarios; practice (simulate) identification and acquisition of offsite resources; and review equipment and facilities to ensure they are sufficient for dealing with multi-unit and prolonged SBO scenarios.

Mr. Guldemond reviewed recommendations made under Tier 3 and observed these are still under deliberation to determine whether or not the conditions that led to the recommendations warrant regulatory action.

- Tier 3
    - Tier 3 Recommendations
        - Ten-year confirmation of seismic and flooding hazards.
        - Potential enhancements to the capability to prevent or mitigate seismically induced fires and floods (long-term evaluation).
        - Reliable hardened vents for other containment designs (long term evaluation).
        - Hydrogen control and mitigation inside containment or in other buildings (long-term evaluation).
        - Emergency preparedness enhancements for prolonged SBO and multi unit events (dependent on availability of critical skill sets).
        - Emergency Response Data System (ERDS) capability (related to long-term evaluation Recommendation 10).
        - Additional emergency preparedness topics for prolonged SBO and multi unit events (long-term evaluation).
        - EP topics for decision making, radiation monitoring, and public education (long-term evaluation).
        - Reactor Oversight Process modifications to reflect the recommended defense-in-depth framework (dependent on Recommendation 1). Dr. Peterson remarked using the concept of defense-in-depth ensures mitigation strategies are developed despite the fact that with lower frequency events it is very difficult to predict what the effect of an actual event may be.

- Staff training on severe accidents, resident inspector training on SAMGs (dependent on Recommendation 8).

Mr. Guldemond reviewed and briefly discussed with the Members and Consultants some additional recommendations under consideration.

- Additional Recommendations for Consideration
  - Filtration of containment vents
  - Instrumentation for seismic monitoring
  - Basis of emergency planning zone size
  - Pre-staging of potassium iodide beyond 10 miles
  - Transfer of spent fuel to dry cask storage
  - Loss of ultimate heat sink

In concluding his presentation, Mr. Guldemond reviewed actions taken at DCPP and some additional actions the plant is currently involved with.

- DCPP Actions
  - Actions Taken To Date
    - Walked down and validated procedures and equipment for mitigating beyond design basis events.
    - Confirmed maintenance and surveillance of equipment for mitigating beyond design basis events.
    - Confirmed and enhanced training on beyond design basis events.
    - Confirmed and strengthened agreements with offsite agencies for providing support to DCPP.
    - Provided refresher training to operating and emergency response organization staff for implementing procedures for beyond design basis events.
    - Procured diesel powered pumps and piping to provide backup to the Auxiliary Saltwater (ASW) system.
    - Obtained an 8kW portable EDG for use under SBO conditions.
    - Modified spent fuel pool abnormal procedures for temporary temperature instrumentation under SBO conditions.
    - Strengthened Emergency Operating Procedures to specifically address SFP monitoring during plant transients.
    - Completed SFP heat-up calculations for use by the Control Room and Emergency Response personnel during upset conditions. **Dr. Peterson remarked a much greater**

amount of water was displaced from the spent fuel pools at Fukushima than had been anticipated and in looking at spent fuel pool heat-up it is necessary to review a range of inventory loss which might be initiated by a seismic event. He suggested post seismic event inspection procedures, including checking the water levels in the pools and inspecting leak chases, should also be considered in connection with the development of a computer program or set of tables to determine heat-up calculations. Mr. Guldemond stated that DCPP has an action in the CAP to modify its post earthquake procedures to do both of the tasks suggested by Dr. Peterson. Dr. Peterson observed that had that ability existed at Fukushima the plant would not have otherwise been required to divert a considerable amount of time and resources trying to spray water into its spent fuel pools which were never really at risk, but would have focused more resources on the reactors.

- Established and implemented equipment protection standards for SFP cooling equipment.
- Confirmed application of shutdown safety principles and standards to the SFP.
- Identified additional equipment needed for mitigating beyond design basis events in both units simultaneously.

- DCPP Actions In Progress
  - Proceeding with a project to replace reactor coolant pump seals with low leakage design in next two refueling outages.
  - Diablo Canyon has a representative actively participating with the industry working group.
  - Actively evaluating actions to improve ability to cope with SBO.
  - Evaluating communication enhancements for SBO.
  - Enhancing the capability to conduct diesel generator restart following a SBO.
  - Evaluating commodity needs for a prolonged station event.

Concerning emergency preparedness, Dr. Peterson stated that while recommendations may include increasing the radius of pre deployment planning, a better approach may be to improve the flexibility, mobility and capacity to deliver resources to where they are needed. He observed that those resources staged to respond to a nuclear-related emergency could also be made available for other types of events such as natural disasters and security-related events. Mr. Guldemond replied and stated there is an industry initiative to do the type of planning suggested by Dr. Peterson in order to provide a wider and more flexible response capacity including the use of military resources. Dr. Budnitz encouraged Mr. Guldemond and DCPP to communicate with others in the industry regarding what DCPP has done and is doing concerning advocating for a more flexible approach to emergency response.

Dr. Budnitz stated the DCISC has reviewed DCPP's capabilities concerning addressing issues with multi-unit planning for emergency response to the same event and he suggested DCPP could

provide leadership to others in the industry in this regard. He stated that DCPP's capacity and need to address these types of issues stem from its location on a seismically active site. Mr. Guldemond confirmed that DCPP is not working in isolation and is coordinating with its partners in the STARS (Strategic Teaming & Resource Sharing) Alliance in its response to Fukushima and is also engaged with a large portion of the nuclear industry to share what it has learned.

Dr. Lam cautioned DCPP, as well as other nuclear power plants, not to allow complacency to develop by focusing on differences between their sites and reactor types and those at Fukushima. He stated his opinion that it is time for the industry to be concerned about beyond design basis events that are not within the category of a seismic event or a tsunami and, to that end, events cannot be dismissed purely based upon probability estimates because mistakes in this regard have occurred in the past and events which were once considered to be extremely unlikely have occurred. He stated it is important to consider these beyond design basis accident scenarios and to determine if there are cost effective measures which involve a commitment of resources that can be implemented.

Consultant Wardell remarked that after many years reviewing safety of operations at DCPP he has a good opinion concerning the strength and robustness of DCPP to withstand and mitigate the beyond design basis events discussed this morning and he asked Mr. Guldemond to identify the items Mr. Guldemond believes are the most important to pursue. In his response, Mr. Guldemond stated he is pursuing Reactor Coolant System make-up capability under SBO conditions from engine room charging pump capability and he confirmed this will continue to be required even when the new RCS pump seals are installed as there remains a need for PWRs to better manage the primary inventory. He commented from an emergency planning standpoint for DCPP more thought should be given to the fragility of the meteorological monitoring towers and the field monitoring towers, as well as to the ability to continue to communicate, as cellular telephone systems are generally unavailable shortly after an emergency occurs. Isolated or stranded plant issues under extreme type conditions were also identified by Mr. Guldemond as items to review and revisit.

The Chair thanked Mr. Guldemond for a very comprehensive review. Ms. Sherry Lewis was recognized from the audience to address comments to the Committee. Ms. Lewis posed two questions and two requests to the Committee. Ms. Lewis inquired whether there were better materials available to use as fuel cladding in order to preclude the production of hydrogen which can occur when zirconium cladding, as is used on the fuel at DCPP, comes into contact with steam; she inquired why the containment venting at the Fukushima was unsuccessful; she requested that the margin for protection from external beyond design basis events include acts of terrorism as well as natural phenomena; and she requested that the DCISC review the requirements or guidelines presented by the Physicians for Social Responsibility group.

Drs. Budnitz and Peterson responded to Ms. Lewis' first question and stated that to date advanced fuel research programs have been unsuccessful in developing a light water reactor fuel which meets all operational requirements but which does not use metal cladding. Dr. Peterson stated zirconium is currently the superior alternative for fuel cladding from the perspective of performance and safety and he reported that Westinghouse and the U.S. Department of Energy are actively researching the use of silicon carbide-based cladding. Mr. Wardell reported zirconium

cladding performs very well under normal operating conditions and performs adequately under accident and upset conditions. He stated that the zirconium cladding only produces hydrogen when exposed to steam at elevated temperatures.

Dr. Peterson, in response to Ms. Lewis' second question, stated that the root cause of the failure to safely vent containments at Fukushima was lack of consideration of how long the containment venting system could function under a prolonged station blackout. This resulted in problems getting to valves and difficulties with instrumentation because there was no access to power. He commented the decisions concerning containment venting at Fukushima were not made at the plant but rather the process extended all the way through the Japanese government to the office of the Prime Minister. He stated with respect to security the DCISC is not comprised or composed of individuals with expertise to evaluate plant security which would require access to safeguards information nor does it have a mandate from the CPUC to do so. In its role, the Committee does evaluate security modifications with respect to effects on operational safety. Dr. Lam commented that access to safeguards information is on a "need to know" basis and that basis, relative to the Committee, has not been established. Dr. Lam stated that the Mothers for Peace, of which Ms. Lewis has identified herself as a member, has access to the NRC's 10 CFR 50.52 petition process relative to consideration of acts of terrorism. Mr. Wardell observed that following September 11, 2001, the NRC directed the industry to perform reviews of all nuclear power plants and to assess performance in the event of fire or flood. The DCISC has reviewed DCPP's procedures, equipment and training and found them adequate to address those issues. Dr. Peterson offered to review the guidelines of the Physicians for Social Responsibility if they were provided to the Committee for that purpose.

In response to Ms. Lewis' follow up question concerning whether there was a chance that a projectile could be discharged from one of DCPP's PWRs and strike the dry cask storage area, Mr. Wardell opined this was extremely unlikely and improbable as the only conceivable missile would be launched as a result of a turbine over spin and that particular scenario has been analyzed and found to be acceptable. Mr. Wardell observed there are a number of barriers within containment including the three-foot thick concrete containment structures themselves to preclude such an event.

Unit Chief Robert Lewin of Cal Fire was recognized to address remarks to the Committee. Chief Lewin stated that as Cal Fire Chief he is also Fire Chief for San Luis Obispo County ("County") and therefore has jurisdiction around DCPP. He stated his department has a good relationship with DCPP and its fire brigade and conducts regular training with the DCPP Fire Department. There is a Memorandum of Understanding with PG&E and he stated that in his professional opinion DCPP has a first-rate fire department. He stated, however, that there are many lessons to be learned from the events at Fukushima for first responders. He remarked that in the past his responsibilities did not appear to extend to participating in trying to cool down the plant and its spent fuel and based on the events in Japan that now appears to be a real possibility. He questions whether his Department is training on the correct methods to be used in such an event and expressed his belief that his Department should have real time experience in laying hose lines from the heat sink in the Pacific Ocean to the reactors and spent fuel pools at DCPP. Chief Lewin stated he has questions about the robustness of the communications systems which would be required and how to conduct briefings

and schedule personnel rotations if sustained, extended fire fighting duty were required at DCPP. His Department has not trained for this in the one-day scenarios which have taken place in the past where the incident is concluded and everyone goes home after one day. Chief Lewin stated that PG&E has recognized these issues. He stated that the local fire departments, along with law enforcement also have off-site responsibilities away from DCPP during emergencies and there could be conflicts with what resources his Department is required to commit to DCPP as well as to other areas. He questioned the adequacy of the two access roads now available to DCPP, as both are within the tsunami inundation area, and commented that perhaps use of the access road which serves the power lines going up Diablo Canyon should be reviewed. Chief Lewin stated he would not be satisfied until personnel from his Department have actually been on site at DCPP performing the necessary exercises and he stated that PG&E is supportive of this. He stated review of other types of issues would also be necessary including training, the adequacy of the County's Emergency Operations Center, communications, and sustained response planning.

The Chair thanked Chief Lewin for his comments and directed that they be accurately included in the Minutes for this public meeting. **Dr. Budnitz stated that he would very much like to discuss all these topics with Chief Lewin during a future fact-finding visit** and then the Committee could form its own independent assessment and he commented this was an area which the DCISC should review. Dr. Budnitz observed that the role of Cal Fire in an emergency at DCPP would be different from what others at the plant would do and he agreed that training was essential to identify those roles and to make the interaction between plant and fire department personnel as advantageous as possible. Dr. Budnitz recalled an explosion in 1965 in Cambridge MA where there had not been any training conducted of the local fire department concerning radiation and the result was the destruction of the building housing, at that time, the highest energy electronic accelerator in the world. **Dr. Peterson expressed his appreciation and thanks to Chief Lewin and agreed with Dr. Budnitz that additional meetings should be arranged to review in detail all the issues raised by Chief Lewin.** Dr. Peterson stated Chief Lewin was correct that at Fukushima both military and firefighters from substantial distances away were brought in to assist in the emergency response at the plant site and better coordination and training would be a wise thing to pursue. Dr. Peterson stated there would be substantive benefits to Chief Lewin and DCPP staff to become familiar with the procedures to be used, as Chief Lewin would also play a role in the community in terms of being a credible expert in emergency response. Dr. Peterson stated he would be interested in the Chief's review and opinion of how well DCPP can undertake the actions it is committed to perform under stressful conditions which plant personnel do not often face but which are confronted on a much more frequent basis by firefighters.

Chief Lewin responded that in California there is a considerable ability to mobilize rapidly in any emergency, such as wildland fires during which it is common to have more than 1,000 fire fighters mobilized and on the fire lines for extended periods of time. He stated there are systems in place to do that for all disasters and it was his intention to make sure that capability existed specifically for DCPP. **In response to Mr. Rathie's inquiry, Chief Lewin stated a copy of the Memorandum of Understanding setting forth the responsibilities of PG&E and Cal Fire could be provided for the Committee's review, however, he stated it does not involve consideration of response to an incident which might spread off site.**

A short break followed.

Following the break Ms. Lisa Bonyer, a member of the public present in the audience, was recognized. Ms. Bonyer stated she was the agricultural liaison to the San Luis Obispo Board of Supervisors and a local farmer who farms within ten miles of DCPP. She observed that the main industry in San Luis Obispo County is agriculture and like Fukushima, DCPP is surrounded by agricultural uses. She requested an update of what planning efforts have been undertaken concerning contamination and food safety matters, including reentry onto land to get it back into production in the event of a radioactive release at DCPP. She observed that after the accident at Chernobyl contamination was widespread and there were significant food safety issues. Dr. Peterson replied that at Fukushima there have been public health measures taken to restrict the distribution of food, including cattle and milk, from nearby areas due to contamination as part of the emergency planning process and this includes long term monitoring of agricultural activities. He stated that such plans in the U.S. will require reevaluation as a result of Fukushima as there is much to be learned and this review will constitute an element of future emergency response training. Mr. Loren Sharp, DCPP Senior Director of Technical Services, stated that training is conducted periodically on steps which might need to be taken within the 50 miles around DCPP to provide information to the County concerning any plume of radioactivity which might be released from DCPP but it is the County which makes the determination concerning protective actions.

Mr. Sharp then requested Mr. Ryan West, Manager of Instrument & Control Electrical Systems at DCPP to make the next informational presentation to the Committee.

Overview of the DCPP Electrical System.

Mr. West stated his presentation would cover an overview of the DCPP electrical distribution system including the capability of maintaining power to the equipment required to protect nuclear fuel integrity. He described the DCPP electrical systems as consisting of:

- 500 kV AC- DCPP output interface with transmission system/ delayed source of off site power.
- 230 kV AC- Immediate source of offsite power (transmission system) following trips or accidents.
- 25 kV AC- Generator output to generator step up transformers.
- 12 kV AC- Power supply for large medium voltage motors.
- 4 kV AC- Power supply for medium voltage motors (i.e., ECCS Pumps).
- 480 V AC- Power supply for low voltage motors and motor operated valves.
- 120 V AC- Control power and power supply for small loads.
- 250 V DC- Power supply for DC loads.
- 125 V DC- Control Power/station battery.

Mr. West provided and reviewed a schematic depiction of the 500kV and 230kV Systems. He stated 500kV is the level at which DCPP provides power to the California power grid and the 500kV System

is also the delayed source of off-site power for DCPP if it becomes necessary to backfeed power to the plant. The 230kV System is the immediately available source of power for DCPP, to which the plant automatically connects in the event of any accident and is also used during shutdown and refueling outages. The 25kV system is a system providing interface between the 500kV System and the generator and is used to transfer power between the generator and the grid and also for the house loads which are fed to auxiliary transformers. The 12kV System is used to operate the large reactor coolant pump motors as well as the two circulating water pumps. Mr. West described the equipment shown on the schematic as non vital or non designed class one equipment.

Mr. West stated the 4kV System is considered vital, with three vital buses, F, G and H on each unit. There are also non vital 4kV buses which run equipment on the secondary side of the plant but which, unlike the vital buses, do not have access to the EDGs. Below the 4kV System are the 480 volt load centers which run small motors, motor-operated valves, heaters, battery chargers, etc. There is also a 120 volt system.

Mr. West provided a schematic of normal offsite power alignments and stated DCPP's preferred source of power is either from the generator or from the transmission grid. When the plant is offline there is the ability to open a motor operated disconnect and supply DCPP loads by the 500kV grid. There is also a method to supply DCPP loads from the 230kV grid.

Mr. West reviewed the Vital (Design Class I or safety-related) electrical systems at DCPP, primarily the 4kV vital buses F, G and H, as follows:

- Vital power is the power supply for functions credited with protecting the health and safety of the public (i.e., cooling the reactors, protecting the fission product barriers, monitoring the status of the reactors).
- Three independent vital electrical 4 kV buses (F, G and H) per operating unit.
- Each of the vital 4 kV buses has three sources of power (dedicated EDGs, 500 kV and 230 kV).
- Each of the vital 4 kV buses powers the associated lower voltage systems (480V and 120V).
- Each of the vital 4 kV buses has a dedicated DC system as back-up and control power.
- Vital electrical equipment is seismically qualified to operate following design basis earthquakes.

Mr. West displayed and described a schematic diagram of an overview of the vital instrument power distribution showing the interrelationship between the portions of the distribution system. He stated the 4kV buses feed the battery chargers which charge the batteries and supply power to the DC distribution system. Each of the vital buses has its own batteries, its own DC system and inverters specific to each bus, three to each unit.

Mr. West reviewed the Non Vital (Design Class II or non safety-related) electrical systems at DCPP, primarily buses D and E on each unit, as follows:

- Non-Vital power is not directly credited with protecting the health and safety of the public.
- Includes two non vital 12 kV buses (D and E) for large motors.
- Two separate non vital electrical 4 kV buses (D and E) per operating unit.
- Each of the non vital 4 kV buses has only two sources of power (500 kV and 230 kV).
- Each of the non vital 4 kV buses powers the associated lower voltage systems (480 V and 120V)
- Capability to cross-tie and transfer lower voltage buses between 4 kV Busses D and E.
- Battery backup is provided for non vital DC systems.
- Non-Vital electrical equipment is seismically qualified to the Uniform Building Code standards.

Mr. West displayed and described a schematic diagram showing an overview of the non vital electrical power distribution including the 4kV buses D and E and the non vital buses at the 480V level and he described the plant's ability to cross-tie the power distribution systems. He confirmed there is battery backup on the non vital equipment but uninterrupted power supplies are not generally provided for those non vital systems although there are some individual loads which have inverters such as the Digital Feedwater System and the Plant Process Computer.

In response to Dr. Lam's inquiry, Mr. West stated that for a non design basis loss of off site power the DC batteries on the vital buses would provide five to six hours of power during which time one of the six EDGs would hopefully be returned to service. Once AC power was available from an EDG, which could be started without AC power, power would be restored to the battery chargers and the batteries would be recharged. He confirmed Dr. Lam's observation that the five to six hour limit could be extended by taking action to shut down non essential equipment and users. **Dr. Lam stated that when he visited the battery rooms for each unit he noticed there was a penetration adjacent to the ceiling which, he was informed, had been used as part of a cross-tie between U-1 and U-2 vital DC power systems and he inquired why that cross-tie capability had been disabled.** Mr. West stated he was unsure and unfamiliar with that previous cross-tie, however, he stated the plant's original design included a bus F diesel which was to be a shared component between the units. Dr. Lam stated he was not referring to a diesel but to the batteries and he speculated the cross-tie may have been disabled due to system interface issues, however, he stated that perhaps a means for enabling a cross-tie during an emergency might be useful. **Mr. West promised to follow up and to provide a response concerning Dr. Lam's question.** Mr. Wardell stated that although the cross-tie capability was eliminated some years ago it was his understanding the capability was retained to manually cross-tie the U-1 and U-2 DC power systems. Mr. West stated DCPP also has the ability to manually cross-tie the vital buses for beyond design basis events, to restore battery charge for DC equipment. **Dr. Peterson observed that after Fukushima there are going to be assessments made concerning whether battery capacity needs to be added and he inquired whether DCPP has the current capability to hook up portable generators and procedures to**

recharge batteries from those portable generators. Mr. West replied that this issue was being evaluated at DCPP and that he was unaware of any portable equipment or procedures to recharge the batteries other than described in his presentation. He stated any change to in-plant procedures would include 150 days for the plant to respond. **Dr. Peterson commented this issue should be part of the DCISC's beyond design basis category on the Open Items List and a subject for future fact-finding.** He commented that at Fukushima due to lack of effective preparation both the first and second portable generators which the plant attempted to use failed to become operable and when a portable generator was connected to Fukushima Reactor 2, the explosion in Reactor 1 severed its cables. In response to Mr. Wardell's question, Mr. West confirmed the non vital power systems are designed to Uniform Building Code standards and Mr. West reported that during the San Simeon earthquake in 2001 there were no issues with the non vital power equipment during the earthquake when the ground motion at DCPP was 0.04g and he stated the uniform building code requirement is on the order of 0.25g, so the margin proved to be sufficient.

The Chair thanked Mr. West for his presentation.

Senior Director of Technical Services at DCPP, Mr. Loren Sharp, was recognized to make the next informational presentation.

Update on Seismic Issues.

Mr. Sharp stated in his presentation he would review the status of the Shoreline Fault Report, the status of the two-dimensional (2D) and three-dimensional (3D) seismic studies, the tsunami hazard studies and DCPP's Seismically Induced Systems Interaction (SISI) Housekeeping Program.

Mr. Sharp reported the final Shoreline Fault Report was submitted to the NRC in January 2011. Currently, the NRC has gone as far as it can with its internal review of the report and has subcontracted further review to Southwest Research Institute (SWRI) to review the report in three subject areas. In response to Dr. Lam's question, Mr. Sharp replied that while the NRC's resources are actively engaged at the present time with events and issues at the North Anna Nuclear Generating Station in Virginia, Southwest Research Institute has the expertise to perform further review of the Shoreline Fault Report. SWRI's review is scheduled to be completed by end of December 2011 and the NRC will review input from SWRI and should complete its review by end of January 2012.

Mr. Sharp reviewed the scope of the 3D Seismic Project undertaken in response to Assembly Bill 1632. PG&E is conducting additional assessments of the Hosgri, Shoreline, and other faults in the vicinity of DCPP:

- Onshore 2D high energy scope near coast
- Offshore 3D high energy survey
- Offshore 2D/3D Low Energy Marine Studies
- Installation of four Ocean Bottom Seismometer (Network Extension)

The onshore 2D Survey is being undertaken to obtain additional data on local onshore faults and Mr. Sharp reported PG&E is obtaining the required permits; data collection has started; vibratory trucks and remote receivers will be used; and data collection is expected to be completed in 2011. He showed a photo of the two types of trucks being used to conduct the study and stated 122 miles of roads, public and private, paved and unpaved, would be surveyed for deep imaging by the simultaneous operation of four 65,000 lb. vibrating trucks which can be used on wide roads with moderate grades. The accelerated weight drop trucks being used in the 2D Survey can provide only shallow imaging but they can be used in rugged terrain. Mr. Sharp reported the schedule for the 2D Study has been advanced by one month to avoid the rainy season. He stated obtaining encroachment permits and rights of entry for the 2D Study has proved challenging. Mr. Sharp displayed a video of vibrating trucks conducting operations in Long Beach CA and stated the trucks usually stay in place for about three to five minutes when in operation. The 2D Study will use remote receivers in connection with the trucks and he showed a photo of the cable-based recording and wireless nodal land recording systems which are being used to measure seismic reflection. Consultant Wardell commented that on its tour of the plant with members of the public the Committee saw some of the 5,000 recording nodes which will be in use installed along the road to the plant.

Mr. Sharp stated the 3D High Energy Offshore Survey is being conducted in two areas: a northern survey area extending for 547 miles is expected to have a 22-day survey duration; while the southern survey area extends for 765 miles and is expected to have a 30-day survey duration. The scheduled survey window is from September to December 2012, and work will go on for 24 hours a day, seven days a week. He stated the survey window does not currently incorporate any down time for maintenance or weather or for marine mammals such as whales entering an active survey area. A vessel from Columbia University, the m/v Marcus Langseth, has been contracted to conduct the offshore 3D High Energy Seismic Imaging Survey from Cambria to Point San Luis in water up to 1,400 feet deep. The Langseth is a specialized survey vessel approximately 235 feet in length and it will tow three streamers, with receivers of about 3.7 miles in length which will utilize two strings of tuned air guns, nine in each streamer. The receivers will be approximately 33 feet below the surface. The air guns will be activated approximately every 16 seconds, or every 123 feet, creating air bubbles that will collapse and send vibrations to the sea bed where the signals will be detected on the bottom and bounced back up to the streamers towed behind the air guns. Additional scout and support vessels will also be utilized. He reviewed the configurations of the air gun array and hydrophone streamers:

- Air Gun Array
    - Two tuned air gun arrays, consisting of two sub- arrays with 1,650 cubic inches (3,300 in 3 total).
    - Mixture of Bolt 1500LL and Bolt 1900LLX air guns.
    - Tow speed of 4.5 knots with shot intervals of 37.5 meters
- Hydrophone Streamers

4 seismic streamers with a length of 3.7 miles

- Total width of array is 0.25 miles

Mr. Sharp stated that because of the Langseth's draft, it will not be able to closely approach the coastline and a different technique has been developed, using a strategy with five lines going out to sea for more than three miles which will employ geophones attached to a line on shore and he commented signals will also be obtained from an onshore 2D source as well as from the ships, to provide signals within the surf zone.

Mr. Sharp displayed maps showing the areas where the various survey techniques are now being employed, and will be employed, on shore, around the Morro Bay Strand and in the vicinity of Cambria and he displayed a chart of the seismometer locations on the sea bed extending out from Diablo Canyon. These seismometers are connected to the shore by a 11-mile conduit cable and he indicated on the chart the locations of the permanent and the temporary seismometers embedded in the ocean floor and he displayed a photo of each type of seismometer.

Mr. Sharp reviewed the types of permits from various agencies which will be required for the survey work and reported the State Land Agency is the lead agency for the high energy 3D off shore work. He reviewed the current best estimate schedule for the various studies and surveys which projects the issuance of a final seismic report in August 2013. He stated DCPP is required to provide an update to the NRC Atomic Safety Licensing Board concerning the current schedule for the various studies.

Mr. Sharp reported that tsunamis were evaluated in the Final Safety Analysis Report (FSAR) as part of the issuance of DCPP's original operating license. He mentioned that the license design basis for tsunamis was based on a deterministic approach using the distance from a generated tsunami, as well as for a locally generated near-shore tsunami, combined with data on high tides, storm tides and storm surge at DCPP recently. A Probabilistic Tsunami Hazard Analysis (PTHA) was performed for DCPP using insights from the Sumatra tsunami. The PTHA employed new, probabilistic methods for addressing different natural hazards under a risk-informed framework. The PTHA also assessed the hazard risk of landslide initiated tsunamis. The PTHA hazard evaluation confirmed the adequacy of the existing DCPP tsunami design.

The NRC is in the process of updating its guidance for tsunami hazards analyses (Ref NUREG/CR-6966). PG&E is working with the Pacific Earthquake Engineering Research Center (PEER) in Berkeley to conduct a technical workshop on tsunamis to:

- Evaluate the aleatory variability of the wave heights due to limitations of the numerical models (unexplained randomness).
- Improve landslide characterization of the continental shelf to better map potential underwater landslides.
- Evaluate results of National Tsunami Hazard Mitigation Program (NTHMP) study that is comparing different tsunami simulation codes.

- Evaluate tsunami source characterization for high magnitude megathrust events in the Pacific Rim.

Mr. Sharp concluded his presentation by reporting on the DCPP Seismically Induced Systems Interaction (SISI) Housekeeping Program. This program ensures systems structures and components (SSCs) required for a safe shutdown of the plant, as well as certain accident mitigating systems, will not be impaired from performing their safety function as a result of seismically induced interactions. The objectives of the SISI Program are met on an ongoing basis. Plant modifications and housekeeping and maintenance activities are reviewed for their potential to create SISIs. The SISI Program provides technical guidance to DCPP support personnel to enable them to perform SISI evaluations.

Mr. Sharp reported on SISI performance monitoring which includes:

- All plant areas except containment are inspected monthly for SISI housekeeping concerns. Containment is inspected and secured following refueling outages.
- Program owner perform monthly assessments of the process using program metrics.
- Program cornerstone health reports are updated quarterly.
- A quick hit self assessment of the SISI Program is performed every two years.
- A formal self assessment of the process is performed at least every two years (in addition to the quick hit self assessment).

In response to Consultant Wardell's question, Mr. Sharp stated that the SISI Housekeeping Program is currently in green health status. Mr. Sharp reported that benchmarking has confirmed the strength of DCPP's SISI Housekeeping Program. While some other power reactor sites do address seismic interaction since seismic activity is a major focus at DCPP and was part of its operating license requirements DCPP's program appears to be more formal than others. Mr. Sharp reported on current SISI Housekeeping Program performance as follows:

- The SISI Program is currently in a positive status as shown in the August 2011 System Health Report.
- Previous adverse trend with plant personnel introducing SISI sources near SISI targets was addressed by self assessment and ACE corrective actions.
- NRC questioned SISI sources out in the plant including carts and stanchions; all concerns have been entered into the CAP and resolved and SISI sources evaluated by Engineering Fix It Now (EFIN) team.

Following Mr. Sharp's presentation, Ms. Sherry Lewis, a member of the public and of Mothers for Peace, was recognized to address remarks to the Committee. She stated she wanted to receive information on the potential for landslides on the continental shelf. Mr. Sharp replied that the off

shore studies now being undertaken by PG&E are 3D seismic studies based on mapping earthquake faults to determine and assess how deep in the earth's crust and at what angle such faults may exist in the vicinity of DCPP. Dr. Budnitz stated the PG&E Geosciences Department is considering doing some additional tsunami studies because the availability of the Langseth makes it practical and economical to do so in conjunction with the 3D studies. However, these tsunami studies are not considered to be definitive nor are they part of the Tsunami Program.

XIX. Adjourn Morning Meeting

The morning session was adjourned by Dr. Lam at 11:30 a.m.

XX. Reconvene For Afternoon Meeting

The afternoon meeting of the DCISC was called to order by Committee Chair, Dr. Lam, at 12:45 P.M.

XXI. Committee Member Comments

There were no comments from the Committee members at this time.

XXII. Public Comments and Communications

There was no response to the invitation from the Chair to any member of the public who wished to address remarks to the Committee.

XXIII. Information Items Before the Committee (Cont'd.)

The Chair requested Mr. Dan Brosnan, Principal Nuclear Engineer at DCPP, to make the next informational presentation to the Committee.

Overview of the Containment Sump.

Mr. Brosnan began his presentation with a review of his professional background. He stated he has been with PG&E, both at DCPP and in San Francisco, since 1989 and holds professional registrations with the State of California in electrical and nuclear engineering.

Mr. Brosnan stated that the containment sump installed in each DCPP unit is equipment which is not needed for normal plant operation but is intended for use only in a situation involving a significant loss of coolant accident (LOCA) which results in an injection phase to inject cooling water into containment. Mr. Brosnan reviewed two issues related to the focus on the containment sump which occurred in the early 1990's. These were Generic Safety Issue (GSI)-191 and Generic Letter (GL) 2004-02 which both relate to the potential impact of debris blockage on emergency circulation during design basis accidents at PWRs. Mr. Brosnan stated the focus on PWRs followed concerns with BWRs at the Perry and Limerick nuclear power plants when strainers became clogged. In response to Dr. Peterson's question, Mr. Brosnan replied in a BWR the strainers are located in the drywells which are part of the pathway used for refueling a BWR.

Mr. Brosnan reviewed the function of the containment sump during an event involving a pipe break and resulting water leak into containment. The containment sump comes into use as the reservoir for water which is recirculated back into the core. The containment sump collects reactor coolant and chemically reactive spray solutions following a LOCA. The containment sump serves as the water source to support long-term recirculation for the functions of residual heat removal, emergency core cooling, and containment atmosphere cleanup. This water source, the related pump inlets, and the piping between the source and inlets are important safety components. He provided a pictorial representation inside containment showing the alignment of the various piping systems and the pathways available for water and steam following a LOCA. In response to Dr. Peterson's question Mr. Brosnan stated main steam line break scenarios have also been analyzed but do not represent a LOCA and he confirmed there is no recirculation issue involved with a main steam line break.

Mr. Brosnan displayed a picture and described the component parts and function of the containment recirculation sump strainer for U-1. He reported DCPP was constructed with an 80 square foot strainer, which was subsequently increased to 700 square feet, and later to 3,300 square feet. He stated there is concern in that the strainer not be too large because significant amounts of fiber could then bypass the strainer and impact the fuel; but the strainer cannot be too small as to preclude sufficient head suction for the pumps. Mr. Brosnan described it as a delicate balance to ensure debris is filtered so it does not reach the core while ensuring there is sufficient flow to the pumps to cool the core. In response to Dr. Lam's observation, Mr. Brosnan confirmed the pumps are robust but there is concern about debris passing through them, in what is termed bypass and ingestion, and it is necessary to make sure the debris is not causing wear to the pump seals.

Mr. Brosnan reviewed and discussed with the Committee several of the points on DCPP's timeline regarding resolution of issues concerning the containment sump as follows:

- 2000 Installed New 700 square foot strainers Units 1&2
- 2004 Tested DCPP strainer in Alion flume in Chicago
- 2006 Steam Jet-Testing of Insulation at Wyle Labs
- 2006 Tested DCPP strainer in PG&E flume with chemical effects
- 2006 Issued purchase specification for new strainer
- 2006/7 General Electric (GE) Strainer head loss testing at Continuum Dynamics Inc. (CDI)
- 2007/8 Installed 3300 square foot strainers in Units 1&2
- 2008 Fuel head loss testing at Continuum Dynamics Inc.
- 2008 DCPP Files Supplementary Response with NRC.
- 2009 Wyle and Westinghouse discover jet test setup error
- 2010 Pressurized Water Reactors Owners Group (PWROG) responds to NRC questions on jet blast effects
- 2011 PWROG Re-test: Temp-Mat, Calcium silicate and cable tray covers

- 2011 PWROG In-vessel Fuel Testing (Long Term Core Cooling)

Mr. Brosnan reported that during 2008 DCPP identified a significant source of debris from the insulation on its steam generators, but as the steam generators were to be replaced beginning in 2009 with insulation which would not be debris for the sump, DCPP was allowed some additional time to meet the NRC's deadline.

Mr. Brosnan identified and discussed what he described as the path to resolution which consists of a multiple solution pathway to achieve debris reduction, a larger strainer, and testing for compliance:

- Key insulation was replaced or jacketed (Fiber insulation was removed during the Steam Generator Replacement Project)
- Insulation systems were jet-tested to prove debris reduction
- Installed debris interceptors to capture debris
- Sump Strainer surface area increased to 3300 square feet per unit
- Increased water inventory in refueling water storage tank
- Strainer tested for head loss and for fiber bypass
- Fuel Assembly tested for head loss
- On-going Containment Cleanliness Program

Mr. Brosnan displayed photos and discussed the jet-testing using 2,000 pound per square inch (psi) steam at 530° F performed on the Temp-Mat insulation, the jacketed temp-mat insulation, the calcium silicate piping insulation and the power cable for the pressurizer heaters fiberglass and mica cable trays. He discussed with the DCISC the debris interceptors which are installed on three doors in the containment crane wall and he described the details of the containment sump strainers by using a cutaway drawing. Mr. Brosnan stated fuel testing was conducted and witnessed by five NRC staff members and from these tests DCPP has a high degree of confidence that the NRC will accept DCPP's approach.

Mr. Brosnan discussed the containment strainer and cleanliness programs and the inspection and cleanliness components:

- Inspection - Surveillance Test Procedure M-45A, inspects the strainer before and at the end of an outage to verify no flow restriction due to debris and no evidence of structural distress or corrosion.

- Cleanliness - Surveillance Test Procedure M-45D provides the requirements to perform a latent debris survey every other outage (or after any invasive or extended maintenance outage). Latent debris survey performed per industry guidelines provided in Nuclear Energy Institute (NEI) 04-07. Design limits are 100 pounds. Four surveys have been performed in the past, two for U1 and two for U2, with an as found maximum latent debris of 14 to 95 pounds.

Concerning industry programs, Mr. Brosnan stated there are two ongoing programs and DCPP is participating in both. These are the jet-testing program to reduce debris and the fuel testing program to confirm long term core cooling. DCPP successfully jet-tested Temp-Mat and calcium silicate piping insulation and the cable tray covers which protect electrical cable insulation and PWROG fuel test results confirm Diablo Canyon meets the requirements for long term core cooling.

Mr. Brosnan reported that DCPP is currently the only plant with a full strainer back flush capability while cooling the core at the same time. This allows a procedure to permit back-flushing of debris off the strainers. He confirmed Dr. Budnitz' observation that this capability was integral to the original design for DCPP but has been retained with the installation of new, larger strainers. In response to Dr. Lam's inquiry, Mr. Brosnan replied that once a strainer is back flushed the debris does not return due to reduced cooling water flow characteristics at the time of back flushing and the increased bypass created by back flushing does not pose a problem. He reviewed and discussed the back flush alignment options which include:

- Back Flush from the Refueling Water Storage Tank (RWST) using Containment Spray
- Back Flush from RWST using Residual Heat Removal Pumps
- Back Flush from Reactor Coolant System using Gravity Feed
- Back Flush from RWST using Gravity Feed

The NRC Commissioners issued a staff requirements memorandum on December 23, 2010, entitled "Closure Options for Generic Safety Issue (GSI) – 191, Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance" (SECY-10-0113) and Mr. Brosnan reviewed the steps being required by the NRC to develop a path forward including:

- Industry Jet-Testing and In-vessel Fuel Testing expected to be complete by the end of 2011.
- Deferring further GSI-191 plant modifications until tests and analyses are complete.
- Industry is expected to develop a path forward in mid 2012
- NRC staff to keep the Commission informed of progress via routine briefings (every 6 months) and send a report in 18 months identifying policy options for closing GSI-191.

Mr. Brosnan reviewed the last paragraph of the NRC memorandum which concluded, given the vastly enlarged advanced strainers installed, the compensatory measures already taken and the low probability of challenging pipe breaks, that defense-in-depth is currently being adequately maintained. Mr. Brosnan concluded his presentation by presenting a list of the physical improvements undertaken at DCPP in response to GSI-191 including:

- Installation of a new containment sump strainer assembly with approximately five times the area of the sump screens upgraded in the tenth refueling outages in 2000 and 2001, and 40 times the area of the original screens.

- Modification of the reactor cavity door to allow more debris to flow into the reactor cavity inactive sump.
- Addition of three debris interceptors to capture reflective metal insulation (RMI) and unqualified coating paint chips.
- Installation of multiple banding on approximately 1,400 linear feet of calcium silicate (cal-sil) piping insulation inside the pipe break zones of influence.
- Installation of stainless steel jacketing on Temp-Mat piping insulation inside the pipe break zones of influence.
- Installation of tray covers to protect the pressurizer heater cable insulation in cable trays below the pressurizer.
- Installation of stainless steel jacketed temp-mat insulation on the inlet to the pressurizer safety valves.
- Removal of calcium silicate and mineral wool insulation, installation of stainless steel jacketed temp-mat insulation, and installation of reflective metal insulation on all four steam generators.

Actions remaining to be accomplished include: developing and implementing a closure plan for both units; finalizing jet-testing report and NRC safety evaluation; updating the GL 2004-02 Supplemental Response to the NRC; and after NRC concurrence, implementing necessary changes. In response to Dr. Budnitz observation, Mr. Brosnan confirmed that DCPP is ahead of many of the other PWRs in completing actions related to the containment sump. In response to Dr. Budnitz' inquiry about regulatory credit for back flushing capability Mr. Brosnan stated operators have been hesitant to make back flushing a part of normal safety response, as it is never intended to be used and when you install a safety function design it requires redundancy and separation, which are two criteria back flushing does not meet, but he confirmed back flushing has been tested and it is part of plant procedures and part of DCPP's Emergency Plan. Mr. Brosnan confirmed Dr. Budnitz' comment that in the unlikely event circumstances required back flushing it would not require immediate action but rather would only occur after the passage of some time.

Dr. Peterson commented that as long as the plant monitors for leakage, primary pressure boundary piping cracks cannot grow large enough to sustain a large break. Therefore the risk from a LOCA would be associated with a small break and he questioned whether such a small break would create debris and recirculation flow. Mr. Brosnan stated the general answer to Dr. Peterson's question was no, because small LOCA breaks would be handled with charging pump injection and would not go to recirculation and accordingly the strainer would not be required. Dr. Peterson concurred and stated it is important to emphasis that there is conservatism associated with the sump strainers because a large break initiating event is highly unlikely provided that a plant is monitoring for leakage in the primary loop. Mr. Brosnan stated he agreed and commented the industry has been pressing the NRC to expand its use of general design criteria for a leak before break. Dr. Lam

commented Mr. Brosnan's presentation was a good example of the effort and resources PG&E has devoted to resolving a generic issue and he stated his opinion that with back flush capability and the work PG&E has done the safety margin of the plant has been increased.

Following Mr. Brosnan's presentation, Ms. Sherry Lewis was recognized. Ms. Lewis inquired what was meant by "bypassing." Mr. Wardell replied that bypassing in the context referred to in Mr. Brosnan's presentation meant water bypassing the filtering capabilities of the containment sump screen. Dr. Budnitz confirmed for Ms. Lewis his earlier observation that in a large break LOCA scenario the debris collection on the screen evolves very slowly, so DCPP's capability to back flush the screens would not be called upon for many days following such an accident.

A short break followed.

Site Vice President Jim Becker was welcomed by the Chair to make the final informational presentation requested by the Committee for this public meeting.

Overview of Nuclear Safety Culture.

Vice President Becker stated nuclear safety culture is uniquely important to nuclear power plants and is recognized at DCPP for its importance. He defined nuclear safety culture as an organization's values and behaviors, modeled by its leaders and internalized by its members, that serve to make nuclear safety the overriding priority. Mr. Becker remarked the NRC incorporates nuclear safety culture in its regulatory oversight process and he reviewed and discussed the eight INPO-identified principles for a strong nuclear safety culture:

1. Everyone, including the craft, engineers and clerical personnel, is personally responsible for nuclear safety.
2. Leaders play a unique role and must demonstrate commitment to safety.
3. Trust must permeate the organization.
4. Decision-making reflects safety first.
5. Nuclear technology is recognized as special and unique, nuclear reactors even when shut down continue to produce heat and that heat must be removed.
6. A questioning attitude is cultivated, it is important to constantly question what could go wrong.
7. Organizational learning is embraced as is the recognition that there are always opportunities to improve.
8. Nuclear safety undergoes constant examination, the NRC, DCPP internal oversight groups, INPO and the DCISC are all examples of forms of oversight.

Mr. Becker commented at DCPP the Site Standards Handbook discusses and reinforces these principles and observable standards.

Mr. Becker reported that from the NRC's regulatory perspective, and closely related to INPO principles, a safety conscious work environment (SCWE) is an important concept and is also referenced in the Site Standards Handbook at DCPP. Vice President Becker commented that in a properly functioning SCWE individuals feel free and are openly willing to identify and raise issues, questions or concerns, express differing professional opinions or viewpoints dealing with nuclear or radiological safety, quality, security, environmental or regulatory compliance, and do so without fear of retaliation. Issues identified are addressed promptly, with timely feedback to the initiator.

In response to Dr. Peterson's request, Vice President Becker stated employees have various avenues to raise concerns including with their immediate supervisor, within the CAP, through the Differing Professional Opinion (DPO) Program, through the Employee Concerns Program (ECP) or directly with the NRC. **Mr. Becker stated the ECP reports directly to PG&E's Chief Nuclear Officer while the DPO Program is an administrative procedure which works to achieve a consensus. He agreed to provide information to the DCISC on the final adjudication procedure that the DPO Program follows.**

Vice President Becker reviewed safety culture progress at DCPP and reported DCPP has made the following improvements:

- Increased communications with the plant staff in the following areas:
  - Reinforcing the importance of a sound nuclear safety culture.
  - Reinforcing awareness concerning the methods for reporting nuclear safety concerns
  - Improving communication concerning resolution of nuclear safety concerns
- Implemented the recommendations of NEI 09-07, "Fostering a Strong Nuclear Safety Culture."

Vice President Becker stated Nuclear Energy Institute (NEI) document 09-07 was directed at fostering a strong nuclear safety culture. He reported all U.S. nuclear power plants are adopting, in some manner, the recommendation of the NEI concerning forming a safety culture monitoring panel and such a panel is now in place at DCPP. NEI document 09-07 places primary responsibility on line management and in particular on the site leadership team for nuclear safety culture and to provide an ongoing holistic, objective, transparent and safety-focused process. This process uses all of the information available including ECP data to provide an early indication of potential problems as well as strong points in nuclear safety culture to develop effective corrective actions and to monitor the effectiveness of those actions. The Safety Culture Monitoring Panel at DCPP is headed by the QV Director and is a diverse team with experienced personnel from various departments which reports at least quarterly to the plant's senior leadership team. Membership on the Panel is limited and Mr. Becker stated membership on the Panel should not be too broad. Membership is also limited to protect the confidentiality of personal information. **The Panel has issued two reports which Mr. Becker offered to share with the DCISC.** He stated the Safety Culture Monitoring Panel monitors the inputs most indicative of the health of the organization's nuclear safety culture to identify potential concerns in the work environment that merit additional attention by the

organization. Vice President Becker remarked that in the future, to increase safety culture awareness at the site, the Safety Culture Monitoring Panel reports may be broadly shared within the plant and not confined to just the plant's senior leadership team.

Mr. Becker reviewed results of the emphasis on safety culture and stated DCPP has undergone a number of NRC inspections that examined its nuclear safety culture. The latest concluded in July 2011 and used NRC Inspection Manual Chapter 40100, "Independent Safety Culture Assessment." The NRC issued no violations as a result of these inspections. Mr. Becker commented the NRC identified and commented that DCPP employees felt that it was safe to raise safety concerns and the employees would not hesitate to raise a concern in at least one, if not more than one, of the avenues open to them to do so. As part of DCPP's day-to-day commitment to excellence, Mr. Becker stated DCPP continues to learn from and make improvements to its nuclear safety culture. He reported that a recent INPO evaluation provided feedback to DCPP based on the eight principles reviewed earlier in his presentation.

Dr. Lam stated during the Committee's tour of the plant he had a conversation with two longtime DCPP employees about nuclear safety culture and he came away with the impression that both felt personally responsible for their activities on site regarding nuclear safety. Mr. Becker commented this is precisely what the plant leadership is trying to instill in all DCPP employees. Consultant Linnen commented on the root cause analysis of the manual trip, which occurred as a result of the leaking relief valve flange on the feedwater heater, and stated he was impressed with the focus of that analysis on cultural aspects. Vice President Becker stated that all root cause analyses at DCPP are now required to address safety culture aspects. In response to Dr. Budnitz' inquiry, Mr. Becker stated DCPP was among the first plants to install a process in response to NEI document 09-07.

This concluded the informational presentations requested by the Committee from PG&E for this public meeting.

XXIV. Concluding Remarks and Discussion By Committee Members Of Future DCISC Activities

Drs. Budnitz and Peterson both commended Dr. Lam for an excellent job in chairing his first DCISC public meeting. **Consultant Wardell received the concurrence of the Committee members to undertake a final review for references in the 21st Annual Report to INPO and Assistant Legal Counsel Rathie stated the Committee will also request PG&E's particular attention to this issue in its review of the 21st Annual Report.** Dr. Budnitz explained that INPO reviews of DCPP, while they are shared by PG&E with the Committee, are confidential in nature and are not public reports. **Consultant Wardell reported that a category will be added to the Committee's Open Items List concerning the DCISC's review of the events following the accident at Fukushima.**

The Chair thanked the members of the public, and in particular Ms. Sherry Lewis, present in the audience and all those persons who chose to address remarks, comments or questions to the Committee. The Chair observed that their remarks will be part of the minutes of this public meeting. Dr. Lam stated the success of this public meeting was due in no small part to the efforts of Vice President Becker and DCPP plant staff in preparing their informational presentations and he

particularly expressed the Committee's appreciation to Mr. Peter Bedesem for his able assistance. Finally, Dr. Lam thanked the capable technicians of AGP Video who provided audio and video recording services to the Committee at this public meeting.

XXV. Adjournment Of Sixty-Fourth Public Meeting

There being no further business, the sixty-fourth public meeting of the Diablo Canyon Independent Safety Committee was adjourned by its Chair, Dr. Peter Lam, at 2:30 p.m.

22nd Annual Report, Volume 2, Exhibit B4, Notice of Plant Tour and Public Meeting on February 8, 2012

The Diablo Canyon Independent Safety Committee Notice of Plant Tour and Public Meeting

NOTICE IS HEREBY GIVEN that on February 8, 2012, at 8:00 a.m., the members of the Diablo Canyon Independent Safety Committee ("DCISC") will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant ("DCPP"). This tour, which will take approximately three and one-half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission.

In the alternative if security considerations preclude the public tour on February 8th, the DCISC may convene an informal presentation and question and answer session at the Pacific Gas and Electric Company ("PG&E") Energy Education Center, 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY GIVEN that on February 8–9, 2012, at the Avila Lighthouse Suites Point San Luis Conference, Conference Facility, located at First and San Francisco Streets, Avila Beach, California, a public meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Afternoon Session (02/08/2012) – 1:30 p.m.** Opening comments and remarks; receive public comments and communications to the Committee; approve minutes of October 5–6, 2011, public meeting; discussion of administrative matters, including review of PG&E's response to the DCISC 21st Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations for the period July 1, 2010 - June 30, 2011; an update on financial matters and activities during 2012; review of the Open Items List; reports by Committee members, consultants and legal counsel; receive, approve and authorize transmittal of fact-finding reports to PG&E; and review of Committee correspondence and documents received.
2. **Evening Session (02/08/2012) – 5:15 p.m.** Committee Member Comments; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including review of plant events, operational status and station performance indicators; recent Licensee Event Reports, NRC Notices of Violation and NRC Performance Indicators; update on the status of issues related to the events at the Fukushima Daiichi Nuclear Power Plant in Japan following the March 11, 2011, earthquake and tsunami and summary of DCPP

actions taken to date and actions planned.

3. **Morning Session (02/09/2012) – 8:00 a.m.** Comments by Committee members; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including an update on DCPP's response to NRC Generic Letter and Issues concerning seismic risk evaluation for U.S. operating reactors; an overview of "stranded plant" issues during which access to DCPP could be significantly impeded during periods of challenge to plant safety systems; and an update on the Self Assessment Program.
4. **Afternoon Session (02/09/2012) – 12:45 p.m.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including the Quality Verification organization's perspective on plant performance including the Quality Performance Assessment Report (QPAR) and Quality Verification's top concerns; a review of the ten-year concrete inspection for Units 1 and 2 Containment buildings; wrap-up discussion by Committee members, and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review at the Reference Department of the Cal Poly Library in San Luis Obispo.

For further information regarding the Public Meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda on line by visiting the Committee's website at www.dcisc.org.

Dated: January 29, 2012.

22nd Annual ReportDCISC Agenda for the February 8–9, 2012 Public Meeting

Committee Members:

Robert J. Budnitz

Peter Lam

Per F. Peterson

Wednesday & Thursday, February 8–9, 2012

Point San Luis Conference Center, First & San Francisco Streets, Avila Lighthouse Suites, Avila Beach, California

Public Tour – 02/08/2012 – 8:00 a.m.

Public Tour of Diablo Canyon Nuclear Power Plant to assemble at the PG&E Community Center *(Prior registration and security clearance required of all public participants.)*

The Members of the Independent Safety Committee, accompanied by members of the public, will conduct a tour of the Plant.

Following the tour, or in the alternative if the tour must be cancelled for any reason, the Committee may convene an informal question and answer session at the PG&E Energy Education Center (formerly the PG&E Community Center), 6588 Ontario Road, San Luis Obispo.

Afternoon Session – 02/08/2012 – 1:30 p.m.

I. Call To Order – Roll Call

II. Introductions

III. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action. (Please Note: (a) The Committee may consider at any time requests to change the order of a listed agenda item; (b) Information distributed to the Committee at a Public Meeting becomes part of the public record of the DCISC. A copy of*

written material, pictures, etc. must be provided to the Committee's Legal Counsel for this purpose.)

IV. Consent Agenda

Routine items which the Committee can approve with a single motion and vote. A member may request that any item be placed on the regular agenda for separate consideration.

A. Minutes of October 5–6, 2011 Public Meeting: Approve

V. Action Items

A. Review of PG&E's Response to DCISC's 21st Annual Report on Safety of Diablo Canyon Operations; July 1, 2010 – June 30, 2011– Discussion/Action

B. Update on Financial Matters and Committee Activities – Discussion/Action

C. Discussion of Open Items List – Discussion/Action

VI. Committee Member Reports and Discussion

A. Public Outreach, Site Visits and Other Committee Activities

B. Documents Provided to the Committee

VII. Staff – Consultant Reports and Receive, Approve and Authorize Transmittal of Fact-finding Reports to PG&E.

A. Ferman Wardell:
Fact-finding Topics; Report on and Approval of November 15–16 and December 13 – 14, 2011, Fact Finding Reports

B. David C. Linnen:
Fact-finding Topics; Report on and Approval of January 10 – 11, 2012, Fact Finding Report

C. Robert Wellington:
Administrative, Regulatory and Legal Matters

VIII. Correspondence

IX. Adjourn Afternoon Meeting

Evening Session – 02/08/2012 – 5:15 p.m.

X. Reconvene For Evening Meeting

XI. Committee Member Comments

XII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so

now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XIII. Information Items Before the Committee

A. Informational Presentations Requested by the Committee of PG&E Representatives

1. Update on Plant Events, Operational Status and Performance Indicators
2. Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators
3. Update on the Status of Issues Related to the Events at the Fukushima Daiichi Nuclear Power Plant in Japan following the March 11, 2011, Earthquake and Tsunami; Summary of DCPP Actions Taken to Date and Planned

XIV. Adjourn Evening Meeting

Morning Session – 02/09/2012 – 8:00 a.m.

XV. Reconvene for Morning Meeting

XVI. Committee Member Comments

XVII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XVIII. Information Items Before the Committee (Cont'd.)

4. Update DCPP Response to NRC Generic Letter and Issues Concerning Seismic Risk Evaluation for U.S. Operating Reactors
5. Overview of "Stranded Plant" Issues during which access to DCPP could be Significantly Impeded during Periods of Challenge to Plant Safety Systems
6. Update on DCPP's Self-Assessment Program

XIX. Adjourn Morning Meeting

Afternoon Session – 02/09/2012 – 12:45 p.m.

XX. Reconvene for Afternoon Meeting

XXI. Committee Member Comments

XXII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XXIII. Information Items Before the Committee (Cont'd.)

7. Quality Verification Organization's Perspective on Plant Performance; the Quality Performance Assessment Report (QPAR); and Quality Verification's Top Concerns
8. Review of Ten-Year Concrete Inspection for Units 1 and 2 Containment Buildings

XXIV. Concluding Remarks and Discussion By Committee Members of Future DCISC Activities

A. Future Actions by the Committee
B. Further Information to Obtain/Review
C. Scheduling of Future Site Visits, Study Sessions and Meetings

XXV. Adjournment of Sixty-fifth Public Meeting

The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. Devices for attendees who may be hearing impaired are available.

22nd Annual Report, Volume 2, Exhibit B6, Minutes of the Diablo Canyon Independent Safety Committee February 8–9, 2012 Public Meeting(Approved at the June 19–20, 2012 Public Meeting)

Wednesday & Thursday, February 8–9, 2012, Avila Beach, California

Notice of Meeting

A legal notice of plant tour and public meeting and several display advertisements were published in local newspapers and mailed to the media and those persons on the Committee's service list. A copy of the meeting agenda was also posted on the Committee's website at www.dcisc.org.

Public Tour of Diablo Canyon Nuclear Power Plant

The members of the DCISC accompanied by 37 members of the public, a PG&E tour guide and the Committee's consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The members of the public responded to the DCISC advertisement concerning the public tour placed in a local area newspaper and on the DCISC's website. The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and received a short presentation on the background of the DCISC's Members, its Technical Consultants and Legal Counsel and the role of the Committee. PG&E representatives provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security and an opportunity was provided to ask questions. PG&E discussed how the plant's cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

The bus entered the plant site through the Avila Gate and the group received a briefing from PG&E representatives on the various external features and buildings. The group then arrived at the Nuclear Power Generation Training Building. The members of the public were divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Control Room Simulator Facility, a full scale mockup of the Unit-1 (U-1) control room, and the lobby of the Security Building, for a demonstration of screening of personnel entering the protected areas of the plant. There was also an opportunity afforded to both groups to view the Intake and Outfall structures where the plant pulls in and discharges cooling water from and to the Pacific Ocean. The bus then drove by plant overlook and the site of the Independent Spent Fuel Storage Installation (ISFSI) before departing DCPP and returning to the Energy Education Center.

Questions and Comments From the Public

During the ride back to the Energy Education Center some members of the public took the

opportunity to ask questions of Committee members and consultants.

Conclude Public Tour

Agenda

I. Call To Order – Roll Call

The February 8, 2012, public meeting of the Diablo Canyon Independent Safety Committee (DCISC), the sixty-fifth public meeting of the Committee, was called to order by Committee Chair, Dr. Peter Lam, at 1:30 p.m. at the Avila Lighthouse Suites Point San Luis Conference Center in Avila Beach, California. Dr. Lam briefly presented information on the creation, history, and role of the Committee and introduced and reviewed the professional backgrounds and appointment of each member of the Committee and welcomed the members of the public watching the meeting on live-streaming video via the internet.

Present:

Committee Member Robert J. Budnitz

Committee Member Peter Lam

Committee Member Per F. Peterson

Absent:

None

II. Introductions

Dr. Lam introduced and reviewed the professional backgrounds of the Committee's technical consultants, Mr. David C. Linnen and Mr. R. Ferman Wardell and DCISC Legal Counsel Robert R. Wellington.

III. Public Comments and Communications

The Chair inquired whether there were any members of the public present who wished to address remarks to the Committee on items not appearing on the agenda for the public meeting.

Ms. Sherry Lewis was recognized. Ms. Lewis identified herself as a member of the governing board of the group San Luis Obispo Mothers for Peace (MFP) and remarked that she has an overarching dislike for nuclear power because the waste produced is so deadly for so long. Ms. Lewis stated she does not believe all the information is available from the accident at the Fukushima Dai-ichi Nuclear Power Plant in Japan ("Fukushima") and she does not believe all the information from the accident at Chernobyl is in the public domain. She commented nuclear power is too dangerous for far too long and that efforts should be made to move toward renewable or alternative energy sources.

Ms. Patricia Miller was recognized. Ms. Miller described herself as a founding member of MFP and

stated MFP has been an intervener for the last forty or fifty years in issues related to DCPP. She stated a terrible problem is created by the waste produced by nuclear power operations and there have been accidents in the U.S., Russia and Japan and that radiation from Fukushima is now appearing on our shores. Ms. Miller stated she hoped the Committee would take these issues into account and emphasize things such as solar, wind and geothermal power.

Dr. Lam thanked Ms. Lewis and Ms. Miller for their comments and observed their remarks will become a part of the Minutes of this public meeting and subsequently a part of the Committee's next annual report.

IV. Consent Agenda

The only item on the Consent Agenda was approval of the Minutes of the Committee's October 5–6, 2011, public meeting held in San Luis Obispo.

Items were reviewed for follow-up action, clarification was provided to Legal Counsel concerning typographical errors and the accuracy of certain references in the draft Minutes provided in the agenda packet for this meeting, and editorial comments and substantive changes were received concerning the draft of the October 2011 Minutes.

Minutes of the Committee's public meetings become part of its Annual Reports on Safety of Diablo Canyon Nuclear Power Plant Operations (Annual Report). On a motion by Dr. Budnitz seconded by Dr. Peterson the Minutes of the Committee's October 2011 public meeting were approved subject to inclusion of the changes provided to the Committee's Legal Counsel. In response to a request from Ms. Sherry Lewis, Mr. Wellington agreed to review the process for providing documents in advance of a public meeting and determine whether there is a way Ms. Lewis can receive a copy of the draft minutes prior to a public meeting.

V. Action Items

A. **Review of Pacific Gas and Electric Company's (PG&E) Response to the DCISC 21st Annual Report on Safety of Diablo Canyon Operations; July 1, 2010 - June 30, 2011. Dr. Peterson directed that an item should be created on the DCISC Open Items List concerning Committee Recommendation R11-3 regarding expanding DCPP's post earthquake response procedures to require examination of the Spent Fuel Pool (SFP) levels after an earthquake and consider providing a permanently installed, remote, wide-range, SFP level monitoring capability. The Committee agreed to follow-up on an existing Open Item regarding Committee Recommendation R11-4 which recommends developing and implementing a schedule for taking necessary action to seismically brace furniture appropriately and to better educate plant staff about seismic hazards and seismic safety. PG&E's Mr. Peter Bedesem reported a DCPP-specific procedure is to be written regarding seismic bracing of furniture.**

   Concerning recommendation R11-1, Consultant Linnen pointed out that the literal wording of the response did not appear to be consistent with PG&E's intent and the Committee agreed to provide an opportunity for PG&E to correct its response to R11-1.

On a motion by Dr. Budnitz, seconded by Dr. Peterson, contingent upon PG&E's correction of a grammatical error in one sentence of R11-1, the Committee unanimously accepted PG&E's responses to its Twenty-first Annual Report on the Safety of Diablo Canyon Operations for the period July 1, 2010 – June 30, 2011.

B. **Update on Financial Matters and Committee Activities**. Mr. Wellington reported financial statements prepared by the Committee's accountant showing the assets, liabilities, and capital on hand were provided for review. He reported that the Committee's expenditures for the calendar year 2011 should be within the amount of the annual grant for that year. Dr. Budnitz commented that overspending in two past years was the result of a need to have more than two technical consultants on staff during that period. Mr. Wellington also directed the attention of the members and consultants to the list of key dates provided with the agenda packet.

Dr. Budnitz observed that since the last public meeting of the Committee former DCISC member William Conway has passed away. Dr. Budnitz remarked that Mr. Conway's passing was a great personal loss to all those serving the Committee and for the industry. On behalf of the DCISC he expressed the condolences of the Committee to Mr. Conway's wife, Mrs. Marie Conway. Mr. Wellington commented that the 21st Annual Report is dedicated in memoriam to William F. Conway and a page is included with information about Mr. Conway's many contributions to the industry and his service to the DCISC on which he served as a member and as its Chair.

C. Discussion of Issues on Open Items List: Dr. Lam requested Consultant Wardell lead a review of items on the Open Items List, used by the Committee to track and follow-up on issues, concerns, and information identified for subsequent action during fact-finding or public meetings. Items discussed or concerning which action was taken included the following:

Item	Re:	Action Taken
[See 1011PM8]	Mtg. with SLO/CalFire Chief Lewin	Add obtain copy of MOU
[See BDB-2(new)]	Recommendation R11-3/SFP Monitoring	Add as item to monitor
[See SC-6]	Recommendation R11-4/ Seismic Furniture	Add as item to monitor
CO-7	DCPP Storm Response Experience	Change to 2Q13 FF
EN-27	Equip. Enviro. Qualification Program	Change to 4Q12 FF
HP-18	Review Operator Fitness & "No Solo"	Change to 4Q12 FF
HP-26	Review Event	Delete

	Threshold Levels	
RA-5	Review Seismic & Fire PRA Programs	Schedule Separate FFs (RJB)
RA-6	Shift from ORAM to Safety Monitor	Change to after1R17outage FF and change wording as shift to Safety Monitor is complete
.		
Item	Re:	Action Taken
QP-9	Software QA Program	Delete references to prior reviews
SG-6	SG Performance Metrics	Add review of SONGS experience
SC-6	Seismic Induced System Interactions	Increase scope of review to include furniture
SC-8	Monitor Response to Generic Issue 199	Add new item 1Q13 FF
BDB-2q	To be replaced	Replace with Spent Fuel Cooling Level Monitoring
BDB-3	To be replaced	Replace with SBO and DCPP Response
BDB-4	To be replaced	Replace with EDMG-SAMG
BDB-5	To be replaced	Replace with Stranded Plant Schedule 1Q13 FF
BDB-TBD	Consider additional items	TBD
2/11PM2	Review Event Threshold Levels	Close
6/11PM12	Tsunami height reference	RJB Provided – Close
6/11PM13	SBO at Fukushima & EOP/EDMG	Transfer to BDB Category Schedule for PFP FF
10/11PM2	Seismic studies reference	RJB Provided – Close
10/11PM4	Shoreline Fault Analysis	Close (same as SC-7)
10/11PM6	Stranded Plant Procedure	Transfer to BDB-5
10/11PM8	Meet with CalFire Chief Lewin	Include MOU in 2Q12 FF

The Chair expressed the thanks of the members to Consultant Wardell for his work in maintaining a comprehensive listing of the open items.

Ms. Sherry Lewis of MFP was recognized. Ms. Lewis stated that she has read that the reactor

operators at Fukushima were, contrary to what she has heard at DCISC meetings, able to take independent action without receiving prior authorization from the Japanese government and although the operators were advised it was better to wait for such authorization, it was not required. Dr. Peterson stated that in the United States specific legal authority exists for operators to take actions outside of normal operating procedures if they believe them to be necessary for plant safety and he stated it was his understanding that in Japan no departure from procedure was authorized without prior approval. Dr. Budnitz reported that a report was made to the International Atomic Energy Agency (IAEA) by Japanese authorities that acknowledged a deficiency concerning authorization to depart from procedure and in which the Japanese authorities committed to address the issue and he stated they have now done so. Dr. Budnitz commented there was one control room supervisor at Fukushima who did proceed without permission at great risk to himself and by doing so prevented greater damage and that supervisor was recognized as a hero but nevertheless under the regulatory system in place at the time of the accident at Fukushima he broke the rules. Ms. Lewis stated that she did not want an impression to be given that the rules in Japan were so different from those in the United States that what happened in Japan couldn't happen here. Dr. Budnitz stated that the DCISC has committed to review the procedures applicable to beyond design basis (BDB) accident situations.

VI. Committee Member Reports and Discussion

Committee members remarked that the tour of DCPP conducted during the morning was a good experience for the members of the public who attended.

A. **Public Outreach, Site Visits and Other Committee Activities**: The members initially deferred their consideration of this item. Following Legal Counsel Wellington's report (Section VII), the members confirmed public meetings of the DCISC are now scheduled for June 19-20 and October 10 – 11, 2012. Future public meetings of the Committee were then scheduled for February 6-7 and June 5–6, 2013. Fact-finding visits were confirmed, adjusted and scheduled for 2012 as follows: August (PFP/RFW); September 5-6 (RJB/DCL); November 7-8 (RJB/DCL); and December 5-6 (PFP/RFW). For 2013 fact-finding visits were scheduled for January 16-17 (PL/RFW); March 12-13 (RJB/RFW); April 16-17 (PFP/TBD); and May 7-8 (PL/DCL)

B. **Documents Provided to the Committee**: Mr. Wellington directed the Committee's attention to the list of documents received since its last public meeting in October 2011. A copy of the list was included with the public agenda packet for this meeting.

A short break was taken.

VII. Staff-Consultant Reports and Receive, Approve and Authorize Transmittal of Fact Finding Reports To PG&E

The Chair requested Consultant Wardell to report on the November 15 –1 6, 2011, fact-finding visit with Dr. Lam to DCPP. Mr. Wardell reviewed the topics discussed with PG&E during the November 2011 visit including:

- Meeting with NRC Senior Resident Inspector – Mr. Wardell reported the DCISC team met with

the Nuclear Regulatory Commission's (NRC) Senior Resident Inspector for DCPP, Dr. Michael Peck, and discussed the independent safety review of DCPP and issues concerning the respective responsibilities of the Nuclear Safety Oversight Committee (NSOC) and the Quality Verification Department (QV). They also discussed issues concerning: the design basis of the 230kV power system and the task interface agreement with the NRC Nuclear Reactor Regulation division in Washington D.C., and had a discussion about the DCPP Fire Protection and control room heating, ventilation and air conditioning (HVAC) systems.

- Maintenance Services – The DCISC fact-finding team reviewed the use of the current verification of human performance tools by maintenance technicians; the adequacy of the detail provided in procedures and the issue of too much dependence upon the skill of craft persons and the associated procedure evaluation and augmentation program; and the maintenance rework performance indicator which was at the time of the November fact-finding visit in yellow (i.e., not currently meeting expectations) status.

- Self-Assessment Program – to be presented as a topic during this public meeting.

- Licensing Basis Verification Project (LBVP)–- Mr. Wardell reported the LBVP was undertaken to identify the correct licensing basis for various plant systems and programs and DCPP is using outside contractors, including Westinghouse, for the project. Review of the 230kV System is complete and the review of the Component Cooling Water System is nearing completion. The LBVP is expected to be completed by the end of 2015.

- Stranded Plant Procedure – to be presented as a topic during this public meeting.

- Auxiliary Feedwater Pumps – Mr. Wardell stated the Auxiliary Feedwater (AFW) System is a backup system to the Main Feedwater System. The DCISC team inspected the turbine driven AFW pump and discussed its operation with the system engineer. The DCISC team found the pump design and operation to be satisfactory and Mr. Wardell stated Mr. Linnen would be presenting further information on the AFW turbine driven pump during his report on the January 2012 fact-finding visit.

- Nuclear Fuel – U-1 has operated without fuel defects since operating Cycle-4 and is currently in Cycle-16. Unit 2 (U-2) has run without fuel defects since operating Cycle-14. Mr. Wardell reported a very small leak in a U-2 fuel rod was recently identified which was not discovered during the first cycle for which the assembly was present in the core. He stated the leak could have been discovered had DCPP employed more up-to-date radiochemistry analysis and DCPP entered this issue into its Corrective Action Program (CAP) and now has updated its radiochemistry program to the latest industry standards. Mr. Wardell reported DCPP continues to consider moving from its current 21-month refueling cycle to a 24-month refueling cycle and could begin such a transition as early as 2016. In response to Dr. Budnitz' inquiry, Mr. Wardell reported the industry-wide program of having zero fuel defects was not discussed during the November 2011 fact finding as that topic was previously reviewed with PG&E. Mr. Wardell confirmed DCPP reported its programs for monitoring fuel defects have been upgraded to meet the latest industry standards.

- Dr. Lam's Meeting with DCPP Site Vice President – during each fact-finding visit time is usually arranged for the DCISC member to meet privately with a senior member of DCPP's leadership team for a frank discussion about the current fact-finding visit and other matters.

Following Mr. Wardell's report, on a motion made by Dr. Budnitz, seconded by Dr. Peterson, the November 15 –1 6, 2011 Fact Finding Report was approved and its transmittal to PG&E was authorized.

Mr. Wardell continued his presentation and reported on the December 13 – 14, 2011 fact-finding visit to DCPP with Dr. Peterson. Items reviewed and topics discussed with PG&E during the visit included:

- Machine Vibration Monitoring – Mr. Wardell reported the DCISC fact-finding team reviewed the Reliability Centered Maintenance Program, a predictive maintenance program which includes vibration monitoring, lubrication analysis, and infrared heat monitoring technology. DCPP has a master list of components which are monitored for vibration including remote control room read-outs for reactor coolant pumps, turbine generators and main feedwater pumps. Some 300 other rotating components are also monitored for vibration on a schedule using portable instrumentation and the results are entered in a trending program. DCPP has developed a machine vibration fault matrix which is now used industry wide. The DCISC team found the machine vibration monitoring efforts to be acceptable and reviewed an instance where the early identification of a faulty bearing prevented a pump from actually experiencing a problem due to that bearing. Dr. Peterson commented this was an excellent and an impressive example of the use of an advanced technology to detect degradation in equipment before failure occurs.

- Three Losses of 230kV Power during Refueling Outage 2R16 – the DCISC team reviewed three separate instances of loss of 230kV power all of which had to do with maintenance work on equipment. In one instance power loss was due to a maintenance worker using a reciprocating saw without a risk analysis having been performed in advance to assess the effects of the vibrations on a relay which tripped and caused a 230kV trip on U-1; the second instance involved a maintenance technician putting test probes on the wrong terminal; and the third instance resulted from exercise of a relay on the wrong unit. In response to Dr. Budnitz' inquiry, Mr. Wardell confirmed it was mechanical vibration in the first instance which caused a relay chatter. An extensive root cause analysis (RCA) was conducted under Mr. Bedesem's leadership and Mr. Wardell commented the RCA was one of the best evaluations the Committee has reviewed and corrective actions have been taken to prevent recurrence and were found satisfactory.

- Compressed Air System – this system was in green (i.e., satisfactory) health status and the DCISC representatives toured and inspected the system's active components.

- DCPP Response and Actions on the Fukushima Accident – to be presented as a topic at this public meeting.

- Engineering Rigor Action Plan Status – Mr. Wardell stated the NRC identified a cross-cutting issue concerning lack of thoroughness in engineering evaluations at DCPP. An extensive program to address this issue was undertaken with 95 separate actions, of which 80 have now been completed and all but one of the remaining actions were scheduled to have been completed in January 2012. The single outstanding item is the LBVP which will not be completed until 2015. The DCISC recommended in its Twentieth Annual Report that DCPP conduct an initial self-assessment of the LBVP and the DCISC team found the self-assessment to have been done satisfactorily and that progress to date is satisfactory per that assessment.

- Observation and Coaching Program – a program where management goes out into the plant to observe work in the field and impart expectations to the workers. Mr. Wardell stated this program is not intended to provide positive or corrective discipline in any way but rather to assist the workers in understanding management's expectations and the use of the right human performance tools. The DCISC team found the program to be comprehensive and appropriately implemented.

- Trouble-Shooting Program – Mr. Wardell reported this program uses a systematic approach to data collection and failure analysis to determine the immediate cause of a failure of a system or a component. The Program has benefited from consolidation of procedures and the DCISC team reviewed an example of use of the Trouble-Shooting Program in connection with a pressurizer heater and found the program to have substantially improved since it was previously reviewed by the DCISC.

- EPA Closed Cooling Update – DCPP and San Onofre Nuclear Generating Station (SONGS) have jointly developed and submitted a proposed scope of work for a study on the effects of the elimination of once-through cooling to the State Water Resources Control Board's Nuclear Review Committee and bids will be solicited from contractors to perform the study. A final study is expected to be completed in 2014 or 2015 by that committee.

- DCPP's Progress in Addressing Institute of Nuclear Power Operators (INPO) Evaluation Items – INPO provides confidential assessments of U.S. nuclear facilities and, while the DCISC members and consultants review the INPO evaluations, this information is proprietary and is not available for public release. INPO identified a number of areas for improvement (AFIs) and DCPP has taken action on each and the DCISC team reviewed and found those actions to be satisfactory.

- Experience with the New Reactor Vessel Head Assembly – Mr. Wardell stated the DCISC representatives reviewed DCPP's experience as a result of the installation of new reactor vessel head assemblies and found that outage durations were shortened and radiation dose during outages was reduced.

- Safety-Security Interface Process – the DCISC team reviewed security modifications which affect the plant or plant modification which affect security and the procedures used at DCPP for reviewing these changes. The procedures and DCPP's implementation of those procedures were found satisfactory.

- Dr. Peterson met with DCPP Station Director Mr. Jim Welch.

Following Mr. Wardell's report on a motion made by Dr. Budnitz, seconded by Dr. Lam, the December 13 – 14, 2011, Fact Finding Report was approved and its transmittal to PG&E was authorized.

The Chair requested Consultant Linnen to report on the January 10 – 11, 2012 fact-finding visit to DCPP with Dr. Lam. Mr. Linnen reviewed the topics discussed with PG&E during that visit including:

- Backlogs/Trends for Revisions to Operations, Maintenance, and Engineering Procedures

  Mr. Linnen reported backlogs are tracked and categorized in the Plant Performance Improvement Report which the DCISC team reviewed. Categories were assigned and rated for high priority outage-related items, with all such items being rated green (i.e., meets standards); high priority non outage-related items, with items rated in various status; and low priority items, for which monthly ratings were in red (i.e., failed to meet standards) status. **The DCPP procedure writing group consists of ten individuals and the DCISC team concluded DCPP has an effective method for tracking and reporting on the effectiveness of responding to procedure change requests but increased attention is needed to address high priority non outage-related procedure change requests.**

- Nuclear Safety Culture – The DCISC fact-finding team reviewed the action plan for Nuclear Safety Culture which lists more than 200 specific items with all except 14 items having been completed and all but two of those now being overdue. Documentation of site events is reviewed periodically for nuclear safety culture aspects and weaknesses identified. These include weaknesses in the quality and detail of certain plant procedures; adherence to procedural guidelines; and a need for an appropriate method to address backlogged requests for procedure changes. **The DCISC team concluded the implementation of the Nuclear Safety Culture Program appeared adequate. However, Mr. Linnen stated that the team concluded that more attention is needed on the content and use of some plant procedures as well as on the backlog of procedure change requests.**

- Quality Verification's (QV) Assessment of Station Operation and Most Recent Quality
- Performance Assessment Report - to be presented as a topic during this public meeting. Mr. Linnen stated that QVs reviews appeared to be detailed and thorough and follow up and communication on the status of station corrective actions appears appropriate.

- Foreign Material Exclusion Issues/Trends - Mr. Linnen stated the purpose of the Foreign Material Exclusion (FME) Program is to prevent the undesired, and potentially harmful, intrusion of foreign materials into plant systems. This occurs most frequently during maintenance activities during refueling outages and outside contractor personnel are primary contributors to FME events. The DCISC team found improved performance since the sixteenth refueling outage for U-1 (1R16) in October 2010, and the station has been providing FME training to its contractors.

- Operation of the Turbine Driven Auxiliary Feedwater Pump during station black Out (SBO) Conditions - the DCISC team reviewed the procedures for operation of this pump and spoke with a shift manager concerning the procedures. The DCISC team concluded that the operation of the pump from the standpoint of operating during a loss of electrical power could be demonstrated. Dr. Lam stated that there is a subtle dependency at DCPP on DC power availability regarding the operation of the steam driven turbine auxiliary feedwater pump during SBO conditions because, while the manual crank would allow operators to run the steam driven pump indefinitely without DC power, without DC power there would be no indication available to the operators in the control room of the steam generator (SG) levels and Dr. Lam observed as steam lines are built to support steam not water there is a danger that the steam lines could collapse in the event of overfilling. In response to Mr. Wardell's question concerning whether the procedure provided guidance for proper position of the valve to prevent over filling or under filling of the SGs Dr. Lam replied the procedure the team reviewed assumed there was DC power available and Mr. Linnen stated the DCISC representatives had not reviewed a loss of DC power procedure in that context.

- Results of Operator Licensing Examinations in 2011 - the DCISC representatives reviewed the circumstances which led to the failure of 5 out of 21 licensed operator candidates who participated in a 20-month training program and took the NRC reactor operator licensing examination in July 2011. The team reviewed the preparation provided to the candidates including review by the Candidate Readiness Review Board at the conclusion of each training phase. A lengthy root cause evaluation (RCE) concerning the failure of five of the candidates to pass the licensing examination found as contributing causes insufficient oversight and execution of the NRC written exam development process and the initial license training remediation not having required student mastery of subject areas. Additional contributing causes were an inaccurate mindset which allowed the Candidate Readiness Review Board to incorrectly determine the students were prepared, and the success of previous classes having resulted in insufficient rigor in the selection and familiarization process for candidates. The DCISC team found the station's program to be impressive, its analysis in examining the failures to be thorough and incisive, and corrective actions taken to have been appropriate.

- 2012 Operating Plan and 2011 Performance - the DCISC team examined the end of the third quarter 2011 values for the 2011 Operating Plan in comparison to goals set for 2011 and 2012 and reviewed the broad elements and objectives of the 2012 Operating Plan compared to 2010 and 2011. The DCISC representatives found that there appeared to be a trend toward improving performance particularly for indicators of operational performance, corrective actions, industrial safety, and radiation exposure. However, performance has not changed with respect to the NRC-identified substantive cross-cutting issue in Problem Identification and Resolution and that remains the single issue to be addressed in reaching a goal of having no NRC substantive cross-cutting issues. The 2012 Operating Plan will have additional emphasis placed on the Management Observation Program and on work affecting operational risk. Performance improvement remains a continuing objective for DCPP including emphasis on the Corrective Action and Training Programs. Regulatory excellence is also a continuing theme with a focus on technical evaluations and the LBVP.

- On-line Maintenance and Risk Management - the DCISC fact-finding team's review focused on DCPP's progress in determining the risk of taking operating equipment out of service for maintenance. DCPP has now replaced its former computerized program, Outage Risk Analysis Maintenance (ORAM), with the more quantitative Safety Monitor Program which is now fully functional and operational. The DCISC team reviewed a demonstration of Safety Monitor and examined DCPP's last twelve months of assessments of online risk and found the rolling average to be in green (i.e., satisfactory) status for every month, with the only month of significance being May 2011 because of the three events affecting the 230kV System which Mr. Wardell previously discussed during his report. Mr. Linnen observed those events were not due to unplanned maintenance activities but rather the conduct of maintenance which had been previously planned. The DCISC team concluded Safety Monitor is effectively supporting online maintenance at DCPP.

- Meeting with NRC Senior Resident Inspector - the DCISC team met with Dr. Michael Peck, the NRC Senior Resident Inspector for DCPP. Dr. Lam stated the team discussed items of mutual interest with Dr. Peck.

- Dr. Lam's met with Mr. Steve David, Director of Site Services.

Subject to receipt of end-of-year performance data for the 2011 Operating Plan, and any minor editorial changes received, upon a motion by Dr. Budnitz, seconded by Dr. Peterson, the January 10 – 11, 2012, Fact Finding Report was approved and its transmittal to PG&E authorized.

Mr. Wellington commented that once the Committee's fact finding reports are approved at a public meeting they are no longer considered to be in draft form and are then made available at the public meeting at which they are approved in a binder for inspection by members of the public, together with information concerning the professional backgrounds of the Committee's technical consultants involved with preparation of its fact finding reports. Fact finding reports become part of the DCISC's Annual Reports.

Mr. Wellington reported that his office actively was engaged in scheduling meetings between members and their respective appointing entities and an invitation has been extended to Dr. Michael Peck to address the DCISC during a future public meeting.

Legal Counsel Wellington reviewed the statistics generated by the activity on the Committee's website at www.dcisc.org which included for 2012 a total of 12,000 visits from many different countries including the Ukraine, South Korea, Germany and Rumania.

Mr. Wellington reported the Committee received notice of a meeting of the State Water Resources Control Board's statewide advisory committee on cooling water intake structures which is to be held in Moss Landing on March 1, 2012.

VIII. Correspondence

Upon convening the afternoon session, the Chair directed the members and consultants to the

copies of correspondence sent and received at the office of the Committee's Legal Counsel since the last public meeting of the Committee in October 2011, copies of which were included with the public agenda packet for this meeting.

IX. Adjourn Afternoon Meeting

The Chair adjourned the afternoon meeting of the DCISC at 4:30 p.m.

X. Reconvene for Evening Meeting

Dr. Lam convened the evening meeting of the DCISC at 5:30 p.m. He again introduced the other members, consultants and legal counsel.

XI. Committee Member Comments

There were no comments at this time from the Committee members.

XII. Public Comments and Communications

At this time Dr. Lam invited any member of the public attending this public meeting and to address comments to the Committee on matters not appearing on the agenda.

Fire Chief Robert Lewin of CalFire and the San Luis Obispo (SLO) County Fire Department was recognized to address comments to the Committee. Chief Lewin stated that following the events in Japan at the Fukushima plant there is an opportunity to address onsite issues in regard to fire protection at U.S. nuclear power plants. Chief Lewin commented that DCPP might serve as an example of a well-prepared plant as the plant has an excellent fire department which works closely with his departments but he observed there are some things which can be done to improve preparation for events which may occur at DCPP in light of lessons learned at Fukushima. Chief Lewin stated he is looking forward to meeting with and discussing these issues with the Committee during a future fact-finding. **Drs. Lam, Budnitz and Peterson replied that a meeting will be scheduled with Chief Lewin for that discussion and an item so directing has been incorporated into the Committee's Open Items List** and Chief Lewin's comments at the Committee's public meeting in October 2011 are now a part of the public record of that meeting.

Ms. Sherry Lewis of MFP was recognized to address remarks to the Committee. Ms. Lewis stated that she had written a letter to the editor of a local newspaper concerning the natural gas pipeline explosion in San Bruno CA. Ms. Lewis stated that PG&E, the owner of that gas pipeline, lied to the public regarding the inspection of that pipeline and she stated that it was her hope that PG&E would be more cautious concerning nuclear power. Ms. Lewis observed that safety is apparently not PG&E's number one concern and there still remains the possibility of human error. She commented the waste stored at DCPP remains toxic and companies and individuals cannot be trusted to keep it safe with zero risk. She stated it was her opinion that the use of nuclear power should be phased out and no more waste should be created. She stated that it was her assumption, based on PG&E's actions concerning the accident in San Bruno, that profit not safety is PG&E's number one concern.

Ms. Patricia Miller was recognized to address remarks to the Committee. Ms Miller stated that she is a local resident and in her opinion there is really no way to speedily escape from the Avila Beach area in the event there was a fire or an accident which required immediate evacuation and she stated she hoped the Committee would take this into account when reviewing the adequacy of safety preparations.

The Chair thanked Chief Lewis, Ms. Lewis and Ms. Miller for their comments.

XIII. Information Items Before the Committee

The Chair welcomed DCPP Site Vice President Mr. Jim Becker to the meeting and asked Mr. Becker to commence the informational presentations requested by the Committee for this public meeting. Mr. Becker introduced DCPP Director of Site Services Steve David to make that presentation.

Update on Plant Events, Operational Status and Performance Indicators.

Mr. David reviewed the topics he would be presenting to the DCISC and began his presentation with a review of the plant's current performance in industrial safety and recordable injuries. Mr. David reported the goal for recordable injuries was lowered in January 2011 as an indication of improving performance. There was one recordable injury during 2011, the trend continues to show an improving rate, and DCPP has now gone ten consecutive months with no recordable injuries.

Mr. David reported on the health of the Reactivity Management Program and stated U-1 has gone from green (i.e., acceptable) to white (i.e., challenged) status while U-2 has remained in green status. He stated the decline in performance for U-1 was due to an event which occurred during reinstallation of a control module when a pinched wire penetrated its insulation and caused a short, which blew a fuse, which resulted in the loss of power to control instrumentation and U-1 experienced an unanticipated drop in power by approximately 2‰ as a result. **In response to Dr. Budnitz' question Mr. David confirmed a cause evaluation for this event is being performed and Dr. Budnitz stated the Committee would review the evaluation when it is available.** Mr. David then briefly reviewed past history of events which have impacted the Reactivity Management Program at DCPP.

Generation history for the past twelve months was reviewed by Mr. David. The sixteenth refueling outage for U-2 (2R16) had the greatest impact on generation history for U-2. Mid-cycle tunnel cleaning for the main circulating water conduits was performed for U-1 and U-1 reduced power to repair a loss of control oil pressure on a steam driven main feedwater pump and to repair vibration on a main turbine control valve and to clean the main condenser. U-2 power was reduced in August 2011 to remove kelp and for a mid-cycle tunnel cleaning. U-2 power generation was curtailed in November 2011 for surveillance testing of the main turbine control valves.

Mr. David reviewed the areas of improving and declining performance shown on the Plant Performance Improvement Report (PPIR) and identified three areas of improving performance including: Maintenance Services human error rate improving from yellow to green status; reportability determinations improving from red to yellow status; and management observation of

training improving from yellow to green status. Mr. David identified and briefly discussed areas of declining performance including reactivity management which went from green to white status; the CAP index for Operations which went from green to yellow; human error rate, with six department level clock resets, which went from green to yellow; Strategic Projects human error rate which went from green to yellow; secondary system health for U-2 which went from green to yellow due to events associated with the condensate polisher system and resin being introduced into the SGs; oversight effectiveness associated with the QV organization which went from white to red status; Maintenance Rule evaluation timeliness which went from green to red status; station rework, with five rework events, which went from green to yellow status; and record submittal timeliness which went from green to red status due to issues with records not being submitted within 120 days by the Radiation Protection organization.

Mr. David reported the plant has performed well on the Operational Focus Index with only the number of control room Notifications currently in yellow status due to the number of Notifications that were written for issues which resulted in either an operator-work-around or an operator burden and which review determined should have been entered in the CAP. In response to Mr. Wardell's question, Mr. David stated the number of steam leaks has remained steady and the Index reflects the addition of new and subtraction of old steam leaks as they are found and fixed.

Concerning the number of mispositions of plant components, Mr. David remarked DCPP had experienced good performance to the middle of 2010, and a cross discipline team was formed to visit six other nuclear power plants to benchmark (i.e., review/assess) good performance and DCPP's performance concerning mispositions continues to improve.

Mr. David stated the human performance error rate for DCPP is showing a short-term increase but is still meeting the overall goal set for 2011, however, the indicator is currently in yellow status for the month on the twelve-month average due to the increasing trend. He remarked the 2012 goal was set below that for 2011 to challenge each of the line organizations to improve human performance.

Concerning the System Health indicator, which shows the age of systems in either red or yellow status for greater than one fuel cycle, Mr. David reported DCPP is doing well and was able to drive the indicator to zero for both units in the second, third and fourth quarters of 2011. For the first quarter of 2012, the indicator will be at one for each unit due to issues with the 4kV vital bus first and second level under voltage relay set points which will be addressed through a license amendment request (LAR) for both units.

The Equipment Reliability Index for both units is currently green and Mr. David stated the system health improvement effectiveness indicator, which measures how effective actions have been over time, now shows red for U-1 and yellow for U-2 due to the emergency diesel generator (EDG) load study and a temporary modification of motors associated with the ventilation system.

Mr. David reported the Critical Equipment Clock Resets indicator is at six for 2011 which represents a twelve-month rolling average which includes five events during the first four months of 2011 and only one event in the last eight months. The Maintenance Rule Performance indicator is currently at

zero and of the nine structures, systems, or components in A1 status under the NRC Maintenance Rule, only three have open corrective actions pending.

Mr. David stated that performance was also good on the CAP index which is a composite index used to review root cause and apparent cause evaluations, as well as open Notifications, cycle times, etc. The index is currently at 97.5 which represents performance in green status and Mr. David observed that a number of organizations are currently at 100‰, however, Learning Services and Operations are not among them.

Mr. David reported on the Engineering Program Health indicator and stated air operated valves, with a not yet qualified program owner, and performance monitoring equipment are currently in yellow status and qualifications training and engineering training respectively are planned to address the issues which impact each of these programs. Mr. David confirmed Dr. Lam's observation that the Engineering Program Health Index represents a dynamic index which is subject to change concerning the reported systems from month-to-month. Dr. Budnitz commented that the implementation cornerstone indicator for Appendix R has been yellow for some time and Mr. Becker confirmed that indicator will remain yellow until the plant makes its National Fire Protection Association (NFPA) 805 filing which will address and implement new regulations regarding fire protection inside the plant and this is expected to occur during summer 2012. Mr. David, in response to Mr. Wardell's inquiry, replied that some of the programs on the Engineering Program Health Index fall under the purview of the Plant Health Committee while some do not.

The Chair thanked Mr. David for his presentation and commented that PG&E has employed comprehensive and systematic programs to track, evaluate and monitor plant performance at DCPP.

Mr. Becker introduced and requested DCPP Regulatory Services Manager Tom Baldwin to make the next informational presentation to the Committee.

Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators.

Mr. Baldwin reported during the period October 2011 through January 2012, there were four updates to previously submitted Licensee Event Reports (LER) as follows:

- LER 1-2011-001-01 was issued January 27, 2012 to report the cause and corrective actions of making a reactor mode transition with an inoperable turbine driven AFW pump. Mr. Baldwin reported this was discovered during a post refueling outage mode transition prior to return to power operations and was due to a specification having been provided to a manufacturer for a part for the speed governor for the pump that was not updated to reflect changes made previously to the part installed during the outage. The error if left unaddressed would have caused the pump to stabilize at a higher operating speed.

- LER 1-2011-002-01 and LER 1-2011-002-02 were issued October 24, 2011 and December 16, 2011 respectively to report additional corrective actions being taken regarding the loss of the Auxiliary Building's Ventilation System due to a flaw in the logic in the system and to clarify

only Unit 2 experienced a loss of that system. Mr. Baldwin stated there was an opportunity missed to have previously discovered and corrected this problem.

- LER 1-2011-004-01 was issued November 8, 2011 to report the cause and the corrective actions taken for the EDG automatic actuation upon 230 kV startup power isolation due to maintenance activities on a relay panel. Mr. Baldwin reported DCPP failed to identify the risk associated with performing the maintenance work and stated that planning processes have been modified, including for work around relay panels that share equipment between the two units. In response to Dr. Lam's inquiry, Mr. Baldwin replied all three U-1 EDGs started automatically as designed.

- LER 1-2011-005-01 was issued November 8, 2011 to report the cause and the corrective actions taken regarding the EDG automatic actuation upon 230 kV startup power isolation due to electrical maintenance testing activities. Mr. Baldwin stated these errors resulted in isolation of the start-up power source and all six EDGs, three for each unit, started automatically and Mr. Baldwin stated this was an affirmation of the quality of DCPP's diesel maintenance program. He confirmed Dr. Lam's observation that the isolation of the 230kV System which caused the EDG actuation was avoidable but he confirmed that the test signal for the diesels to start was a valid signal. The causes were determined to be personnel not following station standards for human performance to have concurrent verification of the correct component before work is performed. Additional vulnerabilities were discovered in not barricading off components on which no work is being performed.

Mr. Baldwin reported during the period October 2011 through January 2012, there were three instances resulting in LERs which have not been discussed previously with the Committee at a public meeting as follows:

- LER 1-2011-006-00 and LER 1-2011-006-01 were issued October 28, 2011 and January 27, 2012 respectively to report the erroneous removal of a blank flange from the control room ventilation system during the maintenance on the ventilation system inlet dampers. Mr. Baldwin stated the incorrect authorization for removal resulted in breaching the control room duct work and he commented better clarity of the status of the project was required and clearance and documentation standards have been revised with respect to removal and return to service for the control room ventilation system.

- LER 1-2011-007-00 and LER 1-2011-007-01 were issued November 14, 2011 and January 30, 2012 to report an inadequately performed 2005 control room ventilation system test. Mr. Baldwin stated the ventilation system works to protect operators by limiting the amount of air which can leak into the control room. The 2005 test data did not support the conclusions and a retest confirmed that there was some leakage during the test into the control room although the control room environment would have remained within its design limits.

- LER 1-2011-008-00 was issued January 3, 2012 to report discovery of a control room ventilation system design flaw. Mr. Baldwin stated this flaw was with respect to the original plant design and revealed itself when it was found that shutting down three out of the four ventilation

trains could result in some outside air entering the control room. Controls have been established to ensure that at least two of the four ventilation trains will remain available and he stated there are emergency operating procedures which would cause operators to check the status of the ventilation within allowable limits.

Mr. Linnen observed and Mr. Baldwin confirmed there was another situation during 2R16 which caused an EDG start and Mr. Baldwin stated that there were different individuals involved in each of the events involving the EDGs and he stated the plant has escalated its level of oversight in the area of personnel employing human performance techniques.

Mr. Baldwin reported on five NCVs and two licensee-identified violations during the period October 2011 through January 2012. All NCVs were determined to be of very low or minor safety significance (i.e., green), as follows:

- NCV (Green) – Failure to Maintain a Fire Barrier (C-C Aspect P.1(d) Corrective Action) when a fire-rated door was found by the NRC inspectors to be ajar. Mr. Baldwin stated DCPP is pursuing a rebalancing of the ventilation system to eliminate, to the degree possible, large pressure differentials between areas. Corrective actions taken previously were not adequate.

- NCV (Green) – Failure to Perform Surveillance on Fire Barriers (C-C Aspect P.1(c) Evaluation) when some doors which were previously not considered to be fire barriers that needed to be controlled were found to require a higher level of control. Mr. Baldwin reported a change to the plant was made back in 1986 that removed many barriers from the Fire Protection Program as unnecessary and as a result of this NCV barriers were placed back into the program. This was a NRC-identified violation.

- NCV (Green) – Failure to Maintain the Control Room Habitability System in the Design Configuration (C-C Aspect H.3(a) Planning). Mr. Baldwin reported that documentation should have been created and an evaluation of the impact made prior to starting work which represents a deficiency in the program and process for work planning.

- NCV (Green) – Failure to Follow a Procedural Requirement for Reactivity Manipulation (C-C Aspect H.4(b) Procedural Compliance) when a control room operator began a procedure to dilute makeup water to the Reactor Coolant System (RCS) just prior to a shift change and did not follow standards which provide that no reactivity manipulation activities will be performed during a shift turnover.

- NCV (Green) – Failure to Ensure Emergency Response Organization Qualifications (C-C Aspect H.1(b) Conservative Assumptions) when an Operations shift manager was found not to have been tested and qualified on new, self contained, breathing apparatus. Mr. Baldwin commented this resulted from a lack of definition between emergency planning and operations procedures and procedural requirements were met but emergency planning did not specify a specific number while operating procedures were adequate and verifications are now made that crews have qualifications.

PG&E Identified – The control room ventilation system was not maintained in the design configuration when maintenance personnel erroneously removed a blank flange supporting maintenance of the ventilation system inlet dampers.

- PG&E Identified – The above removal of the blank flange was not reported to the NRC within eight hours of discovery. This was initially not reported to the NRC and it should have been, hence the LER discussed above.

Summarizing NRC enforcement, Mr. Baldwin stated inspection reports were issued for:

- Integrated Inspection Report (IR 2011-004, 11/18/11) – 7/2.

A total of seven violations were reported since the public last meeting of the DCISC, all of which were determined to be of very low safety significance and two of which were PG&E identified. All were green status violations indicating very low safety significance. Currently five violations in the last four quarters have a cross-cutting aspect of P.1(c) Evaluation and Mr. Baldwin stated these numbers continue to decrease and DCPP has made substantial efforts over the past two years to improve performance in problem evaluation thoroughness, rigor and in oversight. He commented that DCPP ended 2010 with 45 NRC-identified violations and for 2011 that number had been reduced to 20 NRC-identified violations.

Mr. Baldwin reviewed the NRC Performance Indicators for DCPP and observed the plant continues to meet all NRC thresholds for acceptable, or green status, performance. DCPP sets a higher threshold standard for performance than established by the NRC's indicators and he commented for unplanned scrams for 7000 critical hours U-2 is in yellow status, per the DCPP threshold, due to a plant trip a number of years ago. Mr. Baldwin reported safety system functional failures have decreased in performance due to the control and ventilation system flange removal issue which affected both units. A RCE has been initiated concerning losses of safety system function over the last four quarters and this has resulted in heightening awareness with respect to risk significance and risk awareness in the planning process. Mr. Baldwin reported DCPP is still in yellow status but is improving with respect to performance on emergency planning drills and feedback is being received from personnel who perform documentation functions during emergency drills.

Concerning the NRC Cross-Cutting Issue Matrix, Mr. Baldwin stated this metric tracks each of the violations he has discussed with the DCISC and currently only P.1(c) for Problem Evaluation is in red status. Others currently in yellow status include Work Control Planning, Work Practice Procedure Compliance, and Documentation. Mr. Baldwin stated that when a threshold of three violations within a rolling one-year period accumulate, an in-depth investigation is performed to look broadly across discrete events for any commonality and common cause evaluations have been conducted for the three areas currently in yellow status. He reported that over the past two quarters there have been no further violations and no violations have occurred during the current quarter for any of the three areas. In response to Mr. Wardell's inquiry, Mr. Baldwin confirmed that Problem Identification and Resolution remains a substantive cross-cutting NRC-identified issue at DCPP and he stated that plant personnel are disappointed with this situation and DCPP is reviewing each of the contributing violations to determine why they were not prevented. Mr. Baldwin stated it would

not be before the end of 2012 until the violations roll off this four-quarter rolling index.

The Chair thanked Mr. Baldwin for an informative presentation.

Ms. Beth Barnes was recognized to address the Committee. Ms. Barnes stated she has resided in San Luis Obispo County for four days and her daughter now attends California Polytechnic University (Cal Poly) in San Luis Obispo. Ms. Barnes expressed her deep concern about DCPP. She stated that one of the lessons of the accident at Fukushima is that nature holds the trump card. Ms. Barnes stated, on behalf of herself and her daughter, that she strongly opposes the power plant.

The Chair thanks Ms. Barnes for her comments

Mr. Becker called upon and requested Mr. Bill Guldemond, Special Assistant to the Site Vice President to make the next informational presentation.

Update on the status of issues related to the events at the Fukushima Dai-ichi Nuclear Power Plant in Japan following the March 11, 2011, earthquake and tsunami.

Mr. Guldemond stated the Fukushima nuclear power plant consists of a total of six reactors, with Reactors 1, 2, 3 and 4 having been the most severely affected by the earthquake and resulting tsunami on March 11, 2011, during which Reactors 1, 2 and 3 experienced core damaging events. Reactors 5 and 6 were less affected as they had a diesel generator and AC power available that allowed them to mitigate the consequences of events.

Mr. Guldemond reviewed the background of the events which occurred on March 11, 2011:

- Magnitude 9 earthquake, larger than the plant's design basis, consisting of multiple faults rupturing essentially simultaneously, and seven tsunamis struck Fukushima.
    - >20,000 casualties away from the plant and one fatality at the plant as a result of a crane collapsing at the site due to the earthquake.
    - Significant damage to local infrastructure.
    - Hampered site access.
- Earthquake caused a loss of offsite power, but little plant damage.
    - Switchyard breakers damaged for Reactors 1 and 2.
    - Transmission lines damaged for Reactors 3 and 4.
    - Transmission tower collapsed for Reactors 5 and 6.
- Safety systems initially responded as expected.
- Tsunamis which struck approximately 45 minutes after the earthquake caused major damage to local infrastructure and loss of onsite AC and most DC power.

- Tsunami height was approximately 50 feet, constructive interference of multiple waves.
- Turbine Buildings, Reactor Buildings, and Intakes inundated with sea water.
- All but one EDG damaged.
- Safety equipment to maintain core cooling damaged.
- Plant electrical distribution systems (AC and DC) extensively damaged.

Mr. Guldemond displayed a photo showing the condition of the local infrastructure and access roads in the vicinity of the station shortly after the event and commented on the difficulty of getting to the station. He also displayed a diagram showing the relative elevation of the tsunami compared to the plant's structures. Mr. Guldemond stated the EDGs and electrical distribution system equipment were located at lower levels of the turbine buildings and the safety-related equipment for maintaining core cooling were located primarily in the lower regions of the reactor buildings. Significant quantities of water flooded both the turbine buildings and large areas of the reactor buildings and he displayed an overhead photograph showing the areas of inundation at the plant site.

Mr. Guldemond reviewed the effects of the earthquake and tsunami on Reactors 1, 2, 3 and 4 as follows:

- Reactor 1.
  - No core injection for 14+ hours; core damage started in five hours.
  - Significant portions of the core believed to be inside containment but outside the reactor vessel.
- Reactor 2
  - Turbine driven reactor core isolation cooling (RCIC) pump injection for ~ 70 hours (Reactor 1 did not have a RCIC system).
  - Core uncovered at 73 hours with fuel damage shortly thereafter.
  - Significant portions of the core believed to be inside containment but outside the reactor vessel.
- Reactor 3
  - Turbine driven RCIC pump injection for ~ 36 hours.
  - Core uncovered at 48 hours with damage shortly thereafter.
- Reactor 4
  - In outage since November 30, 2011 and defueled.
  - SPF cooling lost, no evidence of fuel overheating.

- On March 15 a hydrogen explosion occurred in the reactor building.

In response to Dr. Lam's inquiry, Mr. Guldemond reported the RCIC system required DC power to operate the governor and he stated that he suspected the RCIC systems failed when DC power was exhausted but a final determination must await an actual physical inspection which is not possible at this time. Mr. Guldemond reported that, although there was concern during the accident concerning loss of inventory in the SPF for Reactor 4, subsequent analysis has shown that even though SPF cooling was lost for a protracted period there is no evidence that the fuel overheated.

Mr. Guldemond reported and summarized several of the principal lessons learned to date from the events at Fukushima:

- Vulnerability to/preparedness for significant natural phenomenon, particularly flooding as when inundated equipment capabilities are lost.
- Potential for multi unit events.
- Importance of ability to maintain fuel cooling during station blackout and other beyond design basis conditions.
- Importance of preserving DC power for plant monitoring.
- Importance of monitoring SPF conditions under upset conditions.
- Need for robust emergency response capabilities.
  - Pre-positioned strategies/equipment.
  - Staffing.
  - Communications capability.

Mr. Guldemond then reviewed the actions taken at DCPP since his last presentation to the Committee in October 2011 and stated that PG&E has not identified any significant gaps in any of these areas at DCPP:

- Analyzed ability to cope with extended SBO.
- Analyzing for industry common gaps identified during initial assessment of emergency response capabilities.
  - Beyond Design Basis (BDB) program governance/configuration management.
  - Equipment maintenance and testing.
  - Training.
  - Capability demonstration for time sensitive activities.
  - Offsite support capabilities.
- Significant interaction with NRC through Nuclear Energy Institute (NEI) to inform NRC

direction on NRC Tier 1 Recommendations

Mr. Guldemond discussed and reviewed with the Committee the continuing industry response to Fukushima:

- Utilities, Electric Power Research Institute (EPRI), INPO, and NEI created a joint leadership model to integrate and coordinate the U.S. nuclear industry's response ("Way Forward").
- Key element is to assure response efforts do not distract focus on safe and reliable operations.
- Significant successful NRC interaction on Tier 1 recommendations.
- Development of the Nuclear Energy Institute's industry "FLEX" strategy.

Mr. Guldemond reviewed the NRC's response which included formation of a response team to capture the lessons learned and identify issues which need to be addressed. The NRC created a series of recommendations which were placed in three separate tiers as follows:

- Tier 1: Start without unnecessary delay, sufficient resources exist.
- Tier 2: Needs further technical assessment, dependence on Tier 1 issues, or availability of critical skill sets.
- Tier 3: Requires further staff study, have an associated shorter-term action that needs to be completed, dependent upon availability of critical skill sets, or dependent upon resolution of the NRC's Near Term Task Force's (NTTF) Tier-1Recommendations' regulatory framework.

Mr. Guldemond discussed and reviewed the eight NTTF Tier 1 Recommendations:

- 2.1 – Reevaluate/upgrade design-basis for applicable (used to be seismic and flooding only) natural events using current data and NRC approved methodology, as would be required if the plant were being licensed today, and take actions to identify vulnerabilities, which will be the subject of a 10 CFR 50.54 (f) letter.
- 2.3 – Perform walkdowns for vulnerabilities to existing design basis for seismic and flooding events to determine how well the plant conforms to its current design basis, which will be the subject of a 10 CFR 50.54(f) letter.
- 4.1 – Strengthen SBO mitigation capability for up to 72 hours which will be addressed by NRC rule making.
- 4.2 – Enhance the ability to prevent fuel damage and preserve containment integrity during a beyond design basis event (SBO/loss of ultimate heat sink, FLEX) and Mr. Guldemond reported this recommendation has recently become much more generic in terms of the scope the NRC wants the industry to address.

- 5.0 – Boiling water reactor hardened containment vents (not applicable to DCPP).
- 7.1 – Enhance SPF instrumentation for monitoring conditions during an event, from the pool's normal level down to the top of the fuel, of the type envisioned in 4.2 above, which will require an NRC Order.
- 8.0 – Strengthen and integrate the Emergency Operating Procedures (EOPs), Severe Accident Management Guidelines (SAMGs), and Extreme Damage Mitigation Guidelines (EDMGs), to be the subject of NRC rule making. Mr. Guldemond reported a pressurized water reactor (PWR) group is now working to improve the SAMGs to create a single set of those documents for all PWRs.
- 9.3 – Emergency communications during a prolonged SBO and multi unit event staffing for multi unit events with degraded site access, which will require an NRC Order.

In response to Dr. Peterson's question concerning whether there would be one document to address SAMGs and EDMGs, Mr. Guldemond replied it was his opinion that these issues would continue to be addressed separately but he stated that there could be a much smoother transition between the EOPs and the SAMGs and a broader application of the EDMGs, as there are other opportunities where the strategies contained in the EDMGs would be of benefit under BDB conditions. Dr. Peterson commented that integrating and providing more entry points into the EDMGs is important and needs to be worked through by the plants. Mr. Guldemond stated that an EDMG-like guidance document is now being prepared to address such items as portable ventilation and stripping DC loads when necessary as these tasks go beyond what is currently contained in the EOPs.

Mr. Guldemond then reviewed with the Committee the timelines for implementing the NTTF Tier 1 Recommendations and stated that the industry has sought permission from the NRC to extend some timelines due to the limited resources available to all U.S. nuclear power plants:

- Staff submits orders/50.54(f) letter to Commission – 2/17/2012.
- Orders/50.54(f) letter, SBO advance notice of rule making issued before March 11, 2012.
- 2.1 – Natural event design basis – flooding and other events.
    - NRC approval of guidance – 8/30/2012.
    - Submit evaluation results – 2/2013.
    - Submit final report, including any needed actions – 2/2014.
- 2.1 – Seismic design basis.
    - NRC approval of guidance – 9/30/2012.
    - Submit evaluation results – 2/2013 (TBD for western plants including Palo Verde, San Onofre and DCPP).

NRC establishes priority of next submittal – 3/2013.

- Submit final report, including any needed actions – 2/2015.

- 2.3 – Seismic walkdowns.
  - NRC approval of guidance – 8/30/12.
  - Complete walkdowns and submit final report – 2/2013.
- 2.3 – Flooding walkdowns.
  - NRC approval of guidance.
  - 8/30/12 Complete walkdowns and submit final report – 2/2013.
- 4.1 – SBO rulemaking.
  - Advanced Notice of Proposed Rulemaking issued by 3/11/2012.
  - Final rule implementation< 2.5 years.
- 4.2 – Beyond design basis strategies.
  - NRC approval of guidance – 8/30/2012.
  - Submit strategy to NRC – 2/28/2012.
  - Implementation by second refueling outage after 8/30/2012 for each unit.

Mr. Guldemond commented concerning Recommendation 4.2 that guidance is still being developed and there will be a best case BDB event strategy analyzed with a SBO of 72 hours, broken into three parts, with loss of connective access to the ultimate heat sink which will postulate reliance initially on permanently installed equipment, then on portable equipment and finally on resources being brought in from offsite to supplement the response and he stated DCPP believes it will be then asked to review individual natural events and determine whether or not those conditions could create situations which would be more severe than the best case beyond design basis event.

- 7.1 – SFP instruments focusing principally on inventory in the SFP.
  - NRC approval of guidance – 8/30/2012
  - Implementation by second refueling outage after 8/30/2012 for each unit.
- 8.0 – Emergency response procedures.
  - Develop and issue final rule – 5/20/16.
- 9.3 – Emergency communication/staffing.
  - NRC approval of guidance – 8/30/2012.
  - Written response – 12/1/2012.

Mr. Guldemond discussed and reviewed the NTTF Tier 2 Recommendations:

- SFP makeup capability.
- Additional emergency preparedness actions.
    - Multi unit dose assessment.
    - Periodic training and exercises for multi unit and SBO scenarios.
    - Adequacy of Emergency Preparedness equipment and facilities.

Mr. Guldemond then reviewed and discussed the NTTF Tier 3 Recommendations:

- Ten-year confirmation of seismic/flooding hazards.
- Seismically induced fire and flood enhancements.
- Hardened vents for other containment designs.
- Hydrogen control and mitigation.
- Emergency Response Data System capability.
- Emergency Planning topics for prolonged SBO and multi unit events.
- Emergency Planning topics for decision-making, radiation monitoring, and public education.
- Reactor Oversight Process modifications.
- NRC Staff training on severe accidents.

Mr. Guldemond remarked that NRC staff was directed to solicit input from others including the Advisory Committee on Reactor Safeguards and other recommendations were provided for NRC staff to prioritize:

- Filtered containment vents.
- Emergency Planning Zone size.
- Pre-staging potassium iodide (KI).
- Dry cask storage.

With reference to the size of the emergency planning zones, pre-staging of KI and dry cask storage, Mr. Guldemond stated that the NRC has determined that sufficient progress is being made on these issues for current public protection and there is no need to take short term action.

Mr. Guldemond reviewed DCPP's response to the Tier 1 Recommendations as follows:

- Station lead assigned to coordinate activities.
- Technical points of contact assigned to coordinate with DCPP's Strategic Teaming and

Resource Sharing (STARS) joint utility alliance partners and the NEI and provide input to NRC on final recommendations.

- Project teams will be assembled for each recommendation from the Strategic Projects and Regulatory Services organizations and other appropriate line organizations.

Mr. Guldemond reported the NRC is in the process of drafting its final 10 CFR 50.54(f) letters and orders and therefore there is not a lot of interaction continuing at the present time while that process is underway.

Mr. Guldemond reported that the industry has developed a strategy termed "FLEX" which he described as a sequence of actions the industry believes will provide a strategy to promptly improve margins for significant events such as Fukushima. The term FLEX comes from the fact that the strategy relies on a diverse and flexible mitigation capability to provide backup to permanently installed equipment. He described FLEX as an industry-proposed response to recommendation 4.2 (Tier 1) concerning how BDB events are mitigated. FLEX concepts include:

- Strategy to promptly improve margin for significant events like Fukushima.
- Diverse and flexible mitigation capability to provide backup to permanently installed plant equipment following severe or extreme natural phenomena.
- Providing multiple means of supplying power and water for key safety functions to preclude damage to nuclear fuel and release of radionuclides.

Mr. Guldemond used two graphic depictions to show how the attributes FLEX are being developed and how FLEX might fit within existing EOPS, SAMGs, SBO coping strategies, and design basis external event considerations to increase defense-in-depth considerations for accident mitigation and provide additional margin to prevent core damage. Dr. Budnitz observed and Mr. Guldemond agreed that FLEX appears to be a part of the prevention rather than the mitigation aspect of protecting public health and safety. Mr. Guldemond stated the NRC was initially reluctant to accept FLEX as a proposed resolution of Recommendation 4.2 (Tier 1) and stated the industry stressed that FLEX was intended to prevent core or fuel damage regardless of location. Dr. Peterson observed that FLEX appears to work for both prevention and mitigation, as the capacities included in FLEX can arrest core damage as well. Mr. Guldemond agreed but he observed that the parameters you deal with are different under the two circumstances of prevention versus mitigation.

Dr. Budnitz commented the FLEX concepts will require clear guidance to preclude ambiguity and he further commented that the industry's effort to focus its BDB efforts toward prevention of core damage rather than mitigation appears to be correct. Dr. Peterson observed the industry may have gone as far as it can in terms of trying to harden and strengthen the safety systems inside plants but it cannot fully anticipate everything and these are mitigation strategies in the sense that what they assume is that, in the end, the installed equipment is disabled and therefore the capability to use portable equipment must be extraordinarily robust to reduce risk. Dr. Peterson observed, in a sense, what FLEX is doing is mitigating the consequences of extensive damage before fuel damage.

Mr. Guldemond agreed and commented the intent of FLEX is to recognize the initiating event is not as important as the ability to manage the consequences. Drs. Peterson and Budnitz further observed that FLEX addressed the uncertainty of whether a plant has identified the full range of events in advance. Dr. Budnitz commented, and Mr. Guldemond agreed, that FLEX must also continue to develop and identify as many BDB and natural events which could threaten a plant as possible but that plants cannot be designed for every potential event. Mr. Guldemond stated that the guidance being created will be endorsed by the NRC before it is fully implemented by the industry and this includes key elements of FLEX:

- Portable equipment such as diesel driven AFW pumps, engine driven reactor coolant make-up pumps, hoses, and portable generators to charge batteries to support key safety functions and engine driven reactor coolant make-up pumps and SFP instruments.
- Reasonable staging and protection of portable equipment.
- Procedures/guidance for emergency response personnel use of the FLEX capability.
- Capabilities provide sufficient coping to allow offsite resources to respond for long term coping.

Mr. Guldemond discussed recent industry efforts on assessing SBO as including the identification of reasonable strategies and actions to extend time existing permanent and portable equipment can maintain critical safety functions for extended SBO and establishing near-term actions to improve margins for beyond design basis SBO. The assumptions used in this assessment included:

- Reactors at full power, successful shutdown of the nuclear chain reaction.
- Installed AC power not available.
- Portable equipment protected from design basis seismic, flooding and wind events, including missiles and may be used.
- Minimum shift staffing levels normally practiced and defined.
- Seismically protected makeup water sources available.
- Ultimate heat sink water available (not systems).
- Portable protected equipment fuel sources available.
- Flood protected inverters and battery chargers available.
- All units are affected.

Dr. Peterson observed these assumptions do not appear to envision the substantial modification of installed equipment but instead make use of portable equipment and he opined this was a reasonable strategy because making major modifications to a plant has its own particular set of risks and can cause reliability issues with existing systems. Mr. Guldemond then reviewed the topics examined in the SBO analysis including:

Length of time core cooling, containment integrity, and SPF inventory can be maintained during an extended SBO using existing and installed portable equipment.

- Strategies to maintain availability of essential instrumentation needed for monitoring core, containment, and spent fuel safety.
- Methods for providing fuel to power emergency response equipment.
- Communications capability for a SBO > 24 hours with AC power and other communications infrastructure not available within 25 miles of the plant.

He then discussed the strategies being developed which include:

- Core Cooling.
  - Rapid cool down and RCS depressurization to permit RCS "float" on safety injection accumulators without N2 injection.
  - Aggressive load shed to extend battery life.
  - Continued decay heat removal using turbine driven AFW pump.
  - Use available temporary cooling for control room and inverter rooms
  - Use temporary instrumentation to monitor/control plant after battery depletion.
- Spent Fuel Pool.
  - No actions required.
  - Level remains sufficient for radiation for at least 36 hours.
- Containment Integrity.
  - No actions required.
  - Maximum pressure is ~ 2.5 psig.
  - 165F in leak compartment, 133F in general area.

Mr. Guldemond stated PG&E has concluded concerning DCPP's capabilities to cope with SBO that:

- DCPP can cope with a SBO > 24 hour duration using assumptions and currently available equipment and procedures.
- "Pinch points" were identified for control room environmental conditions and battery life.
- Sufficient on-site "protected" fuel is available for powering temporary equipment.
- Supplementary communications equipment is needed to support 24 hour communications coping with survivability limitations.

In concluding his presentation to the DCISC Mr. Guldemond observed that U.S. nuclear plants are safe. The events which caused the accident at Fukushima were a national tragedy for Japan and unfortunately the event significance was increased by lack of preparedness. Accordingly, he reported efforts are underway by the U.S. nuclear industry and by the NRC to improve margins for significant events. DCPP has confirmed its existing capabilities for emergency response, has committed to enhancements for margin improvement, and is prepared to act on new lessons and requirements from the events and the experiences at Fukushima.

In response to Dr. Budnitz' query as to whether DCPP has sufficient personnel and budgetary resources to address these issues, Mr. Guldemond replied that PG&E fully supports DCPP's in these efforts and has committed to provide the resources necessary to ensure the enhancements are implemented. He confirmed staffing levels would need to be assessed to ensure sufficient resources would be available to implement the strategies once they are put into place and he agreed with Dr. Budnitz' observation that it will be necessary for DCPP to categorize the issues it must address, such as seismic and flooding, and to be proactive in order to secure the services of the people necessary as there may be a shortage of qualified personnel nationwide to support these industry initiatives over a short period of time. Mr. Guldemond described FLEX as an industry initiative and stated that while there will be modifications as a result of FLEX and there may be issues regarding the availability of equipment, he stated he believed there would be sufficient resources available.

Ms. Sherry Lewis, a member of MFP, was recognized to address remarks to the Committee. Ms. Lewis stated that the point to be learned from the accident at Fukushima is that not everything was thought of and it is conceivable that something will happen that nobody has thought of. She stated the reason that so much effort is being placed on preparation following Fukushima is because of the devastating nature of an accident to a nuclear power plant. She stated it was her opinion that it would be better to just stop using nuclear power and she cautioned against a mindset that allows the belief that somehow American plants are different from those in Japan. Ms. Lewis stated it would be her wish that all the thousands of hours of research and millions of dollars go toward the development of alternative, sustainable energy sources that would not have horrible consequences because it is a matter of when, and not if, things will go wrong.

Ms. Jane Swanson, a member of MFP, stated she agreed with Ms. Lewis' remarks. She commented on the information received and stated that the reality of the matter is that the probability of a beyond design basis event cannot be reduced to zero and she stated that since the possibility of a catastrophe cannot be reduced to zero, and under the National Environmental Policy Act it is required that events with extremely low probability but extremely high consequences be taken into account, it is MFP's conclusion that it is not worth taking the risk to continue to operate DCPP or any other nuclear plant. Ms. Swanson stated that as the DCISC serves the public it was important for members of the public to let the Committee know that sustainable energy is going to be the answer and nuclear is not. She thanked the Committee for the opportunity to express her views.

Ms. June Cochran, a resident of Shell Beach, was recognized to address remarks to the Committee. Ms. Cochran stated she concurred with Ms. Lewis and Ms. Swanson and the Committee members when they indicated that no one can fully anticipate what will happen, prepare and manage the

consequences of dealing with a beyond design basis disaster. She stated that what she heard did not give her any confidence that DCPP could manage the consequences. She reviewed some of the comments in the information presented during the evening including references to challenges to human efficiency; incorrect authorization and removal of a blind flange from the ventilation system; personnel error; data not supporting test conclusions; PG&E not pleased with human performance; and corrective actions not taken to make sure doors were closed. She observed there was a report that an error had continued to exist, undiscovered, for 26 years. She commented on the prohibition on reactivity manipulation during shift turnover having been misinterpreted and DCPP not being rigorous in risk awareness; on forms not having been properly completed and procedures not being followed; and on current communication capabilities not being seismically robust. Ms. Cochran remarked that every time she attends a DCISC meeting she hears of these types of issues repeatedly and there are more and more problems which are found by the NRC and by PG&E. She stated she applauds PG&E for reporting the problems but a plant of the size and complexity of DCPP just cannot be safely managed. She stated this has much to do with its aging components including corroded piping which is not addressed until a problem occurs. She wondered how the wrong data which did not support the test conclusions was used and where did it come from? Ms. Cochran stated she has heard issues about fire barrier doors during at least four DCISC public meetings and about the Fire Protection System being deficient. She inquired about what were the cross-cutting trends found at DCPP by the NRC and asked that they be identified. Ms. Cochran concluded her remarks by stating that she is aware PG&E is going through a reconfiguration following the natural gas line explosion at San Bruno and she wondered how PG&E would deal with these recommendations and whether it was possible to do so and she inquired who at the plant was responsible for managing and overseeing the recommended enhancements.

Fire Chief Robert Lewin was recognized to address remarks to the Committee. Chief Lewin stated he read the INPO public report on Fukushima and it was clear that fire engines were used as the final method used to provide a heat sink for the Fukushima reactors. He stated, however, if that method were to be used in the U.S. it needs to be included in the training process. Chief Lewin stated he is aware that DCPP has increased its fire protection resources and the plant now has two relatively new fire engines available but two fire engines may not be sufficient and he estimated that up to six fire engines could be required just to lay enough hose from the cooling water reservoirs, or from the ocean, to the DCPP reactors. He stated that his Department should be training on this already. He commented that it is important that not only the NRC but also the federal, state and local emergency responders should be involved in emergency planning and preparation. He stated that he acts as Operations Area Coordinator for mutual aid for fire resources for San Luis Obispo County and reports through the California Emergency Management Agency (Cal EMA), and resources are moved up and down the state in response to emergencies and when California's resources are exhausted the Federal Emergency Management Agency (FEMA) is called upon and this process needs to be part of DCPP emergency planning. He stated that although he has met with DCPP emergency planners and with Mr. Guldemond he has not been contacted about what the Operations Area requirements would involve and he stated he was unsure when that would take place if it isn't included in the process. Chief Lewin commented the issues involve not only equipment but also qualified personnel resources. Concerning wildfires, he stated his agency uses punch lists so that teams which are accustomed to working with one another are dispatched

to manage an incident and resources are lined up in order of anticipated needs and it is that level of organization which would be required to respond to an emergency at a nuclear plant. He observed that in his opinion DCPP is probably ahead of many other U.S. nuclear power plants because of its location in California and its emphasis on fire protection. Chief Lewin stated that the issue of road access to DCPP needs to be reviewed, as both access roads to the plant are vulnerable to flooding and that alternatives can be explored including possibly creating a third access road over the mountains on the power line roads. Chief Lewin stated he was in agreement with the emphasis on prevention and the emphasis on a quick response and prevention at the incipient stages of a fire or a radiation release incident. He commented steps need to be taken to improve response times of the onsite fire department and to update the technology used to alert the fire department of an incident. Chief Lewin commented there is also a balance between security issues and fire department response which needs to be reviewed to improve response time.

Ms. Patricia Miller was recognized to address remarks to the Committee. Ms. Miller stated that there was little discussion on conservation in the presentations and that the use of electricity could perhaps be reduced by a factor of 50‰. Ms. Miller encouraged the state to engage in a dialogue about conservation in context of the amount of electricity being produced.

With Mr. Wellington's assistance, the Committee responded to Ms. Cochran's questions. In response to her inquiry concerning a recommendation from the NRC to review issues regarding aging components, Dr. Budnitz replied that there is a program at the NRC to examine aging issues at every plant including DCPP and PG&E has addressed aging issues in its application for an extension of the operating licenses for both DCPP units and the DCPP aging programs will continue to be reviewed by the DCISC.

In response to Ms. Cochran's inquiry about the data used for the test which were found to have reached unsupported conclusions, Dr. Budnitz and Mr. Guldemond replied that the data were correct but the analysis done did not agree with the data or support the conclusion reached.

With respect to the current NRC-identified cross-cutting trend at DCPP, Mr. Guldemond stated that elements of nuclear safety culture which the NRC identifies as weaknesses are based upon a change in a performance indicator which indicate weakness in a safety culture attribute by an increased number of findings or violations over a rolling twelve-month period. If the NRC is not satisfied that the plant is treating the issue with sufficient rigor a substantive cross-cutting issue is declared and increased NRC inspection activity is provided to verify that a plant understands the issue, has identified the causes, and implemented appropriate effective corrective actions. He stated DCPP has experienced five findings or violations related to shortcomings in its thoroughness of problem evaluation (P.1(c)). Dr. Budnitz observed that the DCISC has examined these issues during fact-finding visits to DCPP but that the Committee does not have authority to direct PG&E.

In response to Ms. Cochran's inquiry about how DCPP will address the recommendations arising from the events at Fukushima, Dr. Budnitz commented that this is a valid concern but the Committee will continue to push and to probe to assure there are adequate resources dedicated to addressing those recommendations and will report to the public on its conclusions.

In response to Ms. Cochran's inquiry concerning who was responsible to implementing the

recommendations arising from Fukushima, Mr. Guldemond reported that at this time he was the person responsible for coordinating DCPP's respond to Fukushima-related activities.

Dr. Budnitz remarked that in California energy efficiency efforts have been more extensive and more successful than in any other state and California leads the nation in implementing energy efficiency measures and consumes substantially less electricity than is the case at other places in the U.S. He stated this was largely due to the efforts of Professor Art Rosenfeld who served on the California Energy Commission for ten years and spent forty years advocating successfully for energy conservation.

XIV. Adjourn Evening Meeting

The Chair adjourned the evening meeting of the Committee at 8:20 p.m.

XV. Reconvene For Morning Meeting

The February 9, 2012 morning public meeting of the Diablo Canyon Independent Safety Committee was called to order by its Chair, Dr. Lam, at 8:00 a.m. Dr. Lam briefly reviewed the formation and role of the Committee and introduced and reviewed the background and qualifications of the current members and the Committee's consultants and legal counsel.

XVI. Committee Member Comments

Dr. Peterson reminded those present that the DCISC meetings have hearing assistance equipment available for use by the public.

XVII. Public Comments and Communication

The Chair invited any comments from members of the public.

Ms. Jane Swanson, a member of MFP, was recognized. Ms. Swanson commented she has reviewed NRC inspection reports for DCPP from 2010 and 2011 which discuss cross-cutting areas in Human Performance, Problem Identification and Resolution, and in Safety Conscious Work Environment and she reviewed a section from an NRC annual inspection letter regarding an open cross-cutting issue in Problem Identification and Resolution at DCPP wherein the NRC previously identified 14 findings with this aspect in its mid cycle assessment and concluded DCPP's action s had not proven effective. She commented that 14 was a significant number and she inquired how many of each cross-cutting issues there are.

Mr. Bill Dineen was recognized. Mr. Dineen stated he is a retired biologist who, since 1977, has been concerned about nuclear waste's destructive effect on DNA. He stated it was his opinion that there should be no nuclear waste and DCPP should not have been operated until the nuclear waste problem was solved. He remarked he was arrested in 1977 because of his opposition and now, many years later, nuclear waste is being stored on site at DCPP. He stated that those responsible should be put in jail just as he was in 1977.

Dr. Budnitz stated he agreed with Mr. Dineen's comment regarding the state of public policy in the U.S. concerning the treatment and storage of nuclear waste. He stated his opinion that the matter represents a failure in the political process and that the recommendations of the President's Blue Ribbon Commission on America's Nuclear Future, on which Dr. Peterson served, provide a path forward if those recommendations were to be implemented but he stated most of what the recommendations address was known years before. Dr. Budnitz observed that public policy questions are not within the Committee's purview, the Committee's charge being to review and report on operational safety at DCPP which includes the safety of waste management.

Dr. Peterson reported the Blue Ribbon Commission had eight major recommendations and all involve actions concerning which, for two decades, it was known that they probably should and could be taken including a process for selection of the proposed repository proposed for Yucca Mountain, NV and the use of the fees collected for nuclear waste storage to offset deficit spending by Congress. He commented the U.S. Department of Energy has not been proven to be a reliable and trustworthy actor in the process of developing a repository and both compromise and Congressional action would be required to amend the Nuclear Waste Policy Act. He stated the Blue Ribbon Commission reached the conclusion that the U.S. needs to take a substantially different direction, however, he agreed with Dr. Budnitz that these matters fall outside this Committee's remit from the CPUC which is to ensure the DCPP is run as safely as possible, meets the highest standards and uses the best practices.

Dr. Peterson stated, concerning cross-cutting issues, that reporting of problems is a key element of safety monitoring and reporting should be encouraged and therefore that there may be a significant number of problems reported and classified as having minor safety significance is something which needs to be accepted. He stated, however, that it was also important that these problems are not repeated once they've been identified and therefore the issue warrants a considerable amount of attention from this Committee as well as by the NRC.

Ms. Sherry Lewis, a local resident and member of MFP was recognized. Ms. Lewis stated that there is no solution without danger to the problems of nuclear waste as it remains lethal for hundreds of thousands of years. She stated she opposes a repository such as Yucca Mountain as it is her belief that it would encourage creating more nuclear waste. She stated that she wants no more waste created because it is too lethal to deal with.

XVIII. Information Items Before the Committee

The Chair requested Mr. Bill Guldemond, Special Assistant to the Site Vice President at DCPP, to continue with the informational presentations requested by the Committee for this public meeting. Mr. Guldemond introduced Mr. Richard Klimczak, Geosciences Director for PG&E and asked Mr. Klimczak to make the next presentation.

Update on DCPP Response to NRC Generic Letter and Issues concerning Seismic Risk Evaluation for U.S. Operating Reactors.

Mr. Klimczak reported that the NRC identified a generic issue and issued Generic Issue (GI)–199

Information Notice 2010- 018 in September 2010 to address the implications of updating probabilistic seismic hazard estimates in the central and eastern parts of the U.S. for existing nuclear power plants. Early site permits for new reactors were required to develop probabilistically based seismic hazard curves and Ground Motion Response Spectra (GMRS) based upon a Seismic Probabilistic Risk Assessment (SPRA) model. He stated the seismic hazard analysis has two components: the updated seismic sources or the faults; and the fault characteristics or the geometries and then, for an earthquake on that fault, what is the ground motion at the site. New seismic hazard curves and new ground motion determinations were made and some of the results identified higher seismic hazard estimates that may result in the increased likelihood of exceeding the Safe Shutdown Earthquake (SSE) response spectra at operating nuclear facilities in the central and eastern U.S. He remarked the SSE ground motion spectra is based upon an earthquake on a fault closest to the plant while a probabilistic analysis considers all the faults and estimates ground motions for the selected probability of exceeding the ground motion and represents a different methodology.

Dr. Peterson commented that seismic risk is related to the fragilities of mechanical equipment and is dependent upon specific frequencies and the duration of the seismic event. He remarked that at Fukushima the ground motion accelerations were not high but the duration was extremely long. He stated a discussion based on peak acceleration may risk miscommunicating the seismic risk because such a discussion is more related to whether equipment has enough margin to survive the specific acceleration it will be subjected to. He remarked there can be a disconnect between those who are assessing the seismic hazard and those designing or evaluating the plant systems. Mr. Klimczak agreed and stated that the original plant design was deterministically based but with a probabilistic assessment you have input to the seismic probabilistic risk analysis which includes the fragility of components that would impact core damage frequency and therefore fragility of equipment is addressed by a probabilistic assessment. Dr. Budnitz commented it is always a spectrum of ground motion which represents the state of knowledge about what an earthquake may do and this spectrum differs from site to site and at any site from source to source and therefore seismologists have taken care to try to describe the motion at the site in terms of a frequency spectrum which is then used by designers to assure the structures and equipment meets the criteria and those criteria depend upon frequency. Dr. Budnitz commented that one of the major findings in the central and eastern portions of the U.S. was that the higher hazard was concentrated in the higher frequency ranges to which equipment is more susceptible to damage and not in the lower frequency ranges which affect structures.

Dr. Lam observed that it is still not known when or where an earthquake will occur and how much magnitude would be created and Dr. Budnitz replied the NRC has attempted to use the best knowledge at each site, while acknowledging the sites are all different, to identify the design basis earthquake for which if a plant is properly designed it will be adequately protected. Dr. Lam observed that in Japan concern was expressed about an earthquake on the Tokai Fault when it was along a fault near Fukushima that the large earthquake of March 2011 occurred. Dr. Budnitz responded that the offshore fault in the vicinity of Fukushima was known to the Japanese, and the Fukushima plant was designed for it but the designers had not accounted for the size of a potential earthquake. He commented that the ground motion at Fukushima was close to the plant's design

basis but the duration of the event was much longer and he stated that it is important to note that not a great deal of damage was caused to the Fukushima plant by the earthquake but rather by the resulting tsunami which followed the earthquake.

Mr. Klimczak stated nuclear power plants are designed for earthquakes on active faults in the vicinity of the plant and the source characterization is determined by the fault length and depth and what magnitude earthquake may be expected on the fault, all of which contribute to what happens at a site during an earthquake when the energy is transferred to the site and produces ground motion. Dr. Peterson stated this analysis is still probabilistic for what will be the strength of an earthquake but that this does not mean that all the faults have been identified, but, in general, it provides a level of confidence that faults which would generate a substantially larger amount of energy will be found and he stated that the Hosgri Fault in the vicinity of DCPP has been known for some time but the Shoreline Fault, which is smaller and closer to DCPP than the Hosgri, has only recently been identified. Dr. Peterson stated that the increasingly smaller faults as they are discovered tend to remain bounded by the larger faults which were identified earlier.

Mr. Klimczak stated the NRC staff determined that the seismic designs of operating nuclear plants in the central and eastern U.S. still provide adequate safety margins. The basis for this determination was the plants' responses to the NRC review of 1991 Individual Plant Examinations of External Events (IPEEE).

Mr. Klimczak reviewed and summarized issues as they relate to DCPP:

- DCPP was excluded from the original GI-199 issue as it did not rely on the central or eastern U.S. source and ground motion models for its Seismic Probabilistic Risk Analysis (SPRA).
- DCPP has a detailed SPRA required by its Long Term Seismic Program (LTSP).
- DCPP recently updated its SPRA to include the Shoreline Fault Zone (SFZ).
- Shoreline Report was submitted to the NRC Jan 2011. NRC review in process.

He reviewed and described for the Committee a graph showing the updated Shoreline Fault GMRS, including the original analysis of the Hosgri Fault, together with that for the Los Osos and San Luis Bay Faults, which shows the ground motions predicted for earthquakes on the three faults, Los Osos, San Luis Bay and Shoreline Faults, would be less than that for the Hosgri Fault.

In response to Dr. Peterson's question, Dr. Budnitz confirmed that when performing shake table testing of equipment a range of frequencies is tested and those identified where there are resonances detected. Dr. Budnitz observed equipment is tested for a substantively longer period of time than would be credibly expected for an earthquake. However, he commented that while the tests may confirm the equipment is adequate, the tests are not as intensive as some in the seismic community would prefer. Dr. Peterson commented this subject could benefit from a better way of describing and characterizing hazards as there is presently no good way to describe margin.

Mr. Klimczak reported that as part of DCPP's update, probabilistic based seismic hazard curves were developed and these were shown on a graph. He stated the seismic hazard curve is input to

the DCPP SPRA to determine a seismic risk number which indicates the annual probability of core damage from a seismic hazard and he reported that from the analysis of data from the Long Term Seismic Program to that for the Shoreline Fault, including the latest modeling techniques, that number for DCPP has been reduced.

In response to Dr. Peterson's observation, Dr. Budnitz observed that for the western portion of the U.S. there is paleo seismic statistical information available which is not available to researchers working in the central or eastern portions of the country. Dr. Lam observed and Mr. Klimczak agreed that even with the progress made in seismic evaluations over the past two decades there is still substantial uncertainty in some of the predictive analyses. Dr. Peterson commented that with the capability to understand and characterize the ground motion on the Hosgri Fault there is sufficient information to engineer reactor systems to provide a high level of confidence that they would perform well as it is not unreasonably expensive to engineer substantive margins into those types of systems although he stated this was not the case with all civil infrastructures. Dr. Lam stated he agreed with Dr. Peterson based on the experiences at the Fukushima and at the Kashiwazaki-Kariwa nuclear plants in Japan and upon the experience at the North Anna nuclear plant in Virginia.

Mr. Klimczak stated the NRC attempted to draft a generic letter in September 2011 which:

- Requested all plants to evaluate their facilities to determine current level of seismic risk.
- Requested all plants to collect the requested information to facilitate NRC's determination if there is a need for additional regulatory action.
- Proposed a flow chart for development of request info and its use in regulatory analysis.
- Allowed SPRA or Seismic Margin Assessment (SMA).

DCPP responded with comments to the draft Generic Letter by recommending that its recent License Amendment Request (LAR) submittal for the seismic risk update process (LTSP) be recognized as meeting the intent of the Generic Letter. The LAR had two paths based upon the LTSP: a deterministic GMRS (84%); and the probabilistic seismic hazard curves. DCPP coordinated its response with its partners in the STARS alliance and with the NEI. In response to the NRC's request that DCPP calculate the capacity of its structures, systems, and components and determine what acceleration level they could withstand while performing their safety function versus at peak acceleration, DCPP built that into the process in its LAR as a basis for continued operation and that LAR is presently under review by the NRC.

However, in January 2012, Mr. Klimczak reported the NRC switched from issuing a Generic Letter to issuing a 10 CFR 50.54(f) letter requesting information to address:

- NRC Fukushima NTTF Recommendation 2.1 – Update Seismic Hazard.
- GI-199 issue is subsumed by the NTTF Recommendation 2.1.

- Draft letter requires an updated seismic hazard using current probabilistic methodology.
- GMRS < SSE no action.
- GMRS > SSE risk evaluation required.

The generic issue subsumed by the 10 CFR 50.54(f) letter provides for updating the seismic hazard using current probabilistic methodology, development of site specific hazard curves and, specifically for western U.S. nuclear plants to have source characterization models and ground motion models and provides for what Mr. Klimczak described as a very detailed review process which DCPP does not expect to complete until the end of 2014. Dr. Peterson stated he believed these to be an important set of changes that will bring long term benefits and he commented that had the North Anna nuclear power plant been equipped with better instrumentation to provide better data as to how the plant responded to the earthquake it is possible that the plant might have resumed operation much sooner. Dr. Budnitz summarized PG&E's comfort level with the NRC's current approach as based upon DCPP having completed some of the work and having begun other work so that the 10 CFR 50.54(f) letter should not require DCPP to undertake any work not already being done. Mr. Klimczak agreed with Dr. Budnitz' summary but observed that DCPP has a deterministically based ground motion and will need to do a probabilistic analysis. Mr. Klimczak reported that DCPP is in discussion with SONGS to have SONGS join DCPP in the Senior Seismic Hazard Analysis Committee (SSHAC) process for ground motion.

In summary, Mr. Klimczak reported DCPP's LTSP has been maintained to update seismic knowledge of source through the AB 1632 seismic studies currently in progress and for ground motions. A LAR has been submitted which proposes a ten-year update of seismic hazards; an update process with operability criteria; and a SSHAC level 3 process. The seismic hazard update required by the NRC Letter will be performed.

The Chair thanked Mr. Klimczak for an informative presentation and a lively discussion.

Ms. Jane Swanson, a member of MFP, was recognized. Ms. Swanson stated that the reason DCPP was the only plant in the U.S. with a LTSP was because it is the only plant built within 3 ½ miles from an earthquake fault classified by the USGS as major and active. She observed that PG&E and the NRC knew of the existence of the fault and yet allowed DCPP to be constructed anyway. She praised PG&E for work it is doing on its LTSP but commented the reason they need to do the work is because there should not be a plant where DCPP is located in the first place. Ms. Swanson stated there is an apparent assumption that each of the faults in the vicinity of DCPP is a separate fault and she commented there is a possibility some may be connected and might rupture at the same time or a rupture on one fault might trigger another rupture on another fault and therefore the possibility for greater ground motion than is currently predicted exists. Ms. Swanson stated that not all equipment in a nuclear power plant is
safety-related but there is the possibility damage to a non safety-related equipment might impact safety-related equipment and affect the plant. Ms. Swanson questioned concerning the LAR to be submitted by PG&E whether the change in criteria PG&E is requesting in the plant's design basis for seismic risk assessment is actually lowering the existing standards for safe shutdown during an

earthquake.

Dr. Budnitz replied and he confirmed that DCPP is on a site that has more seismicity than that of any other nuclear plant in the U.S. He stated the work being done concerning the Shoreline Fault is being done with the understanding that the faults could be connected and one fault could cause an event on another or they could rupture simultaneously. He stated that the studies on the Shoreline Fault which have been ongoing for three or four years seem to demonstrate that it is not one long continuous fault but there are segments that, although appearing parallel, were not linked. PG&E has provided its submittal to the NRC and the NRC is in the process of reviewing the issues. Dr. Budnitz commented it is still an open question whether linkage could occur on the Shoreline Fault but the best interpretation of the data to date is that it is not likely and therefore the ground motion is unlikely to exceed that for the Hosgri Fault. Dr. Lam stated he believes that the connectivity issue regarding the faults should not be dismissed but rather it should be assumed for purposes of analysis that they are connected and the analysis must then demonstrate that, given this possibility, the plant would survive a seismic event. Dr. Budnitz observed this is the analysis that was submitted to the NRC and with which the NRC agreed in its interim findings letter.

Dr. Budnitz stated that the issue of whether non safety-related equipment could fall and damage safety related equipment during an earthquake is a valid concern that has been extensively reviewed through walkdowns and by configuration analyses to assure that will not occur.

Dr. Budnitz remarked that the switch from the existing design basis criteria to the new probabilistic approach is a concern of the NRC and that the NRC will specifically address that issue in its review of PG&E's LAR. He stated that the NRC would insist that the new approach embed at least as much safety and conservatism as the old and he stated the reason why the new probabilistic approach is better intellectually is that it enables a more comprehensive consideration of the several faults in the area rather than the old approach which was based upon the Hosgri Fault. He remarked that there is work ongoing concerning the on and offshore areas in the vicinity of DCPP and within one or two years we will know more than we know now and have a much firmer basis for interim conclusions.

Ms. Sherry Lewis was recognized. Ms. Lewis stated Dr. Budnitz discussed the segments of the Shoreline fault but Ms. Swanson was inquiring about the possibility of connections to the other faults in the area. Dr. Budnitz replied that there has been consideration given to the possibility of connectivity with other faults, including the Los Osos and San Luis Bay Faults, and this remains a concern and has not escaped the attention of the seismic community.

Dr. Peterson commented that he has empathy with persons concerned about living in proximity to a nuclear plant in an active seismic region and in making sure that the best possible understanding is being generated. He stated that there is a considerable amount which can be learned from better methods now available to approach problems of characterizing risk and then ensuring the infrastructure is adequate to protect from the consequences of those risks. He observed there is a need to review and think generally about the ability of non safety related equipment and its capacity to survive earthquakes and Dr. Peterson stated he would request that an item be included on the Committee's Open Items List for further investigation and to review equipment qualification

practices at DCPP for non safety related equipment from the perspective of seismic qualification.

Dr. Lam stated he agreed with Dr. Peterson's observations but he commented he wanted to inject a sense of conservatism to the issue of seismic activity at DCPP by assuming the unlikely, that the faults are connected and he stated it his belief that PG&E was receptive to that proposal.

Mr. Guldemond introduced Mr. Michael Ginn, Emergency Planning Director at DCPP to make the next informational presentation.

Overview of "Stranded Plant" Issues during which access to DCPP could be significantly impeded during periods of challenge to Plant safety systems.

Mr. Ginn stated that during his presentation he would discuss PG&E's procedures and the response equipment established to protect plant personnel and the public during a station isolation and casualty event. He commented Ms. Maureen Zowalik of his staff met previously with DCISC representatives during a fact-finding visit. Mr. Ginn reviewed with the DCISC

Casualty Procedure (CP) M-12 "Stranded Plant" and stated it is very similar to abnormal operating procedures at other stations for acts of nature or station isolation. The purposes of the CP M-12 are to: provide guidelines for actions to be taken in response to an event outside of the power block, such as earthquakes, rain storms, mud slides, tsunami warnings, etc., affecting Diablo Canyon Power Plant which may physically isolate the plant; ensure adequate site staffing; establish an offsite muster area or augmentation of the oncoming shift staffing; establish a point of contact for liaison and information sharing with San Luis Obispo County, state and federal responders; and establish and maintain emergency communications onsite and offsite. Mr. Ginn stated CP M-12 focuses on around-the-clock preparation to maintain safe operations and the other alternative is to shut down DCPP and maintain the plant in safe shut down.

Mr. Ginn reviewed with the Committee the historical perspective concerning the development of CP M-12 in 1995, following winter storms that impeded access to the station and the Avila Beach area during that year. Lessons learned from 1995 storms were used as the basis of CP M-12 and DCPP good practice includes station preparedness meetings to review CP M-12 prior to the annual storm season and to pre-stage equipment along the access road in case it needs to be cleared. In response to Dr. Peterson's inquiry about engineering experience along the California coastline, Mr. Ginn confirmed in March 2011, in accordance with direction from the CPUC and the CEC, DCPP performed engineering analyses of both its primary access roads for post seismic events and PG&E has a project during 2012 to upgrade and improve those roads.

Mr. Ginn reviewed the recent use of CP M-12 during winter storms in December 2010 and he commented that while not a stranded plant situation, DCPP still used CP M-12 to facilitate actions during the week-long storm which resulted in flooding in the Avila Beach area. The shift managers and station leadership conducted three meetings or conference calls each day during the event and used the checklists in CP M-12 to assess the situation and assign actions. Included among the directions received by Mr. Ginn's organization was a directive to minimize distractions to control room personnel while keeping them, along with other plant personnel, informed of outside

conditions and to lead communication with offsite responder agencies. Mr. Ginn commented that coordination between DCPP and the County Office of Emergency Services, and the County Public Works and Sheriff's Departments, the Coast Guard, Port San Luis and the California Highway Patrol ensured sufficient and immediate resources at the station and in the community. Daily updates were provided to NRC Region IV and to NRC Headquarters, FEMA, State of California and local governmental agencies concerning DCPP''s ability to operate and to implement its emergency and security plans.

Mr. Ginn discussed with the Committee the recent implementation and use of CP M-12 during the tsunami warning issued in March 2011 following the earthquake in Japan. Although again not a stranded plant issue, DCPP did not want to impede the County's decision to evacuate the Avila Beach area and accordingly non essential personnel were dismissed. DCPP declared an Unusual Event due to the tsunami warning for central coastal area. The Emergency Response Organization (ERO) including the Technical Support Center (TSC), the Emergency Operation Facility (EOF) and the Joint Information Center (JIC) were partially activated. The PG&E Energy Education Center was used as an assembly location for evacuated members of the public and as an muster location for the crews coming on shift, prior to the evacuation order, for approximately 60 Operations, Security, Chemistry and Radiation Protection personnel deemed necessary to onsite operations who then arrived at DCPP by the north access road to avoid impacting the evacuation. Other employees were notified not to report to work and Mr. Ginn commented it was important to ensure that an ERO team was located offsite in order to be prepared for an escalation of an event. In response to Dr. Budnitz inquiry, Mr. Ginn confirmed the plant and the local community had several hours in which to prepare and take action. In response to Dr. Lam's inquiry, Mr. Ginn confirmed that planning for emergency situations does not include reliance on cellular telephone communication being available. In response to Dr. Peterson's request, Mr. Ginn stated during a tsunami warning CP M-5 addresses the primary risks to safe operation and the protection of plant personnel and, as DCPP is located 85 feet above sea level, the best protection offered at any given time may be to maintain personnel at the plant site and off the access roads. Mr. Ginn reported that during March 2011 these procedures were actually used and not just drill tested. In response to Dr. Lam's query he reported that in the event he (Mr. Ginn) is unavailable there is coverage for his position as Emergency Planning Manager and the ERO has hundreds of plant employees trained and qualified to respond.

Mr. Ginn reviewed some other recent use of other station casualty procedures which PG&E and San Luis Obispo County tested during recent drills and evaluated exercises including:

- 2008 Evaluated Exercise – Tsunami Warning (CP M-5).
- 2010 Evaluated Exercise – 100 Year Storm (CP M-12).
- 2011 Annual Medical Drill – Personnel Injury (CP M-13).
- 2011 Full Scope Drill – Earthquake (CP M-4).
- 2011 Full Scope Drill – Hostile Action (CP M-15).

He stated that corrective actions from drill and exercise critiques continue to improve overall

response coordination efforts with FEMA, the County Office of Emergency Services, Public Works and Sheriff's Departments and California's Emergency Management Agency. Evaluated exercises are typically conducted during even-numbered years and include scenarios other than plant malfunctions or events leading to radiological releases in order to test DCPP's capacity to respond to natural hazards and events. Mr. Ginn stated these scenarios have led PG&E to provide for mutual aid and additional training for public safety agencies further away from the plant, including use of dosimetry, potassium iodide (KI), radiological controlled training to organizations located 50-100 miles from the plant site. Dr. Peterson commented it was important not to focus solely upon Emergency Planning Zone (EPZ) distances and it is more beneficial to provide capacities that are flexible and portable rather than merely trying to anticipate and position resources, as in that manner resources can be moved around as needed in response to a wider range of challenges, including those that might not involve DCPP, such as natural disasters. Dr. Peterson stated this was an area which merits further understanding by members of the public. In response to Dr. Budnitz' question, Mr. Ginn stated DCPP continues to review and learn lessons from the Japanese March 2011 experience through INPO and NEI assessments and he stated the use of social media was one of those lessons and he commented that while the NEI issued no press releases concerning the events in Japan, it received 42 million hits on its website for information. **Dr. Peterson stated this issue relates to issues reviewed previously by the DCISC, such as evacuation of schools during an emergency, and he recommended a fact-finding be scheduled by the Committee to review in detail about lessons learned concerning the important role social media plays in emergency planning.** Mr. Ginn commented that during the declaration of an alert at DCPP in 2010 an effective video presentation was made and distributed wherein Site Vice President Becker clarified and explained the nature of the event and how the plant was maintained in a safe condition.

In concluding his presentation, Mr. Ginn commented that DCPP could be considered as another city of 1,500 persons in San Luis Obispo County and the plant has the capabilities to feed and house hundreds of people with cots and temporary food supplies on hand.

In response to Consultant Wardell's inquiry, Mr. Ginn stated that his organization has worked closely with SLO County Fire Chief Lewin on a routine basis and is having ongoing discussion with Chief Lewin about the best and safest ways to validate fire fighting capabilities where CalFire and county Fire Departments would be a partner on site with the DCPP fire department. Concepts have been discussed but Mr. Ginn stated that the departments have not actually trained together or actually laid hose from the reservoirs down to locations in the vicinity of the power block where water might be required.

Ms. Sherry Lewis, a representative of MFP, was recognized. Ms. Lewis inquired whether Mr. Ginn's organization reviews information from groups such as the Union of Concerned Scientists or the Nuclear Information Resource Service because those groups, while not necessarily promoting the use of nuclear power, do provide a resource and might be able to provide useful information.

Ms. Jane Swanson, a representative of MFP, was recognized. Ms. Swanson commented that she was in the Avila Beach area during the March 2011 tsunami warning and the resulting evacuation and she observed that roadway closures were well done. She remarked that she is a former elementary school teacher and a recent convert to the use of social media and observed that while

the schools provide training on teacher responsibilities in the event of a radiation release or other emergency, parents would need to be advised concerning the whereabouts of their children and social media could be a significant help in that regard. Ms. Swanson remarked that there are two colleges in the local area and often students who are not from the local area are unaware of the presence of DCPP in the local community and the administrations for those campuses need to review the need for training and drills for their students.

Mr. Ginn stated, in response to Ms. Lewis' comment that his organization does listen closely to nongovernmental organizations and reads their position papers and he stated his philosophy is not to restrict inquiry to organizations that are pro nuclear. **Dr. Peterson stated it is difficult for society to make adequate preparations for dealing with disasters and he expressed his appreciation to all those who work in that area. He commented the idea of placing an increased focus on flexible, mobile, capabilities that can be used and sent to wherever they are needed for any kind of disaster gives a much better ability to respond and it would be worthwhile to better understand how social media fits into a response.** Mr. Ginn commented that he has a son in the fifth grade at a local school and the principal and staff told him that based upon the training and presentations they have received due to the presence of DCPP in the area they are better prepared to handle emergency situations.

A short break followed Mr. Ginn's presentation.

Mr. Guldemond requested the Manager of Problem Prevention & Resolution at DCPP, Mr. Gary Close, to make the next presentation to the Committee.

Update on DCPP's Self-Assessment Program.

Mr. Close began his presentation by describing problem prevention and resolution as including providing the programs and processes necessary to promote and make DCPP a learning organization and to find, analyze, and fix problems to prevent their recurrence. He displayed a graphic depiction of the components of the DCPP Performance Improvement Model and directed the DCISC's attention to the areas of self-assessment and effectiveness reviews which form a part of the model. In response to Dr. Peterson's inquiry Mr. Close stated the concept of having a questioning attitude is discussed in the Site Standards Handbook as one of the principles of nuclear safety culture and a questioning attitude is expected when data is reviewed and evaluated to ensure issues are entered in the CAP.

Mr. Close reviewed the reasons for performing self-assessments including the direction in 10 CFR 50 Appendix B Criterion II that management review regularly the status and adequacy of that part of the Quality Assurance Program which they are executing. Other reasons to perform self-assessments include: promoting continuous improvement by comparing current performance to management expectations, industry standards of excellence and regulatory requirements to identify areas needing improvement; and to identify low-level precursor issues or trends for early resolution before more significant problems occur that can adversely affect plant safety, reliability, or regulatory performance.

Mr. Close identified and discussed with the Committee the six key components involved with performing a self-assessment:

- Planning: Purpose and Guidance – blending performance improvement and compliance to include regulatory and industry standards and expectations from the NRC, INPO and DCPP procedures. There are a number of periodically reviewed programs with reviews ranging from one to five years on an ongoing schedule.

- Leadership Oversight – including a trained manager /sponsor and team lead; a department-level review board (D-CARB) to review milestones in preparation; and a station leadership review board (SARB) to review self-assessment plans, findings, actions and effectiveness.

- Dedicated Team – including the manager /sponsor and a team lead to conduct diagonal slice organizational reviews with multi discipline teams drawn from cross-functional departments including stakeholders in processes or programs; personnel from the craft; individual contributors; and supervisors and managers. Participation by an industry peer representative is included who is not a part of the DCPP staff and is a subject matter expert in the area being assessed. Mr. Close observed this person can thereby bring a "best practices" perspective, or experience from a station recovering from problems in area of study and offer objective, critical observations.

- Formal Reporting – to addresses issues including what was done, what was learned, what deficiencies or gaps were found, what strengths and positive findings were there, and what actions are going to be taken and what results are expected from those actions.

- Action Tracking – actions should be in accordance with an acronym he termed SMART which stands for the attributes of the actions being: specific, measurable, achievable, realistic and timely (< 180 days). Actions are tracked to closure.

- Results, Effectiveness Review and Action Closure - conducted by the SARB approximately six months and always within a year after identified actions are completed to determine success in implementing actions as intended by assessing whether results have been achieved as expected. Mr. Close stated training has been performed to assist in assessing programmatic improvements based upon the actions taken and challenging goals have been set and the results have been self-assessments are garnering more results and have strong oversight.

Dr. Budnitz commented that there are bound to be some important insights as a result of self-assessments which aren't measurable and may be difficult to capture. Mr. Close agreed some insights are more philosophical in nature but when actions are assigned to individuals who may or may not have been on the self-assessment team it is important that those actions be specific. Dr. Peterson observed that taking measurements and feeding them back in a feedback loop is valuable from the perspective of increasing the probability that the goal will be achieved and he stated an effective CAP can be a tool in assessing whether the correct attributes are being measured. Dr. Budnitz observed that there are many things which can't be measured but which can be observed and which have importance.

Mr. Close reported that approximately 15 formal self-assessments and approximately 40 quick hit assessments which involve a smaller scope and one or two individuals, department leadership reviews with industry peer participation optional are performed each year.

Mr. Close stated there are approximately 100 required or recurring self-assessments conducted on a one to five-year schedule as required for compliance with pre inspection and evaluation (NRC or INPO) or as a result of emergent or topical interests which have arisen due to an identified gap to closure of a regulatory issue, industry issues (INPO or STARS), the Operating Plan initiatives, or PG&E's business objectives. Mr. Close reviewed the 13 formal assessments scheduled for 2011 and the conclusions and recommendations which included and identified 43 deficiencies which were entered in the CAP and 59 gaps where the issue was not a lack of regulatory compliance but which resulted in 111 actions. There were also 9 strengths and 24 positive findings identified by the self-assessments performed in 2011. Mr. Close observed the focus in a self assessment is not on strengths or positive findings but rather on identifying gaps. Mr. Close then reviewed the self-assessments scheduled for 2012.

In concluding his presentation, Mr. Close identified and discussed recent improvements to the self-assessment program including:

- Shorter Cycle time for effectiveness reviews.
- SARB review of all effectiveness reviews.
- Milestone improvements.
- D-CARB reviews resulting in higher quality reports prior to SARB review.
- Topic Selection frequency / process (includes Performance Improvement Review Board).
- Attended first industry self-assessment user group (SAUG) meeting (Jan 2012); participating on the subcommittee for effectiveness reviews.

Improvement initiatives for the 2012 self-assessments include:

- Line ownership, re communicate manager /sponsor and team leader expectations.
- Enhancing manager/sponsor and team leader training to focus on clear action statements to those who must implement the actions.
- Enhancing guidance to SARB on specifying results expected and the effectiveness reviews.
- Enhancing guidance to SARB on critical oversight of actions and results expected.

In response to Dr. Lam's question, Mr. Close stated a formal self-assessment will typically occupy the team for a full week, with the team leader being committed during the week before and the week following the self-assessment. There is also a commitment and an impact upon the team that is being assessed and Mr. Close stated this is a reason to engage in a rigorous process of topic selection to determine the best use of resources. In response to Mr. Linnen's inquiry, Mr. Close replied the self-assessment topics performed during 2011 included emergent issues and approval

from the SARB is required to alter the scheduled self-assessment topics. Mr. Wardell commented that the changes to the self-assessment process at DCPP have been impressive and he inquired how DCPP can be assured participants in the self-assessments are being self-critical. Mr. Close replied that self-assessments now include generation of Notifications which are entered in the CAP and that this is a change from previous practice. From an oversight perspective, he observed that this is assurance that the self-assessment teams are not just coming up with recommendations but that they have found items which are appropriate for entry into the CAP. In response to Mr. Wardell's inquiry, Mr. Close replied the pre NRC inspection of the CAP which was recently conducted is termed a Problem Identification and Resolution Inspection and is a programmatic routine inspection conducted every two years and is unrelated to the current NRC-identified cross-cutting issue at DCPP in problem evaluation and thoroughness (P.1(c)). In response to Mr. Wardell's question about what programs at DCPP other peers in the industry are reviewing, Mr. Close identified DCPP's implementation of work control, its dynamic learning activities for human performance, and reduction in dose rates as programs industry peers will likely seek to review.

Dr. Lam thanked Mr. Close for his presentation and observed that without addressing the merits or effectiveness of the self-assessment program, the presentation by Mr. Close was another example of PG&E being willing to invest a substantial amount of resources into looking for ways to improve performance.

There were no public comments following Mr. Close's presentation.

XIX. Adjourn Morning Meeting

The Chair adjourned the morning session at 11:30 a.m.

XX. Reconvene For Afternoon Meeting

The afternoon meeting of the DCISC was called to order by Committee Chair, Dr. Lam, at 1:00 p.m.

XXI. Committee Member Comments

The Chair introduced himself, the other members and the Committee's Consultants and Legal Counsel. There were no remarks by members of the Committee at this time.

XXII. Public Comments and Communications

Ms. Sherry Lewis was recognized to address comments to the Committee. Ms. Lewis identified herself as a member of MFP and stated that, while it appears to her that the DCISC, the NRC and PG&E are all doing a good job in trying to keep the use of nuclear power safe, she wished to register a complaint that the issue of whether nuclear power should be used at all is never on the table for discussion.

The Chair thanked Ms. Lewis for her comment.

XXIII. Information Items Before the Committee (Cont'd.)

The Chair requested the Special Assistant to the DCPP Site Vice President, Mr. Bill Guldemond, to continue with the next informational presentation to the Committee.

Mr. Guldemond introduced DCPP Director of Quality Verification Dennis Petersen to make that presentation.

Quality Verification Organization's perspective on Plant performance; the Quality Performance Assessment Report; and Quality Verification's top concerns.

Director Petersen identified Maintenance performance, Security program challenges and Engineering challenges as the current top three concerns of the Quality Verification (QV) organization he leads.

Mr. Petersen reviewed the issues in Maintenance which QV is addressing. These include worker practices as demonstrated by the loss of startup power during the last DCPP refueling outage. A root cause evaluation (RCE) was performed and RCE-identified actions were approved by the Corrective Action Review Board (CARB) on 10/13/11 and monitoring continues. Mr. Petersen reported DCPP forecasts completion of Corrective Actions1 thru 5 by 5/31/12 which will address changing procedure, installing signage, and developing robust barriers. Industrial and electrical safety continue to warrant attention in connection with worker practices.

Work package quality is another issue identified to be addressed by the DCPP Maintenance organization. QV issued a deficiency notice concerning this issue on 12/07/10 (SAPN 50365183) during a refueling outage and Maintenance response was monitored by QV. A RCE was initiated and remaining actions have been transferred to RCE 50409024.

Weak drawing revision program knowledge was also identified as a Maintenance issue to be addressed. QV issued a finding on 4/4/11 (SAPN 50386871) and an apparent cause evaluation (ACE) was requested on 4/4/11 and completed on 7/21/11. In response to Dr. Budnitz question concerning why previous training was apparently inadequate, Mr. Petersen reported that historically corrective action performance by Maintenance was weak. QV determined the response by Maintenance was taking too long and escalated this issue with DCPP senior leadership. Training in conjunction with the drawing revision program is forecast to be completed by 02/07/12 and the Maintenance corrective action group performance has improved. Mr. Petersen agreed with Dr. Budnitz' observation that the key to resolution may lie in following up to ensure that identified weaknesses are addressed and Mr. Petersen stated DCPP is utilizing a risk-informed approach in this effort. Consultant Wardell commented that reviewing and determining the latest revision made to a drawing should be a simple matter. Mr. Petersen replied that the program set up to track revisions was a contributor to the problem. Ongoing revision of certain drawing may have been underway and, additionally, multiple field changes to drawing were not incorporated. The use of SAP in connection with the drawing revision program also caused problems. Mr. Wardell stated he discussed with the current Maintenance Services Director the issue of identification of Maintenance rework items. Mr. Petersen stated there is a disparity in the way in which other plants measure

rework, with most plants measuring rework more broadly than "maintenance activities" and, at present, there do not appear to be consistent metrics. In response to Consultant Wardell's observation concerning work package quality and procedures being too general, Mr. Petersen commented the two issues are interrelated and procedures and work packages must be in agreement concerning terminology. Consultant Linnen remarked a work package quality deficiency was identified at DCPP during 2010 and Mr. Petersen confirmed Mr. Linnen's observation and stated that deficiency was identified during a U-2 refueling outage and the matter was escalated to senior leadership. He commented that DCPP has made some headway on improving the quality of its work packages.

Mr. Petersen stated progress is being made concerning addressing Maintenance issues but significant work remains to resolve QV identified issues

Mr. Petersen discussed the second of QV's current top three issues which involves challenges to performance by the Security organization which, Mr. Petersen stated, touches upon underlying cultural issues at DCPP. Drs. Budnitz, Lam and Peterson observed that the remit of the DCISC only extends so far as the effects of security on safety and there are very strong prohibitions concerning the public release or discussion of security-related information and the members of the DCPP are without the capability to review and assess all aspects of plant security. Mr. Petersen reported that Security procedures need to be created or upgraded as it was identified that Security was not utilizing procedure effectively. An audit finding was issued on 10/12/10, and the matter was escalated to senior leadership on 11/03/11. Supplemental resource and budget allocations were sought but denied. Security is allocating additional in-house resources. Long term corrective actions are forecast to be complete by 12/23/12. Mr. Petersen reported Security was found to be too tolerant of low standards and performance misses were not being addressed. An audit finding was issued on 12/12/11 (SAPN 50446700, 50434602). An Apparent Cause Evaluation (ACE) is being performed for Security's declining trend and corrective actions are forecast to be completed by 12/31/12. The need for a Systematic Approach to Training (SAT) by the Security organization was identified. An audit finding was issued on 11/15/10 (SAPN 50361541) and Mr. Petersen stated this involves a significant effort. Corrective actions are not forecast to be completed by 6/30/12. There is an issue with Security in connection with the holding areas and review of materiel condition. There have been longstanding problems with sinks, drains, HVAC issues, etc., in areas which are continually occupied by Security personnel. Weak station alignment on resolution of some issues has been found.

Mr. Petersen reviewed some contributing factors and insights into issues identified with the Security organization as including the level-of-effort approach to procedural projects not being commensurate with risks and he reported QV is concerned that completion of projects will continue to slip and Security standards will continue to lag other functional areas. In response to Dr. Peterson's question, Mr. Petersen replied that no significant issues have been identified concerning plant safety or the continued safe execution of the Security program at DCPP. Dr. Peterson commented it is good that Security uses the same types of tools and procedures, such as the CAP, as the other DCPP organization as this ensures that safety implications are considered.

Mr. Petersen reviewed with the DCISC the challenges to the Engineering organization which he

characterized as the third of QV's top three concerns.

Engineering evaluation of the control room ventilation system which involved leakage to the control room ventilation boundary was site-identified as deficient and Engineering continues to experience challenges concerning problem evaluation. Engineering involvement in fire protection issues in connection with a fire water tank rework and the fire water piping replacement project contributed to a lack of readiness and resulted in deferral of the project. An audit deficiency was issued for not updating "TCP manager" and Mr. Petersen observed this was a team problem involving not only the Engineering but also the Operations and Strategic Projects organizations. QV identified potential non conforming fire dampers in 480V switchgear room and evaluation of Engineering performance is continuing. Ineffective design specification control was identified as an Engineering challenged and an audit finding was issued on 10/24/11 (SAPN 50435416). Human performance in the Engineering organization was identified by Mr. Petersen as an adverse trend. An ACE was completed and corrective actions are forecast to take place through 12/30/12. Material holds for Class 1 equipment inspections were found to be challenging the Engineering organization and Mr. Petersen remarked that the ongoing backlog in this area needs to be reviewed and prioritized. Review by Engineering is backlogged and QV needs assurance that there are no unnecessary holds on equipment which is needed in the plant on an emergent basis. Mr. Petersen identified contributing factors and insights to the challenges faced by the Engineering organization as including resource constraints and evaluation challenges.

In response to Consultant Linnen's inquiry concerning Maintenance rework practices, Mr. Petersen replied that the majority of requests for procedure changes come from workers out in the plant and he stated that the procedures which are risk informed receive prompt attention while those procedures which involve a lesser level or risk or which are infrequently performed receive a lower level of attention.

The Chair thanked Mr. Petersen for his presentation.

Mr. Guldemond introduced Ms. Kristin Zaitz, P.E. and Mr. Anton Pirtz, P.E. to make the final informational presentation to the Committee.

Review of ten-year concrete inspection for Units 1 and 2 Containment Buildings.

Ms. Zaitz reported she was a civil engineer assigned to DCPP and Mr. Pirtz was a civil engineer assigned to PG&E's Applied Technology Services organization which includes responsibility for testing. She then reviewed the functions performed by DCPP containments which include providing housing and structural support for the nuclear steam supply system components including the SGs, and other structures; act as a third barrier to prevent a release of radioactivity into the environment resulting from a postulated accident; serve as a barrier to protect safety systems inside; and serve as a biological shield against radiation originating inside containment.

The conceptual design for DCPP containments was completed in 1967. U-2 design and construction followed U-1 by approximately 18 months. There are no differences in requirements between the two units. Detailed design for both units was essentially completed in July 1969 and excavation and

basemat construction began in late 1969. The first structural integrity test was performed in August 1975 at 54 pound force per square inch (psig) (115‰ of the design pressure, 47psig). Seismic reevaluation was performed in 1977 for a postulated earthquake on the Hosgri fault. DCPP began commercial operation on May 7, 1985 for U-1 and March 13, 1986 for U-2.

Summarizing the design of the DCPP containment Ms. Zaitz stated the concrete thickness was designed to maximize radiation shielding but minimize seismic loads, as more mass means more load in a seismic environment. The basemat thickness is 14ft. 6in., cylindrical wall thickness is 3ft. 8in. and the dome thickness is 2ft 6in. Dr. Peterson observed that biological shielding is provided around the vessel and the SGs and Ms. Zaitz confirmed containment provides extra radiation protection barrier to that provided by inner shield walls. She stated that DCPP containment design was based upon that for the Indian Point Number 2 reactor in New York but with modifications as Indian Point is located in a very different seismic environment from DCPP and the DCPP design optimized containment thickness in order to reduce the seismic loads. The interior surface of the containments are covered with a leak-tight steel liner, which forms the actual pressure boundary. Ms. Zaitz displayed two photos showing U-1 containment construction in April and June of 1970.

Further summarizing DCPP containment design, Ms. Zaitz reported their special reinforcing steel design utilizes #18 reinforcing steel, the largest available, with a diameter of 2.257in. and an area of 4.2 in. Individual bars are cad welded to form uninterrupted bars. These cad welds are as strong as the bars. Diagonal bars are inclined at 60 degrees, rather than 45 degrees at other plants which utilize vertical bars, to resist both membrane shear and vertical tension. There are no vertical bars at DCPP; there are multiple layers of diagonal bars. Horizontal hoop bars resist the hoop tension. Reinforcing steel is routed uninterrupted around penetrations, except for the two largest openings that use plate collars which are mechanically attached to the reinforcing bars. In the dome area, reinforcing bars are placed in a geodesic pattern matching the wall reinforcing and forming continuous loops with both ends anchored in the basemat. In response to Dr. Peterson's question, Ms. Zaitz stated the ends of the reinforcing steel bars are deeply embedded in the basemat with a bend at the bottom. Ms. Zaitz then displayed five photos of U-1 containment construction during 1970-1972. In response to Dr. Peterson's inquiry, Mr. Pirtz stated DCPP never considered painting or otherwise coating the concrete surface of its containments. He remarked that during inspections no chlorides have been found at the top or at the 140 foot levels and no evidence of corrosion or any effect on the steel rebar was found and hence there is no need for cathodic protection.

Mr. Pirtz reviewed the inspection background and reported effective September 9, 1996, the Code of Federal Regulations was amended to incorporate requirements of American Society of Mechanical Engineers (ASME) Section XI Subsection IWL. Initial inspections were required to be complete by September 9, 2001. Subsection IWL requires a visual examination of 100‰ of the accessible surface. Portions of concrete surfaces that are exempt from examination include areas covered by the liner (including penetration sleeves); foundation material or backfill; or which are otherwise obstructed by adjacent structures, components or parts. The examination is conducted directly (within 4 ft. of the concrete surface) at a distance not to exceed the qualification distance of the visual examination apparatus. He reviewed the IWL inspection history for DCPP which includes completion of baseline inspection for U-1 in November 2000 and for U-2 in July 2001. First cycle inspections were completed for U-1 during June-October 2010 and for U-2 during May-August

2006. Second cycle inspections for U-2 were completed during May-August 2011 and are scheduled for U-1 during 2015.

Mr. Pirtz described the examination procedure conducted in accordance with the DCPP Nondestructive Examination (NDE) Procedure, NDE VT 3C-1, Revision 4, VT-3C Visual Examination of the Containment Concrete Shell. The examination employs a two-tier review and acceptance process similar to that described in American Concrete Institute (ACI), ASME Code stipulation 349.3R-96. The first tier criterion permits direct acceptance by the examiner while the second tier findings (conditions requiring responsible registered professional engineer evaluation) must be evaluated by the responsible engineer who then accepts the results or requires performance of further evaluations or recommends repair. Examiners are trained to recognize concrete conditions following the ACI 201.1R-68, Guide for Making a Condition Survey of Concrete in Service. Personnel performing this examination at DCPP must be qualified and certified to TQ1.ID12, Qualification and Certification of NDE Personnel, for VT-3C examination and must have a minimum of three years of concrete inspection experience; one day of a hands-on training class before the start of inspection; and must pass a vision test. Mr. Pirtz stated most the PG&E's concrete inspectors have 20-25 years experience inspecting a variety of PG&E facilities. In response to Dr. Peterson's observation that when steel rebar corrodes it changes volume, Mr. Pirtz stated that this is difficult to spot at first as the deeper the rebar is embedded the longer it takes for indications of corrosion to appear. Ms. Zaitz stated that cracks in the concrete are sounded for indications of delamination using both hammer and impact-echo testing.

Mr. Pirtz summarized the testing results for Unit 2 during 2011 as follows:

- A total of 2096 reportable indications were documented of which 20 were greater than second tier indications.
- Passive cracks 1034 (49.3‰ of total).
- Pattern cracks 463 (22.1‰ of total).
- Indications of leaching 501 (23.9‰ of total).
- Active Cracks, Poor Consolidation, Spalls, Voids, Rust Stains, Damaged Cover Plates, and Damaged form tie repairs 98 (4.7‰ of total).

Mr. Pirtz stated that approximately 70‰ of the cracks were above concrete pouring lifts numbers 7-10 and all were determined to be shallow, between 15/1000 inch and 25/1000 inch in depth. He reported there are indications of leaching around lifts 9 and 10 near the springline, where the straight cylindrical walls end and the rounded dome configuration begins. In response to Dr. Budnitz' observation, Mr. Pirtz stated that this is believed to be due to the change in curvature and PG&E has found less than 1% of new cracks. Mr. Pirtz attributed leaching to rainfall on the dome and the walls and he commented that due to differences in pH, the cleaner the rainfall the more harmful it is to the concrete. Ms. Zaitz remarked that due to the deep embedment of the steel rebar there is nothing in the outer layer of the concrete to keep it from cracking. In response to Dr. Peterson's question, Mr. Pirtz stated that the pressure testing of containment performed every ten years, which causes the diameter of the containment structure to expand by 4 inches and the height by 2

in., has not been found to cause cracking in the concrete. Mr. Pirtz reported that some damage has been observed since the last pressurization test due to ¼ in. tie-wires, which were used to secure the concrete forms during construction, which have been found to be protruding from some areas of the concrete.

In response to Dr. Lam's inquiry concerning the basis for the determination that a 38-year old structure with 2,000 cracks is fit-for-duty, Mr. Pirtz and Ms. Zaitz stated that the number of cracks has grown by only 2% and none of the cracks discovered is greater that 1 ½ inches deep and the structures have significant design strength due to the depth of their rebar covering. In response to Dr. Budnitz' inquiry, Mr. Pirtz reported that PG&E could be prepared to do a complete concrete inspection of DCPP containments, with the exception of areas around the containment steam dumps in the event a unit was in operation or in those areas which are inaccessible to inspection activities due to their locations, within two weeks after a seismic event and much of that two-week period would be required in order to stage safety equipment. Ms. Zaitz stated that high-powered binoculars are also available at all times to onsite inspectors for use when required.

Dr. Peterson remarked that, in order to obtain a better design margin, it might be possible to determine from the data at what pressure there might be expected to be an impact on containment from pressurization. Mr. Pirtz replied that strain gauges were installed on rebar during the original pressurization of containment and cracks have been mapped. **Dr. Peterson stated that as the containments at Fukushima exceeded their design pressurization levels by a factor of two, a firmer understanding of the design basis for containment pressurization might be useful.**

In concluding the presentation, Mr. Pirtz displayed an inspection map of a containment structure which is used to track the location of cracks and to indicate those areas of containment which cannot be inspected due to their location. He displayed nine photos showing: typical Indications of efflorescence; crack measurement techniques; typical indication from form tie plug protrusion; inspection equipment; and inspection activities on the containment dome and cylindrical walls. In response to Dr. Peterson's question whether efflorescence concentrations along the springlines could be the result of stress, Mr. Pirtz replied that 75‰ of the efflorescence locations are different between U-1 and U-2 and during the rainy season, the indications disappear as leaching is eliminated. In response to Dr. Peterson's query regarding tensile strength at the location of the joints between individual lifts, Mr. Pirtz replied that DCPP appears to have been well constructed as 50-60 of those joints have been examined with impact echo sounding techniques and all were found to be solid and Ms. Zaitz added that DCPP does not rely on tensile strength in its containment design basis. Mr. Wardell inquired and Mr. Pirtz and Ms. Zaitz confirmed that similar inspections were performed inside containment approximately every 40 months.

Ms. Sherry Lewis, a member of the audience and of MFP, was recognized. Ms. Lewis inquired for how long the concrete was expected to last and concerning the effects of a possible buildup of pressure due to the presence of hydrogen gas inside containment, similar to what occurred at Fukushima which resulted in explosions at that site.

Ms. Liz Apfelberg, a member of the public and of MFP, inquired about the effects of the marine environment on DCPP concrete.

Dr. Peterson replied that with respect to hydrogen gas buildup the design pressure is adequate at 100% and the 115% pressurization testing ensures additional margin is available. He observed that PWRs do not tend to pressurize their containments during SBO the way boiling water reactors do in a PWR decay heat can be removed through the SGs while in BWRs decay heat is deposited into the suppression pool inside containment. Hydrogen detonation is considered in the mitigation of hydrogen and he gave the example of the events at the Three Mile Island nuclear power plant in Pennsylvania. Dr. Peterson observed all PWRs have systems to continually burn hydrogen at low levels to prevent its accumulation and there are no analogous mechanisms in PWRs to those at Fukushima. Mr. Pirtz stated the life of the concrete is determined through inspection and testing for corrosion, however, corrosion does not affect concrete but rather it affects the steel rebar embedded in concrete which at DCPP is buried deeply within the concrete and there have been no chlorides detected on the surface or to a depth of 3 in. on the concrete. Ms. Zaitz remarked that concrete's compressive strength actually increases with time but DCPP continues to inspect. In response to Dr. Budnitz' inquiry, Ms. Zaitz replied there is no reason to believe that the concrete at DCPP would be compromised if the station's operating license was extended by the NRC for another twenty years but this would continue to be confirmed through inspection. Mr. Wellington observed that he has a number of clients who utilize concrete structures to convey water and wastewater and those facilities are normally considered to have a functional life of 100 years. In response to Ms Lewis inquiry, Dr. Budnitz stated that when DCPP is decommissioned the concrete will be removed.

Mr. David Taggart, a member of the audience and a former PG&E employee, was recognized. Mr. Taggart stated he thought the presentations by PG&E were excellent and he expressed his belief that the DCISC's role is vital and provides an excellent educational opportunity for the public. He remarked that the Vogtle nuclear plant in the State of Georgia received construction license approval from the NRC on this date for two new nuclear units and he extended accolades to PG&E and to the DCISC for the information presented to the public at these public meetings.

This concluded the informational presentations requested by the Committee from PG&E for this public meeting.

XXIV. Concluding Remarks and Discussion By Committee Members Of Future DCISC Activities

The Chairman inquired whether there were any Committee members or staff who wished to made remarks or discuss future activities or actions by the Committee. There were no comments in response. Dr. Budnitz stated that he found each of the presentations by PG&E at this public meeting of the DCISC to be first class and commended PG&E and Mr. Bedesem for the quality and content of those presentations. Dr. Lam expressed the Committee's appreciation for the public participation and comments from the public during this meeting, especially by Ms. Lewis and Ms. Swanson of MFP and stated that they both made a great contribution to the public meeting. The Chair closed by thanking the personnel of AGP Video who provided audio and video recording services for the meeting. The Chair thanked everyone for a productive meeting and invited all present to attend the next public meeting of the DCISC to be held on June 19–20, 2012.

XXV. Adjournment of Sixty-fifth Public Meeting

There being no further business, the sixty-fifth public meeting of the Diablo Canyon Independent Safety Committee was adjourned by its Chair, Dr. Peter Lam, at 2:45 p.m.

22nd Annual Report, Volume 2, Exhibit B7, Notice of Plant Tour and Public Meeting on June 20, 2012

The Diablo Canyon Independent Safety Committee Notice of Plant Tour and Public Meeting

NOTICE IS HEREBY FURTHER GIVEN that on June 20, 2012, at 8:00 a.m., the members of the Diablo Canyon Independent Safety Committee ("DCISC") will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant ("DCPP"). This tour, which will take approximately three and one-half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant, the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission ("NRC").

In the alternative if security considerations preclude the public tour on June 20th, the DCISC may convene an informal presentation and question and answer session at the Pacific Gas and Electric Company ("PG&E") Energy Education Center, 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY FURTHER GIVEN that on June 19–20, 2012, at the Avila Lighthouse Suites Point San Luis Conference Facility, located at First and San Francisco Streets, Avila Beach, California, a public meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Morning Session (06/19/2012) – 8:00 a.m.** Opening comments and remarks; receive public comments and communications to the Committee; approve minutes of February 8–9, 2012, public meeting; discussion of administrative matters, including an update on financial matters and activities during 2012; review of the Open Items List; nomination and election of Chair and Vice Chair to serve for the July 1- 2012 to June 30, 2013 term; reports by Committee members, consultants and legal counsel and scheduling of future public meetings and site visits; receive, approve and authorize transmittal of fact-finding reports to PG&E; review of Committee correspondence and documents received; and receive information presentation requested by the Committee from PG&E on the status of the DCPP steam generators.
2. **Afternoon Session (06/19/2012) – 1:30 p.m.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including review of plant events, operational status and station performance indicators; a report on the DCPP 2012 Operating Plan; recent Licensee Event Reports, NRC Notices of Violation and NRC

Performance Indicators; and a status report on the NRC-identified cross-cutting issue concerning problem evaluation (P.1(c)).

3. **Evening Session (06/19/2012 – 5:30 p.m.** Committee Member Comments; receive public comments and communications to the Committee; remarks by the NRC Senior Resident Inspector at DCPP; and receive informational presentation requested by the Committee from PG&E on topics relating to plant safety and operations, including update on the status of issues related to the events at the Fukushima Dai-ichi Nuclear Power Plant in Japan following the March 11, 2011, earthquake and tsunami and summary of DCPP actions taken to date and actions planned.
4. **Afternoon Session (06/20/2012) – 1:00 p.m.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including DCPP/PG&E interfaces with local agencies with respect to emergency planning and preparedness activities; and a presentation on the results of the seventeenth refueling outage for Unit 1 (1R17); and wrap-up discussion by Committee members.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review at the Reference Department of the Cal Poly Library in San Luis Obispo.

For further information regarding the Public Meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda on line by visiting the Committee's website at www.dcisc.org.

Dated: June 9, 2012.

22nd Annual Report, Volume 2, Exhibit B8, DCISC Agenda for the June 19–20, 2012 Public Meeting

Committee Members:

Robert J. Budnitz

Peter Lam

Per F. Peterson

Tuesday & Wednesday, June 19–20, 20121
Avila Lighthouse Suites, Point San Luis Conference Center
Northwest corner of First & San Francisco Streets
Avila Beach, California

Morning Session – 06/19/2012 - 8:00 a.m.

I. Call To Order – Roll Call

II. Introductions

III. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action. (Please Note: (a) The Committee may consider at any time requests to change the order of a listed agenda item; (b) Information distributed to the Committee at a Public Meeting becomes part of the public record of the DCISC. A copy of written material, pictures, etc. must be provided to the Committee's Legal Counsel for this purpose.)*

IV. Consent Agenda

Routine items which the Committee can approve with a single motion and vote. A member may request that any item be placed on the regular agenda for separate consideration.

A. Minutes of February 8–9, 2012 Public Meeting: Approve

V. Action Items

A. Update on Committee Activities: Discussion/Action

B. Discussion of Open Items List: Discussion/Action

C. Nomination and Election of Chair and Vice Chair for the July 1, 2012 – June 30, 2013 Term: Discussion/Action

VI. Committee Member Reports and Discussion

A. Public Outreach, Site Visits and Other Committee Activities; Scheduling and Confirmation of Future Fact-Finding Visits and Public Meetings

B. Documents Provided to the Committee

VII. Staff – Consultant Reports and Receive, Approve and Authorize Transmittal of Fact-finding Reports to PG&E.

A. Ferman Wardell:
Fact-finding Topics; Report on and Approval of March 13–14 and May 22 – 23, 2012, Fact Finding Reports

B. David C. Linnen:
Fact-finding Topics; Report on and Approval of April 3 – 4, 2012, Fact Finding Report

C. Robert Rathie:
Administrative, Regulatory and Legal Matters

VIII. Correspondence

IX. Information Items Before the Committee

A. Informational Presentations Requested by the Committee of PG&E Representatives

1. Status Report on Diablo Canyon Power Plant ("DCPP") Steam Generators

X. Adjourn Morning Meeting

Afternoon Session – 06/19/2012 – 1:30 p.m.

XI. Reconvene For Afternoon Meeting

XII. Committee Member Comments

XIII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XIV. Information Items Before the Committee (Cont'd.)

2. Update on Plant Events, Operational Status and Performance Indicators
3. Report on the DCPP 2012 Operating Plan
4. Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators
5. Status Report on NRC-identified Cross-cutting Issue Concerning Problem Evaluation (P.1.c)

XV. Adjourn Afternoon Meeting

Evening Session – 06/19/2012 5:30 p.m.

XVI. Reconvene for Evening Meeting

XVII. Committee Member Comments

XVIII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XIX. Information Items Before the Committee (Cont'd.)

6. Remarks by Dr. Michael Peck, NRC Senior Resident Inspector at Diablo Canyon Power Plant
7. Update on the Status of Issues Related to the Events at the Fukushima Dai-ichi Power Plant in Japan following the March 11, 2011 Earthquake and Tsunami; Summary of DCPP Actions Taken to Date and Planned

XX. Adjourn Evening Meeting

Public Tour – 06/20/2012 – 8:00 a.m.

Public Tour of Diablo Canyon Nuclear Power Plant to assemble at the PG&E Community Center *(Prior registration and security clearance required of all public participants.)*

The Members of the Independent Safety Committee, accompanied by members of the public, will conduct a tour of the Plant.

Following the tour, or in the alternative if the tour must be cancelled for any reason, the Committee may convene an informal question and answer session at the PG&E Energy Education Center

(formerly the PG&E Community Center), 6588 Ontario Road, San Luis Obispo.

Afternoon Session – 06/20/2012 – 1:00 p.m.

XXI. Reconvene for Afternoon Meeting

XXII. Committee Member Comments

XXIII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee.*There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XXIV. Information Items Before the Committee (Cont'd.)

8. DCPP/PG&E Interfaces with Local Counties, Agencies and Organizations with Respect to Emergency Planning and Preparedness Activities
9. Presentation on the Results of the Seventeenth Refueling Outage for Unit 1 (1R17)

XXV. Concluding Remarks and Discussion By Committee Members of Future DCISC Activities

A. Future Actions by the Committee
B. Further Information to Obtain/Review
C. Confirmation of Future Site Visits, and Public Meetings

XXVI. Adjournment of Sixty-sixth Public Meeting

The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. Devices for attendees who may be hearing impaired are available.

22nd Annual Report, Volume 2, Exhibit D.9, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on May 22 – 23, 2012 by Per Peterson, Member, and R. Ferman Wardell, Consultant

1.0 Summary

The results of the May 22 – 23, 2012 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 are as follows:

1. Update on Upgraded MIDAS
2. Electrical Clearance Apparent Cause Evaluation
3. Health of DCPP Steam Generators
4. Outage 1R17 Plant Tour
5. Outage Coordination Center Meeting
6. Safety Injection System Review
7. Office and Workspace Seismic Safety Update
8. Fukushima Update
9. Open Items List
10. Component Mispositioning Prevention Team
11. Per Peterson Meeting with Jim Becker, Site Vice-President

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine ifPG&E's performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team's suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Update on Upgraded MIDAS

The DCISC Fact-finding Team met with Curt Hansen, Emergency Preparedness (EP) Coordinator, and Andrew Warwick, Senior EP Coordinator, for an update on the upgraded Meteorological Information and Dose Assessment System (MIDAS). The DCISC last reviewed MIDAS at the January 2011 Fact-Finding Meeting (Reference 6.1) and at the DCISC June 2011 Public Meeting (Reference 6.2). From the January meeting the DCISC concluded the following:

> *Significant enhancements and expansions are nearing completion on DCPP emergency dose assessment systems, which exceed regulatory requirements and increase the level of protection for the public in the event of an unplanned radiological release. Expected completion of these activities is June 2011. The DCISC should consider including this topic as a DCPP presentation in one of the upcoming Public Meetings in 2011 to obtain closure on this longstanding issue that is important to public health and safety. Afterwards, any further DCISC Fact Finding reviews of this topic should be dictated by future potential DCPP performance issues in emergency preparedness.*

MIDAS is used by PG&E to predict the path and intensity of radiation releases in the surrounding environment caused by an accident at the plant, such that protective action (sheltering, evacuation, etc.) recommendations can be made to protect the public. Inputs to MIDAS include the concentration and height of radioactive releases at the plant from EARS (Emergency Assessment Response System) and wind and temperature data from up to seven meteorological towers and several SODAR (Sonic Detection and Ranging) units. The predictions are corroborated by data from roving Field Monitoring Teams and by nine Pressurized Ionization Chambers (PIC radiation detectors) at fixed locations.

The purpose of the MIDAS upgrade was to enhance the capability of PG&E and the County for making appropriate Protective Action Recommendations (PARs) and decisions. Such decisions relate to the need to evacuate or shelter the population in various geographic sectors in the vicinity of DCPP in the event of an unplanned radiological release from the site. Typically, the most significant radioisotope initially from a radiological accident is Iodine-131, which can be ingested through breathing and which concentrates in the Thyroid gland. The closest population area to the plant at about six miles is Port San Luis with approximately 180 people. This area is frequently evacuated by the County early in emergency exercises because of its location and frequent winds in its direction. Historically, the County has issued orders to evacuate selected population zones and schools well before the joint PG&E/County Unified Dose Assessment Center (UDAC) has recommended them.

DCPP had reached agreement with the County staff, including the County Office of Emergency Services (OES) and the Air Pollution Control District (APCD), to proceed with the following, which was completed as scheduled by mid-July 2011:

1. Seven offsite meteorological towers, the original six plus an additional seventh tower. The wind speed and direction data from all towers serve as multiple inputs to the upgraded dose assessment system. The wind and temperature detectors have been replaced with new ones. Also, DCPP will continue to have a primary tower and a backup tower on site.
2. Thirteen (compared to the original twelve) PICs are in fixed locations in the local area to measure radiation dose and feed the individual data from each location into the dose assessment system.
3. The system now has three SODAR installations: the original one on site at DCPP, plus two more in the surrounding area. All three installations were upgraded.
4. MIDAS dose assessment software was upgraded, including the capability of receiving and processing multiple inputs. Testing has been completed.

A consultant performed the required validation and verification (V&V) on the upgraded MIDAS software. The upgraded program had good correlation with the previous version of MIDAS and with a similar but simplified program, QUICKDOSE. ABS, the MIDAS developer, used prior DCPP tracer tests and the multiple meteorological inputs to verify the upgrade. MIDAS has been used successfully in several drills in 2011 and 2012. DCPP personnel participate in the industry MIDAS Users' Group, which has provided valuable information and practices.

Conclusion:

DCPP has successfully completed the upgrade of its Meteorological Information and Dose Assessment System (MIDAS), along with seven offsite and two onsite upgraded meteorological towers, two offsite and one onsite Sonic Detection and Ranging (SODAR) units, and one onsite and eight offsite Pressurized Ion Chambers (PICs). The upgraded system should provide more accurate and timely predictions of the direction and intensity of radiological releases from plant accidents. This upgrade brings DCPP in line with the industry. It is recommended that the DCISC close its Open Item EP-3 initiated for tracking the MIDAS upgrade but continue to track MIDAS through emergency exercise observations.

3.2 Electrical Clearance Apparent Cause Evaluation (ACE)

The DCISC Fact-finding Team met with Abdul Kadir, Operations Shift Foreman, to review Apparent Cause Evaluation (ACE) 50435658, which identified and documented clearance problems with electrical equipment. The DCISC last reviewed DCPP clearances in its July 12 – 13, 2011 Fact-finding Meeting (Reference 6.3), in which it concluded the following:

The new Electronic Shift Operations Management System (eSOMS) appears to be an effective replacement for that corresponding aspect of the Plant Information Management System (PIMS). DCISC should obtain and review the Notification pertaining to

the clearance error discussed in this report. Based on the causal factors for this event, further DCISC follow-up may not be needed unless dictated by future station performance issues regarding tagouts.

DCPP, and all nuclear stations, use clearances to "clear" systems and equipment prior to work on them to assure all energy (electricity, pressure, heat, etc.) is removed to permit personnel to safely perform their work.

DCPP experienced four separate events in the last 3 years in which electrical energy was discovered after the clearance application. These were as follows:

1. In May 2011 an inadequate clearance boundary for an electrical cabinet hinge wire replacement was prepared and implemented; however, a worker encountered 120 volts alternating current during the work. An ACE identified the following apparent causes:
    a. Clearance writers do not have the expertise to adequately write complex electrical clearances.
    b. The electrical worker did not have adequate guidance for performing Live-Dead-Live checks. (Live-Dead-Live checks are voltage or current measurements made when equipment is energized ["Live"], un-energized ["Dead"], and re-energized ["Live"] to assure the measuring device (e.g., voltmeter) is functioning properly.)
    c. The Corrective Action Program (CAP) was not used to document clearance revisions to previous hinge wire work due to energy identified during Live-Dead-Live checks.
2. In May 2011 proper clearance boundaries were not established for work at a panel that contained two startup power relays. Maintenance workers found unexpected voltage during Live-Dead-Live checks. The clearance writers used the points recommended by planners. A revision to this clearance was requested and additional clearance points were added.
3. In October 2009 inappropriate clearance boundaries were established to replace annunciator sample valve position switches. During the Electrical Maintenance tailboard, it was noted that the assigned clearance did not remove power to the monitor light box contacts that were part of the circuit of the switched being replaced. The craft then modified the work order to lift leads to completely de-energize the switches.
4. In August 2011 operators assigned work orders to perform resistance checks of a pump at the hot shutdown panel to an approved clearance that did not provide adequate worker protection. The problem was identified and corrected during the independent review of the clearance. A misunderstanding of the procedural interaction with the clearance caused the preparers to purposely omit a required point. This latent error was embedded in the archive clearances that were previously used.

Because these events indicated a negative trend identified by INPO, DCPP authorized an Apparent Cause Evaluation (ACE) to identify the cause(s) and correct them. The DCISC Fact-finding Team had received this ACE and reviewed it prior to the meeting. The ACE Team utilized the Common Cause

Analysis Matrix Worksheet method to identify common causal factors, which indicated that "Inadequate Expertise in Print Reading" and "Inadequate Guidance or Standard" were each common to two or more of the events. Individual accountability was used to address the human performance issues that contributed to the three events listing human error causal factors.

A review of DCPP Procedure OP2.ID1, "Clearances" identified many instructions regarding status control and a description of the clearance process but little instruction regarding how to remove energy from a device and no guidance was located describing acceptable energy isolation.

The apparent causes were identified as follows:

1. OP2.ID1 does not provide sufficient guidance to create and review electrical clearances.
2. Inadequate electrical print reading expertise.

Corrective actions were:

1. Revise OP2.ID1 as follows (Completed):
    a. Include a matrix specifying generic guidance for clearance creation (e.g., pump oil change, breaker knife switch open, discharge valve shut).
    b. Revise clearance checklists to align with the body of OP2.ID1.
    c. Require the documented SME (Subject Matter Expert) review of complex clearance boundaries to be completed prior to Verifier signature.
    d. Require a review of the current order operations requesting a clearance to validate applicability before using a library clearance for copying.
2. Provide electrical print reading familiarization instruction to clearance coordinators to enhance their electrical print reading expertise. (Scheduled for completion 6/30/12).
3. Require SME review of complex electrical clearances. (Completed)

The ACE Team evaluated the extent of condition at DCPP and reviewed internal and external industry operating experience. A total of 361 Notifications on clearances were found for the prior three years. Of these ten were identified as "non-electrical." The ACE Team believed the corrective actions for electrical clearance issues would benefit non-electrical ones as well. The industry experience review showed events similar to the four DCPP events identified above.

(One significant prior DCPP electrical clearance event was noted. In January 2009 during performance of a routine calibration of the Pressurizer Heater Group 1-2 wattmeter, an employee received an electric shock from energized 480-volt test leads. Corrective actions included substantial revisions to DCPP Procedure OM6.ID2, "Electrical Safety Procedure" and other related procedures and additional Maintenance Department training. The corrective actions did not prevent the four events initially listed above.)

DCPP Senior Management instructed that industry benchmarking be performed on this issue. Plans for benchmarking included the following:

1. Industry practices for performing observations of clearance preparation activities
2. Protective tagging index to validate consistency with industry metrics
3. Practices of copying historical or library clearances as standard practice
4. Standard practices for clearance information expected to be provided by the clearance requesting organization
5. Routine use of shift operations staff to perform clearance reviews
6. Use of clearance removal checklists and qualification requirements for performing removal reviews and approval

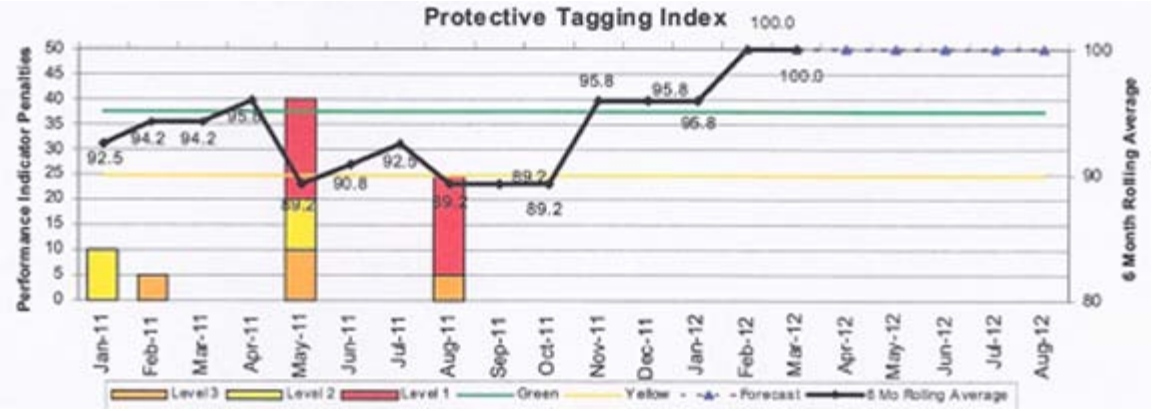
The results of extensive benchmarking indicated that DCPP was in-line with best industry practices, except for the following areas:

- DCPP procedures place responsibility for independent verification of most workweek clearances on the operating crew. DCPP's Clearance Group is not sufficiently staffed to perform both preparation and verification of workweek clearances. A recommendation was made for additional staffing of the Clearance Group.
- DCPP post-task observations were not up to industry best practices, and they developed a new focused template, "Post-Task Clearance Preparation Observation," for observations by the Clearance Coordination Supervisor and Operations Planning Manager.

Management directed an ACE effectiveness review by July 2012 to achieve:

1. Zero electrical shocks due to failure of all clearance safety barriers, which include the following:
    a. Properly prepared and verified clearances in accordance with applicable procedures and properly implemented
    b. Maintenance Live-Dead-Live checks are performed per procedure prior to all work
2. The Protective Tagging six-month rolling average is Green monthly performance six-of-nine months starting November 2011.

Through March, the latest data available, the index was as follows:



The Index has been continuously Green beginning in November 2011. There have been no clearance events during November and December 2011 nor since January 2012. From these data, it appears the changes to the DCPP Clearance Program have been effective to date. Outage 1R17 began April 22, 2012, and there have been (later) clearance problems; however, there are many clearances written during outages, and the DCISC should follow up on clearance issues following the outage in June or July 2012.

In communicating the importance of clearances and of the significant changes made, the Maintenance Services Director facilitated a February 8, 2012 site-wide safety stand-down with all supervisors. The message stressed the importance of the safety requirements for clearance holders to review that the clearance provides adequate protection for workers and that a clearance boundary check (such as Live-Dead-Live or verifying no flow through open drains) is always performed prior to performing work. DCPP has also developed "5 Minute Meeting" guidance for all employees involved in clearance work.

Conclusion:

DCPP experienced three significant clearance events in the last three years. Because of a negative trend, DCPP began an Apparent Cause Evaluation (ACE) to determine and correct the causes of the problems, which were that the governing procedure did not provide adequate guidance and that clearance-writing personal did not have adequate electrical print reading expertise. Substantial corrective actions were taken to upgrade the procedure and personnel expertise, along with changes based on industry benchmarking. The actions appeared effective with excellent performance since November 2011. The DCISC should review DCPP clearance performance following Outage 1R17 in June or July 2012.

3.3 Health of DCPP Steam Generators

The DCISC Fact-finding team met with John Arhar, DCPP Steam Generator (SG) System Engineer, to review the SG health. The DCISC last reviewed DCPP SGs at its November 17–18, 2010 Public Meeting (Reference 6.4), when Mr. Arhar presented the results of SG tube testing.

DCPP replaced its four Unit 2 SGs in Outage 2R14 in 2008 and four Unit 1 SGs in Outage 1R15 in 2009. The replacements were fabricated with corrosion-resistant Alloy 690 thermally treated tubing. Other features included:

- Stainless steel tube support plates (TSP) with tri-foil broached tube holes.
- Advanced anti-vibration bar (AVB) design in u-bends.
- Hydraulic expanded tubes with no crevices in tubesheet.
- Electropolished channel head reduces personnel dose exposure.
- Feeding spray nozzles with small opening sized to restrain large objects from entering tube bundles.
- Sludge collector collects a percentage of sludge and limits tubesheet sludge pile.
- Integrated blowdown holes in tubesheet improves blowdown efficiency.
- Peripheral trough region facilitates draining of tubesheet region.
- More access ports through shell (4 handholes, 10 inspection ports).
- New SGs have 16 steam separators as compared with 3 for the old SGs.

The DCPP SG tube inspection frequency and the extent of the inspections required is governed by Technical Specification 5.5.9 as follows:

- Eddy current testing (ECT) of 100‰ of tubing is required after one cycle of operation (the subject of this report).
- After Initial Service Inspection (ISI), inspect each SG every 3rd refueling outage (or 72 effective full power months [EFPM]) if supported by operational assessment.
- Inspect 100‰ of tubes in each SG every inspection period (144 EFPM, 108 EFPM, 72 EFPM, 60 EFPM). These periods are under review and are being revised to 144/120/96/72 EFPM in upcoming TSTF-510.

The results of the SG tube inspections during 2R15 and 1R16, the outages following installation, were as follows:

- 100‰ of tubes were ECT inspected with bobbin coil with excellent results.
- U-2 had one shallow wear indication in a single tube from a tube support plate (5‰ through-wall) which was left in-service, no tube plugging.
- U-1 had one shallow wear indication in a single tube from an anti-vibration bar (5‰ through-wall) which was left in service, no tube plugging.
- Operational assessment supports operation for the next three cycles without additional ECT inspection.
- Next TS-required ECT inspection scheduled for 2R18 and 1R19.

These results were considered excellent.

For this May 2012 Fact-finding Meeting the DCISC was interested in DCPP SG health at this time

because San Onofre Nuclear Generating Station (SONGS), with recently replaced SGs, reported SG tube problems to the NRC. Outage testing of Unit 3 SG tubes revealed a through-wall tube indication, representing a failed tube. Further inspection and pressure testing revealed seven additional tubes, which failed the pressure test. Unit 2 shut down for similar inspections and tests and experienced one tube indication, which was found to be acceptable. The tube failures were in the free span between tube supports in the tube bend area and were caused by tube-to-tube wear. No further information was available about the SONGS failures. Investigations are continuing. The SONGS reactors and SGs were made by different manufacturers than DCPP.

Conclusion:

Because of the San Onofre Generating Station (SONGS) Steam Generator (SG) tube failures of relatively new SGs, the DCISC reviewed the health of DCPP's relatively new SGs. DCPP's SG tubes had shown excellent inspection and test results in Outages 2R15 and 1R16 and are considered to be in excellent health. DCPP's plant and SGs were designed and fabricated by different manufacturers than SONGS. Although in excellent health, the DCISC should monitor SG inspection results during future outages.

3.4 Outage 1R17 Plant Tour

The DCISC Fact-finding team met with Pete Bedesem, the DCISC/DCPP Liaison, for a tour of the plant during the outage. The DCISC last took an outage tour in March 2009 (Reference 6.5), when it concluded the following:

> *DCPP appeared to be making good progress in completing 1R15 safely and on schedule. The condition of the plant appeared good even with all of the work being performed. DCISC should continue plant tours during outages to observe work being performed. The committee should also follow the determination activities associated with transformer bushing deterioration.*

The tour included the following:

- Control Room
- Turbine Building – all levels
- Cold Machine Shop
- Yard area
- Maintenance I&C Shop

The plant was clean and orderly, outage work locations appeared in-order, personnel were wearing proper safety gear, and Security was appropriately present. However, during the tour several cabinets and bookcases were identified that lacked adequate seismic bracing to protect personnel during an earthquake. This is discussed in Section 3.7.

Conclusion:

On its plant tour the DCISC found that the plant was clean and orderly, outage work locations appeared in-order, personnel were wearing proper safety gear, and Security was appropriately present.

3.5 Outage Coordination Center Meeting

The DCISC Fact-finding Team met with Pete Bedesem, DCPP/DCISC Liaison, to attend the evening Outage Coordination Center (OCC) outage update meeting. The DCISC last attended an OCC meeting in March 2009 (Reference 6.6), when it concluded the following:

> *The Outage Control Center (OCC) appeared to be appropriately staffed and coordinate and control the outage.*

This was day 31 of Outage 1R17, which began on April 22, 2012. Representatives from all functional areas of the plant each provided a very brief update of their status. Detailed specific questions were directed to individual discussions following the meeting to keep the meeting as short as possible. The OCC Director presented a list of emerging items and actions being taken to resolve them. Operations provided their shift priorities. Safety and human error prevention messages were given. There had been a 240-volt shock that day, which, though apparently minor, was given considerable emphasis.

The DCISC Team was given the following outage reports:

- Plan of the Day – this was a colorful, four-page document containing the following:
  - Site Standard of the Day: Questioning Attitude
  - Operations Update on Primary, Secondary, and Electrical Systems and Projects
  - Outage Appreciation: free lunch sponsored by PG&E President Chris Johns
  - Access Termination Process – process for contractors, temporary workers, etc. to properly process out of the system when their outage work has completed.
  - Clarification of Records and Document Storage Requirements
  - ALARA (As Low As Reasonably Achievable) Radiation Dose Tips
- OCC Contacts Directory
  - Outage Safety Plan Status
  - OCC Composite Dayshift Turnover Report
  - Detailed listing by plant function/department of items ready for turnover to the Night Shift
  - Outage update regarding personnel safety, foreign material exclusion, and security events
  - Plant update regarding Decay Heat Removal, Safety Monitor risk level, Offsite Power

Source status, and Protected Equipment Status

- Plan of the Day Package – a detailed list and schedule of the items in the two lists above

Conclusion:

The DCPP Outage Coordination Center (OCC) evening status meeting was concise and to-the-point while providing necessary outage information to all plant areas. Short oral reports were given, and detailed information was provided in comprehensive documents but not reported in the meeting. The meeting appeared beneficial to all without being burdensome and was efficient.

3.6 Safety Injection System Review

The DCISC Fact-finding Team met with Sergio Santiago, Safety Injection System (SI) Engineer for a review of his system. This was the first review of SI by the DCISC in recent years.

The DCPP Emergency Core Cooling System (ECCS) is designed to provide water from the Refueling Water Storage Tank (RWST) to cool the reactor core and provide negative reactivity in the event of a loss of coolant accident in either the Reactor Coolant System (RCS) or the Steam System, spurious lifting of a RCS relief valve, a Rod Cluster Control assembly ejection, or a Steam Generator tube rupture. The ECCS includes three separate subsystems:

- Centrifugal Charging (high pressure)
- Safety Injection (intermediate pressure)
- Residual Heat Removal (low pressure)

This fact-finding report is about the Safety Injection (SI) System. SI consists of two 100& capacity trains that are interconnected and redundant such that either train is capable of supplying 100‰ of the flow required. The SIS contains two safety injection pumps along with associated suction, discharge, and throttle valves and instrumentation for each Unit. The four accumulator tanks and one RWST are also part of the SIS.

The ECCS pumps receive power from the 4160V Vital AC electrical systems Bus F, G, and H and utilize control power from 125V Vital DC distribution panels 11, 12, 21 and 23. Various SI motor operated valves receive power from buses F, G, and H of the 480V Vital AC electrical system. These power sources are backed up by the Emergency Diesel Generators.

The SI Pump discharge lines are cross-connected via two normally open motor-operated valves (MOVs). Downstream of these valves, the discharge crosstie supplies the RCS cold legs via a header containing a normally open MOV (containment isolation valve) and 4 branch lines each containing a pressure reducing orifice assembly, flow orifice (used for flow measurement), and a throttle valve. This arrangement allows proper flow balancing between loops and limiting the pump flow to prevent pump runout. The injection lines are sized and the throttle valves are set so that a single broken injection line will not starve the other injection lines.

The SI Pumps provide ECCS flow to the RCS cold and hot legs, and flow through test lines for check valve testing and to fill all the accumulators. The nominal shutoff backpressure for the SI Pumps is 1,520 psig. The maximum allowable pump flow for the SI Pump is 675 gpm. The required Net Positive Suction Head at 675 gpm is approximately 29 feet. The maximum pump flow is controlled by design features, e.g., throttle valves, flow orifices, and piping resistances. SI Pumps are full-flow tested each refueling outage and tested quarterly at partial/recirculation flow. All tests have been successful.

The SI Pumps are required to be seismically qualified for Design Earthquake, Double Design Earthquake and HOSGRI. They are qualified based on current nozzle loads and current installation configuration.

The accumulator tanks are designed to passively inject their contents into the RCS cold legs in the case of an intermediate or larger size LOCA when the RCS is depressurized below the nitrogen cover gas pressure in the tanks. There are 4 tanks, 1 for each loop. The required nitrogen cover-pressure is maintained between 579 and 664 psig.

The electrical supply to the SI loads is required to provide power to the loads assuming loss of the offsite grid and/or the main generator. Thus, the SI loads are designed to be powered from the Emergency Diesel Generators through the vital buses and station batteries. The ECCS pumps are required to be at maximum rated flow within 25 seconds of reaching the SI setpoint. The electrical system supplying power to redundant SI loads is required to be physically separated and electrically isolated from each other in order to preclude a single failure or event causing failure of both SI trains. The electrical supply to the SIS is required to perform its function during a postulated fire in the plant. The original Class IE components are required to be environmentally qualified when located in a harsh environment. The Class 1E components are required to be seismically qualified.

The ECCS is protected from postulated missiles postulated to be generated inside and outside Containment and have been reviewed to ensure that the ECCS is capable of withstanding those missile effects or is protected by barriers from the effects of those missiles. The accumulators are located within the Containment but outside the shield will which protects them from missiles generated within the reactor coolant loop components. The SI Pumps, located outside Containment are housed in compartments separated from other potentially missile-generating components. To protect against the unlikely event of the flexible coupling becoming a missile, a shroud has been installed around the coupling. No other SI Pump component can become a missile. The RWST has been designed to withstand postulated site proximity missiles and tornado - generated missiles. Redundant ECCS components are housed in separate compartments to ensure that missiles and flooding will not impair both ECCS trains.

The ECCS is required to withstand the effects of any potential flooding due to natural phenomena and due to postulated tank spills or piping ruptures. It has been determined that Diablo Creek is capable of handling any postulated site flooding, and the yard and roof drainage designs are such that it is not possible to develop sufficient ponding to flood safety-related buildings. As a result, the depth of the probable maximum flood is effectively zero. Thus the ECCS is not subjected to

external flooding.

The ECCS has been reviewed for its ability to withstand environmental effects of internal flooding. Equipment required to operate post-accident subject to the effects of flooding or water spray have been qualified as part of the Environmental EQ Program. Flood height in the containment is calculated to be elevation 96.5 ft. The only SIS equipment below this elevation are the accumulator isolation valves; however, they are not required to close following a LOCA and thus will perform their safety function (allowing flow) prior to the water rising to that level. Flood levels for the RHR, SI and ECCS CCP pump rooms have been evaluated and it has been determined that the levels will not exceed the height of the pump motors and associated instrumentation. Flooding design considerations ensure that flooding effects are limited to a single location or compartment. Components are housed in separate compartments to ensure that redundant components are not impaired by flooding.

ECCS is required to be protected from tsunami effects and is well above maximum levels resulting from the design basis tsunami.

The SI System health is Green with a maximum Green score of 5.0 for both units. There are no significant issues affecting system health. The only issue is periodic back leakage through 2nd-off check valves, resulting in header pressurization. These valves are scheduled for replacement during the next drain-down outage (2R18).

The DCISC Fact-finding Team reviewed the System Engineer's quarterly walk down inspection report. The report was comprehensive and showed no problems.

Conclusion:

The DCPP Safety Injection System, a part of the Emergency Core Cooling System, exhibits Green (excellent) health and has no major problems. The system engineer appeared knowledgeable and pro-active about the system.

3.7 Office and Workspace Seismic Safety Update

The DCISC Fact-finding Team met with Pete Bedesem, DCPP/DCISC Liaison, to tour the plant for outage work and to observe tall furniture for its seismic anchoring to prevent injury to plant personnel during an earthquake. Such bracing is important to plant operational safety because injuries to plant personnel would reduce the number of personnel available to respond implement post-earthquake safety procedures. The DCISC last reviewed office and workspace seismic safety in May 2011 (Reference 6.7), when it concluded the following and had the following recommendation:

> *Little progress appears to have made during the past year regarding protecting personnel in office spaces from moving objects that could cause personnel injury and/or impede response to an emergency in the event of an earthquake. In addition, the acceptance of existing conditions can create an underlying belief by employees that earthquakes will not occur in this geographic area that is prone to earthquakes. The accident at Fukushima*

reinforces the importance of taking seismic safety for personnel seriously, because it is critical that plant personnel be available to respond after an earthquake occurs and not be injured or diverted to perform first aid. The DCISC should review the status of this issue no later than in the first quarter of 2012.

Recommendation:

DCPP needs to develop and implement a schedule for taking the necessary actions to brace furniture appropriately throughout the station, and to better educate plant staff about seismic hazards and seismic safety.

Basis for Recommendation:

Not much progress in seismically securing heavy furniture appears to have been made during the past year. Some aspects of the design and testing room for the Auxiliary Building Control Board Replacement Project, Room 206 in Building 102, need to be more in keeping with seismic standards. Specifically, several tall shelving units containing boxes were not braced to the wall and other tall stands/bookcases were freestanding and away from the walls of the room. One desk had a large number of heavy boxes stored at a high elevation above the desk. The file cabinets in the Shift Manager's office, which had been noted not to have been braced during the May 2010 Fact-finding Visit, were still in the same condition. While these file cabinets may not be tall enough to formally require seismic bracing, they are very heavy and are located a few feet from a large table, so if they were to fall over during an earthquake they would pin operators against the table and potentially cause serious injuries.

PG&E Responded as follows:

PG&E agrees with the DCISC that the safety of Diablo Canyon Plant staff, including from seismic threats, is of paramount importance.

It should be noted that PG&E maintains high levels of seismic awareness and control of materials within the power plant itself via the Seismically Induced System Interaction Program. The concerns raised by the Committee revolve around similar concerns in the context of office environments.

PG&E's standard to address this concern is Utility Procedure: RE-2002P-01, "Bracing Cabinets and Storage Racks Procedure." Diablo Canyon is committed to comply with this standard.

The examples noted by the Committee in a project work area also do not meet the Diablo Canyon standards for general area housekeeping. This deviation has been entered into, and will be addressed by, the Corrective Action Program.

With regard to the more general concern of preventing office furniture from tipping during a seismic event, Diablo Canyon believes that this concern has been addressed by an

alternative to bracing. The file cabinets that were observed in the Control Room briefing area (as well as the remodeled floors in the Administration Building) were procured with counterweights installed in base of the units. The weights are sufficient to assure a sufficiently low center of gravity that they will not tip. They comply with the requirements contained in the above referenced procedure without additional bracing.

One of five station initiatives identified in the DCPP 2012 - 2015 Operating Plan, the Site Modernization Initiative assures the station remains focused on a number of areas including the concerns identified in this recommendation. It provides a schedule for assuring 'that all Diablo Canyon-related facilities are upgraded to meet current standards.

The May 23, 2012 Fact-finding Team observed tall furniture in the following locations:

- Control Room Shift Manager's Office
- Main Turbine Floor outside the Control Room entrance
- Control Room Briefing Room
- Unit 2 Plant Process Computer Room
- I&C Maintenance Lab
- Various locations in the Administration Building
- Outage Coordination Center

None of these locations, except the I&C Maintenance Lab and some locations in the Administration Building, appeared to have seismic anchors or bracing for the tall furniture and cabinets. Cabinets in the Control Room Briefing Room, which reportedly had weights in their bases, easily tipped when shaken, suggesting that any counterweights that might be in these cabinets would not be effective in preventing them from falling over. Likewise, new, tall cabinets had been installed into the Control Room Shift Manager's office without any seismic bracing, and were aligned so that they would fall directly into the Shift Manager's workspace. A few locations in the I&C laboratory had screw anchors, but some were screwed into the dry wall and could be easily pulled loose, and thus would clearly not be effective in preventing the furniture from falling onto personnel during an earthquake. The fact that a number of anchors in the I&C building were found to be improperly installed (screws into drywall) draws into question all of the seismic anchoring that exists in that building, and potentially on the site.

The Team met with Ken Pazden, Facilities Manager to review actions that were planned to correct these problems and put them in accordance with corporate policy. He was working on a DCPP policy to implement the corporate policy and had a completion date of June 30, 2012. He advised that he would initiate a Notification to document this action and begin furniture reviews/corrective action beginning with the Control Room and work out from there. He reported that new furniture is to be purchased with base weights or capability for proper anchoring.

Mr. Bedesem later initiated Notification 50484562, which stated:

During a Diablo Canyon Independent Safety Committee fact-finding visits beginning in 2010, one of the committee members began a dialog with DCPP personnel on this topic. During the course of these discussions, the Manager, Construction Maintenance described DCPP's strategy for upgrading office seismic safety. Specific and more severe hazards were document and resolved via the CAP (e.g.,SAPN 50454998).

During a fact-finding visit on 5/22-23/2012, the DCISC member identified a number of additional situations, some of which warrant evaluation to determine whether a more immediate seismic safety concern exists. During the walk-down, the DCISC Coordinator noted that compliance with SISI requirements was acceptable; it was the personnel safety aspects that were considered weak:

Power Block:

140' Elevation:

Shift Manager's Office - There is a row of approximately seven-foot tall bookshelves behind the SM's desk that is unsecured. This unit is sufficiently massive that injury to someone sitting at the desk is likely should they be struck by it.

PPC Rooms - Cabinets over four-feet tall were un-braced.

Turbine Deck outside the Control Room entrance and personnel elevator area - There are a number of approximately six-foot tall cabinets, which appear to weigh over 500 pounds, which are un-braced.

119' Elevation: Outside the West exit from the OCC there are several more of the heavy, approximately six-foot tall cabinets that are un-braced. These cabinets may also pose a hazard to personnel in the crane bay on the 85' elevation.

Office Areas:

I&C Shop, Building 102: Multiple instances of materials stored above work areas were noted. Many cabinets over four-feet tall appear to be braced, but some were identified as being screwed into only sheet rock and not any kind of structural support (in violation of the attached procedure). Other shelves and cabinets over four-feet high were not braced.

Administration Building, Building 104, 5th floor: Bookshelves in the Regulatory Services area are inconsistently braced (some are, some are not). Of those that were examined in the hallway, the shelves that were braced were attached to Hayworth panels. This may be in violation of the attached procedure as it states, "Under no certain circumstance shall the attachment be made to sheet rock, de-mountable walls, or similar material." if a Hayworth panel is considered a 'de-mountable wall'.

Suggested Resolution:

Knowledgeable personnel should evaluate the concerns identified above for their effect on ingress / egress as well as personnel safety during or after a seismic event. The above list is not intended to be all-inclusive and DCISC recommends that personnel seismic safety walk-downs be performed to assess where else hazards exist and what priority should be given to addressing them. In addition, DCPP may wish to create a site-specific standard that would supersede the attached procedure to better address situations that are unique to DCPP as well as mitigation strategies that equivalent to, but not listed in the corporate procedure; e.g., bottom-weighted shelves / cabinets.

Conclusion:

There was no improvement in the status of office and workspace seismic safety since the DCISC Fact-finding Meeting in May 2011, and new seismic personnel hazards were identified during this Fact-finding tour. Of the limited seismic bracing that is installed at DCPP, some is improperly installed and would be ineffective in protecting personnel safety during an earthquake. DCPP initiated a Corrective Action Program Notification to document problems found and to get action started. The DCISC should continue to monitor this item.

Recommendation:

DCPP should assign a manager with the authority and inclination to develop the DCPP site office and workspace seismic safety policy and devote the resources needed to implement necessary changes to avoid harm to personnel from a seismic event.

Basis for Recommendation:

The DCISC has observed numerous examples of tall office and workspace furniture, which, unanchored or incorrectly anchored, creates a threat to personnel safety during earthquakes. Inattention to personnel seismic safety appears to be pervasive around the plant, including the existence of clear hazards in the Control Room Shift Manager's office and briefing room. PG&E has a corporate policy for resolving this type of hazard. Because some existing anchors are improperly installed (for example using screws into dry wall in the I&C Maintenance Building), all existing anchors must be considered to be suspect and verified to be appropriately installed. DCPP has stated that they will develop a plant policy in accordance with the corporate policy, but there has been little progress over the past several years. DCPP has now initiated a Notification in the Corrective Action Program, which, if tracked appropriately, should spur on action. The DCISC believes it necessary to initiate this new second recommendation to emphasize its concern.

3.8 Fukushima Update

The DCISC Fact-finding Team met with Jearl Strickland, Director of the DCPP Fukushima Project, and the following members of the Project for an update on DCPP's actions on implementing changes in response to the March 2011 Fukushima accident:

- Terry Grebel, Fukushima Project Manager

- Murrell Evans, Fukushima FLEX Lead
- David Miklush, Consultant
- David Patty, Consultant
- Douglas Spaulding, Consultant
- Cameron Christensen, Fukushima Engineering Support

The DCISC last reviewed this subject at its February 8–9, 2012 Public Meeting (Reference 6.8) and at its December 13 – 14, 2011 Fact-finding Meeting (Reference 6.9), when it concluded the following:

> *DCPP is appropriately assessing and fulfilling its mitigation needs for responding to Fukushima-type events such as enhancements to the ability to cope with extended station blackout and loss of installed safety equipment.*

DCPP has committed substantial resources to their Fukushima Project. The Project is organized with the following elements:

- Executive Oversight Board – DCPP officers and senior directors
- Integrate emergency procedures and guidelines
  - Severe Accident Management Guidelines (SAMGs)
  - Emergency Operating Procedures (EOPs)
  - Extreme Damage Management Guidelines (EDMGs)
- External Hazards – Seismic
- External Hazards – Flooding
- Mitigating Strategies for Beyond Design Basis Events (BDBEs)
- Spent Fuel Pool Level Instrumentation
- Emergency Preparedness (EP) Communications
- EP Staffing
- Project Support – Licensing & Seismic Analysis
- Quality Assurance

The Project is formulating DCPP's position, responses, and actions in response to the following industry/regulatory requirements:

- U.S. Nuclear Regulatory Commission (NRC) Orders
- Nuclear Energy Institute (NEI) Guidance
- Institute of Nuclear Power Operations (INPO) Guidance

The Project has the following major milestones scheduled:

- 60-Day EP Alternative Response – May 2012
- 90-Day EP Requested Information Response – June 2012
- Mitigation and SFP Orders Initial Status Report – October 2012
- Seismic and Flooding Analysis Approach Plan – January 2013
- Mitigation and SFP Orders Integrated Plan – February 2013

DCPP is working with two industry groups to develop its Fukushima positions and new equipment, procedures, and emergency preparedness strategies. One is the Westinghouse Owners' Group (WOG), which is employing Westinghouse, the DCPP reactor supplier. Westinghouse is developing generic positions for all of its reactors. The other group is the STARS (Strategic Teaming and Resource Sharing) Alliance. STARS is an association of the following seven nuclear plants from seven different companies:

1. Callaway
2. Comanche Peak
3. Diablo Canyon
4. Palo Verde
5. South Texas
6. Wolf Creek
7. San Onofre

The association was formed "to capitalize on the collective abilities of the seven companies to support each other's efforts in achieving and maintaining operational excellence … "

The primary focus of the alliance for 2010 was to identify and pursue initiatives and projects that would "assist station efforts in achieving operational excellence." This was to be accomplished by making heavy use of the leadership and experience of the Engineering and Site Vice Presidents and focus on the following areas:

- Training excellence
- Corrective Action Program improvement
- Collaborative improvement opportunities identified by performance measures analysis
- Operational excellence
- Improvement in equipment reliability
- Leveraging the experience and insights of INPO loanees
- Expanded strategic industry leadership

The above industry-assisted efforts were in progress, and no conclusions were yet available.

The DCPP Project Team presented a comprehensive Fukushima matrix with the following entries. The list of safety functions being considered was comprehensive. This exercise was basically a gap analysis identifying the differences existing capability and needed capability and what is needed to close the gap.

- Safety Function (e.g., reactor core cooling & heat removal, SFP level, etc.)
- Method (e.g., natural circulation with auxiliary feedwater to SGs, SFP level, etc.)
- Baseline Capability (e.g., installed equipment, portable equipment, etc.)
- Existing/Purchased e.g., (backup fire truck, none, etc.)
- Additional Needs (e.g., two pumps, Westinghouse SFP level recommendation, etc.)
- Procedure Notes (e.g., flow/temperature limits, acceptance testing, etc.)
- Comments/Notes (e.g., connection needed, etc.)

Each Safety Function will undergo an extensive analysis to assure DCPP has the capability to effectively and safely cope with any of the Fukushima (and related) hazards such as earthquake, tsunami, flooding, and extended loss of electric power. The capability includes equipment, procedures, training, staffing, plant access, emergency preparedness, communications, offsite assistance, testing, preventive maintenance, etc. aspects. The analyses are underway at this time, and, except for existing capabilities, no final results are yet available. The DCISC should follow up periodically to review progress. DCPP will provide a Fukushima Project status report at the June 19–20, 2012 DCISC Public Meeting.

Conclusion:

The DCPP Fukushima Project organization, plans and accomplishments to-date for responding to regulatory orders and industry guidance are extensive and impressive. The DCISC should follow up periodically to assess DCPP's progress.

3.9 DCISC Open Items List

The Fact-finding Team met with Pete Bedesem, DCPP/DSISC Liaison, to review the status of DCISC Open Items assigned to DCPP at prior public meetings. The following items were discussed:

1. In response to Dr. Peterson' question whether the County during emergency drills and exercises routinely orders precautionary evacuations before PG&E makes a recommendation concerning such actions or whether the County has ordered an evacuation contrary to PG&E's recommendation, Mr. David stated he would review with Mr. Ginn the frequency of such events during combined drills with the County over the past three years to determine whether there is a trend toward over-conservatism on the County's part. (2/11 PM #8)

   Status: Closed after discussion with Kurt Hansen in May 22, 2012 Fact-finding Meeting.

2. Mr. Ginn stated that PICs, SODAR and the meteorological towers are all have uninterrupted power sources (UPS). Mr. Ginn stated he believed the UPS duration to be 12-14 hours but would have to check and verify that information. (6/11 PM #7)

   Status: Closed following October 3, 2011 e-mail from Pete Bedesem.

3. In response to Dr. Lam's inquiry about depletion of battery power due to its being required to power building systems such as lighting, Mr. Guldemond stated that it was his belief the lighting system had its own battery backup system but he would need to review and confirm that this is the case. (6/11 PM #9)

   Status: Closed following October 3, 2011 e-mail from Pete Bedesem.

4. Dr. Budnitz remarked, and Mr. Guldemond agreed, there is a question about the capacity of the catalytic converters and this should be placed on the Open Items List, or provided by Mr. Guldemond, to examine what capacity per minute may be achieved by the hydrogen recombiners. (6/11 PM #10)

   Status: Closed following October 3, 2011 e-mail from Pete Bedesem.

5. Unit 1 Containment Concrete Inspection Results - a ten-year inspection conducted in June, July and October 2010. At the time of the fact-finding, the inspection report for U-2 was not available and is expected to be provided soon. (10/11 PM #5)

   Status: Closed pending review at the DCISC July 18 – 19, 2012 Fact-finding Meeting.

6. [NRC will] order licensees to provide reliable SFP instrumentation including parameters to be monitored, review of the locations of instrumentation, qualifications for instrumentation, and makeup strategies. Dr. Peterson recommended DCPP consider installing a bubbler tube to allow the water level in its spent fuel pools to be checked manually with no need for electrical power. (10/11 PM #7)

   Status: Closed following discussion with the DCPP Fukushima Project at the May 23, 2012 Fact-finding Meeting.

7. Mr. Becker stated the ECP reports directly to PG&E's Chief Nuclear Officer while the DPO Program is an administrative procedure which works to achieve a consensus. He agreed to provide information to the DCISC on the final adjudication procedure followed by the DPO Program. (10/11 PM #11)

   Status: Closed following discussion at the April 3 – 4, 2012 Fact-finding Meeting.

8. The Safety Culture Monitoring Panel at DCPP is headed by the QV Director and is a diverse team with experienced personnel from various departments which reports at least quarterly to the plant's senior leadership team. Membership on the Panel is limited and Mr. Becker stated membership on the Panel should not be too broad. Membership is also limited to protect the confidentiality of personal information. The Panel has issued two reports which

Mr. Becker offered to share with the DCISC. (10/11 PM #12)

Status: Closed following October 3, 2011 e-mail from Pete Bedesem.

Conclusion:

The eight DCPP open items on the DCISC Open Items List were satisfactorily closed after informational e-mails were sent from DCPP and discussion at various DCISC fact-finding meetings.

3.10 Component Mispositioning Prevention Team

The DCISC Fact-finding Team met with Paula Gerfel, Operations Manager, to discuss the Component Mispositioning Prevention Team (CMPT). The DCISC last reviewed DCPP component mispositions in the July 12 – 13, 2011 Fact-finding Meeting (Reference 6.10), and it concluded the following:

> *DCPP's performance with respect to component mispositioning experienced a setback beginning in the second half of 2010. The large majority (73%) of those mispositionings examined by DCPP occurred during normal plant operation, rather than during an outage. DCPP's Common Cause Evaluation of these problems appears to be thorough. The station's intention to benchmark other similar programs in the industry is appropriate. The DCISC should review station progress on this issue no sooner than after the next refueling outage, which is currently scheduled for April/May 2012.*

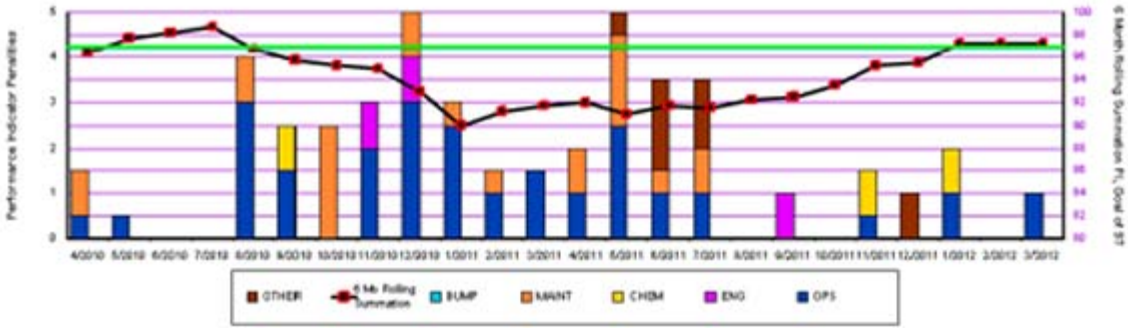
A "Mispositioned Plant Component" is defined by Procedure OP1.ID6, "Plant Status Control," Definition and Measurement of Mispositioned Plant Components, as follows: "*Any positionable component placed or left out of the required position for existing plant conditions when the component's required position is tracked by one or more of the following status control tools: procedures, clearances, work management process (e.g. orders), other similar authorizing documents that align or re-align components, any positionable component placed or left out of the required position or existing plant conditions due to inadequate or incorrect status control tools described above. This includes situations where a lack of process exists that should have controlled the configuration of the component.*"

("Plant Status Control" is the formal name for mispositioning.)

The DCPP CMPT is mentioned in the DCPP Procedure OP1.ID6, but there is little further mention of its role or duties. This was explained by the fact that the CMPT charter has not been completed, but in the meantime it is a cross-functional team headed by an I&C Foreman and owned by Jan Nimick, Operations Director. The CMPT's principle role is to develop prevention techniques to minimize or eliminate mispositionings much like human error prevention tools. DCPP has benchmarked several other plants and is now developing its charter.

As of May 23, 2012, there have been no outage-related mispositionings. The Plant Status Control Program is currently in Green (excellent) health. The Plant Misposition Component Performance Indicator (PI) through March 2012 is shown below. The PI has steadily improved since early 2011 and

currently indicates Green (excellent) performance.



The DCISC should follow up on the CMPT after its charter has been completed and it has had at least six months in operation.

Conclusion:

The Component Mispositioning Prevention Team (CMPT) has been established based on benchmarking of other nuclear plants, but its charter has not yet been developed. The DCISC should follow up on the CMPT after its charter has been completed and it has had at least six months in operation. The DCPP Component Misposition Performance Indicator has steadily improved since early 2011 and is currently Green (excellent).

3.11 Per Peterson Meeting with Jim Becker, Site Vice-President

DCISC Member Per Peterson met with DCPP Site Vice-President, Jim Becker to discuss selected topics from this fact-finding meeting and other subjects of mutual interest.

Conclusion:

None

4.0 Conclusions

4.1

DCPP has successfully completed the upgrade of its Meteorological Information and Dose Assessment System (MIDAS), along with seven offsite and two onsite upgraded meteorological towers, two offsite and one onsite Sonic Detection and Ranging (SODAR) units, and one onsite and eight offsite Pressurized Ion Chambers (PICs). The upgraded system should provide more accurate and timely predictions of the direction and intensity of radiological releases from plant accidents. This upgrade brings DCPP in line with the industry. It is recommended that the DCISC close its Open Item EP-3 initiated for tracking the MIDAS upgrade but continue to track MIDAS through emergency exercise observations.

4.2

DCPP experienced three significant clearance events in the last three years. Because of a negative trend, DCPP began an Apparent Cause Evaluation (ACE) to determine and correct the causes of the problems, which were that the governing procedure did not provide adequate guidance and

that clearance-writing personal did not have adequate electrical print reading expertise. Substantial corrective actions were taken to upgrade the procedure and personnel expertise, along with changes based on industry benchmarking. The actions appeared effective with excellent performance since November 2011. The DCISC should review DCPP clearance performance following Outage 1R17 in June or July 2012.

4.3

Because of the San Onofre Generating Station (SONGS) Steam Generator (SG) tube failures of relatively new SGs, the DCISC reviewed the health of DCPP's relatively new SGs. DCPP's SG tubes had shown excellent inspection and test results in Outages 2R15 and 1R16 and are considered to be in excellent health. DCPP's plant and SGs were designed and fabricated by different manufacturers than SONGS. Although in excellent health, the DCISC should monitor SG inspection results during future outages.

4.4

On its plant tour the DCISC found that the plant was clean and orderly, outage work locations appeared in-order, personnel were wearing proper safety gear, and Security was appropriately present.

4.5

The DCPP Outage Coordination Center (OCC) evening status meeting was concise and to-the-point while providing necessary outage information to all plant areas. Short oral reports were given, and detailed information was provided in comprehensive documents but not reported in the meeting. The meeting appeared beneficial to all without being burdensome and was efficient.

4.6

The DCPP Safety Injection System, a part of the Emergency Core Cooling System, exhibits Green (excellent) health and has no major problems. The system engineer appeared knowledgeable and pro-active about the system.

4.7

There was no improvement in the status of office and workspace seismic safety since the DCISC Fact-finding Meeting in May 2011, and new seismic personnel hazards were identified during this Fact-finding tour. Of the limited seismic bracing that is installed at DCPP, some is improperly installed and would be ineffective in protecting personnel safety during an earthquake. DCPP initiated a Corrective Action Program Notification to document problems found and to get action started. The DCISC should continue to monitor this item.

4.8

The DCPP Fukushima Project organization, plans and accomplishments to-date for responding to regulatory orders and industry guidance are extensive and impressive. The DCISC should follow up periodically to assess DCPP's progress.

4.9

The eight DCPP open items on the DCISC Open Items List were satisfactorily closed after

informational e-mails were sent from DCPP and discussion at various DCISC fact-finding meetings.

4.10

The Component Mispositioning Prevention Team (CMPT) has been established based on benchmarking of other nuclear plants, but its charter has not yet been developed. The DCISC should follow up on the CMPT after its charter has been completed and it has had at least six months in operation. The DCPP Component Misposition Performance Indicator has steadily improved since early 2011 and is currently Green (excellent).

4.11

[No conclusion for Section 3.11]

5.0 Recommendation

Recommendation:

DCPP should assign a manager with the authority and inclination to develop the DCPP site office and workspace seismic safety policy and devote the resources needed to implement necessary changes to avoid harm to personnel from a seismic event. (Section 3.8)

Basis for Recommendation:

The DCISC has observed numerous examples of tall office and workspace furniture, which, unanchored or incorrectly anchored, creates a threat to personnel safety during earthquakes. Inattention to personnel seismic safety appears to be pervasive around the plant, including the existence of clear hazards in the Control Room Shift Manager's office and briefing room. PG&E has a corporate policy for resolving this type of hazard. Because some existing anchors are improperly installed (for example using screws into dry wall in the I&C Maintenance Building), all existing anchors must be considered to be suspect and verified to be appropriately installed. DCPP has stated that they will develop a plant policy in accordance with the corporate policy, but there has been little progress over the past several years. DCPP has now initiated a Notification in the Corrective Action Program, which, if tracked appropriately, should spur on action. The DCISC believes it necessary to initiate this new second recommendation to emphasize its concern.

6.0 References

6.1 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011," Approved October 11, 2011, Volume II, Exhibit D.8, Section 3.4, "Emergency Dose Assessment Program (MIDAS)."

6.2 Ibid., Exhibit B.9, "Efforts and Actions Remaining to Improve and Expand the Emergency Preparedness Dose Assessment System including the Meteorological Information and Dose Assessment System (MIDAS),"

6.3 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012," Approved October 10, 2012 Volume II, Exhibit D.1, Sect. 3.8, "Outage Clearance Performance."

6.4 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011," Approved October 11, 2011, Volume II, Exhibit B.3, "Results of the 1R16 Steam Generator Tube Testing."

6.5 "Diablo Canyon Independent Safety Committee Nineteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2008 – June 30, 2009", Approved October 12, 2009, Volume II, Exhibit D.8, Section 3.1, "Plant Tour During the 1R15 Outage."

6.6 Ibid., Section 3.4, "Outage Control Center Schedule."

6.7 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011," Approved October 11, 2011, Volume II, Exhibit D.11, Section 3.4 "Seismic Bracing of Tall Furniture."

6.8 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved Oct. 10, 2012, Volume II, Exhibit B.6, "Fukushima Update."

6.9 Ibid., Exhibit D.5, Section 3.4, "Update on the DCPP Responses and Actions on the Fukushima Accident."

6.10 Ibid., Exhibit d.1, Section 3.9, "Component Mispositioning."

22nd Annual Report, Volume 2, Exhibit B.10, Typical DCISC Service Mailing List

The DCISC sends legal notices of meetings and press releases with the informational items for discussion at its public meetings to those persons who have requested same and to governmental entities, interested groups and to the news media. This exhibit includes a list of the governmental and public entities, interested groups and the news media outlets who regularly receive information regarding the DCISC's public meetings.

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Mayor and City Council City of San Luis Obispo 990 Palm St. San Luis Obispo, CA 93406	Office of the Governor State of California State Capitol Bldg., First Floor Sacramento, CA 95814	Chairman – Board of Supervisors San Luis Obispo County Rm 270, Cnty Govt Ctr San Luis Obispo, CA 93408
Congressman Sam Farr 17th District, California 100 West Alisal Street Salinas, CA 93901	Office of the Atty Gen. 350 McAllister, 6th Floor San Francisco, CA 94102	Office of Emer. Ser. County Govt Ctr, Rm 370 San Luis Obispo, CA 93408
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Redwood Alliance PO Box 293 Arcata, CA 95521	Diablo Canyon Power Plant News Dept. PO Box 56 Avila Beach, CA 93424	Pacific Gas and Electric Co Mail Code B32 – 77 Beale Street San Francisco, CA 94105
Pacific Gas and Electric Law Dept. PO Box 7442 San Francisco, CA 94177	The Associated Press 221 So. Figueroa, #300 Los Angeles, CA 90012-2501	Editor Santa Barbara News Press 908 North H St. Lompoc, CA 93436
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22nd Annual Report, Volume 2, Exhibit D.1, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on July 12 – 13 2011 by Per F. Peterson, Member, and David C. Linnen, Consultant

1.0 Summary

The results of the July 12 – 13, 2011 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 are as follows:

1. Clearance Process Implementation During Refueling Outages 1R16 and 2R16
2. Meeting with Nuclear Regulatory Commission (NRC) Senior Resident Inspector
3. Status of DCPP Implementation of NRC Work Hour Rule Regarding Fatigue Management
4. 2010 Annual Radioactive Effluent Release Report and 2010 Annual Radiological Environmental Operating Report
5. Single Point Vulnerabilities
6. Unit 2 Reactor Manual Trip
7. Time Critical Operator Actions
8. Component Cooling Water System Review
9. Per Peterson Meeting with Jim Becker, Site Vice President
10. Status of Component Mispositionings

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine ifPG&E's performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team's suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Clearance Process Implementation During Refueling Outages 1R16 and 2R16

The DCISC Fact-finding Team met with Chris O'Connor, Coordinating Supervisor. DCISC last reviewed this topic at the July 2009 Fact-finding meeting (Reference 6.1) when it concluded the following:

> The new Electronic Shift Operations Management System (eSOMS) appears to be an effective replacement for that corresponding aspect of the Plant Information Management System (PIMS). DCISC should obtain and review the Notification pertaining to the clearance error discussed in this report. Based on the causal factors for this event, further DCISC follow-up may not be needed unless dictated by future station performance issues regarding tagouts.

Mr. O'Connor stated that overall the performance of eSOMS and DCPP's schedule adherence resulting from the station's use of the system during 1R16 and 2R16 were good. This "clearance" system is used to isolate complete systems or portions of systems so that components within the isolated section(s) can be worked on without posing a risk to station personnel or to plant operation. The eSOMS clearance and tagging software is one component of the new Nuclear Excellence Information System (NEXIS), which has replaced the COBOL based Plant Information Management System (PIMS). Mr. O'Connor stated that he had served for 16 years at another nuclear station, including positions as Reactor Operator and Senior Reactor Operator, and he maintained that eSOMS is the best clearance system that he is aware of. As a computer based system, is easier to use than completely manual systems and it also displays applicable Technical Specifications. As such it is helpful from a human performance standpoint in that, based on the applicable Technical Specification, it can refer the user to applicable Limiting Conditions of Operation (LCOs)

Mr. O'Connor stated further that eSOMS is also more efficient than completely manual tagging systems in that multiple tags do not have to be hung on the same component for multiple tagouts. Rather, the same physical tag can apply to more than one electronic tagout, each of which is referenced in the computer as affecting that one component. When one electronic tagout is being cleared, eSOMS will note the components that have other tagouts applying to them. Therefore, the physical tags are not removed from those particular components (Operations is responsible for placing and removing tags so that Maintenance can perform work; eSOMS notifies Operations when all work has been completed for a tag so that Operations knows that the tag needs to be removed).

Overall, the station's Operations Protective Tagging Index in the monthly Plant Performance

Improvement Report (PPIR) indicated that the use of eSOMS in implementing the clearance process during refueling outage 1R16 was good. However, the same report indicated and Mr. O'Connor noted that during 2R16 a worker received an electrical shock. Mr. O'Connor stated that this was not due to a problem with eSOMS, but rather involved a lack of clarity in station drawings related to that particular work and the failure of the worker to verify that the component was deenergized prior to working on the component. Mr. O'Connor noted that a cross reference has since been developed to identify pertinent station drawings component by component for all Diablo Canyon Power Plant (DCPP) 4kv and 12kv circuit breaker cubicles. He also noted that there was a human performance aspect in this event in that the same activity was performed about four years ago without experiencing a similar problem. Moreover, a review of industry operating experience revealed that other stations had experienced the same type of problem, indicating that complex clearance operations need to have more layers of review.

With regard to any improvements that might be appropriate for eSOMS, Mr. O'Connor offered that the formats for some reports might be made more user friendly, but this issue tends to diminish as the reports become more familiar to the users.

Conclusion:

The Electronic Shift Operations Management System (eSOMS) appears to be functional and supportive of DCPP's clearance program. Nevertheless, one worker experienced an electrical shock during refueling outage 2R16 due to a lack of clarity in station drawings that were pertinent to that activity rather than due to an inadequacy in eSOMS. The station appears to have taken appropriate actions to address this issue. Since eSOMS appears to be completely functional, the DCISC should focus any future reviews on issues related to DCPP's implementation of its clearance process.

3.2 Meeting with Nuclear Regulatory Commission (NRC) Senior Resident Inspector

The DCISC Fact-finding Team met with Dr. Michael Peck, NRC Senior Resident Inspector at DCPP. Mr. Peter Bedesem, Technical Assistant to the DCPP Site Services Director and Liaison to the DCISC, was also present. Discussion focused primarily on potential implications of the earthquake and tsunami at the Fukushima Daiichi Plant earlier this year. Dr. Peck noted that the NRC would be webcasting a briefing on the Fukushima event during the week of July 18. He noted further that the radiological conditions experienced at Fukushima would need to be assessed. Discussion also focused on the fact that DCPP's prior addition of a sixth Emergency Diesel Generator in 1991 helped in DCPP's response to the Station Blackout (SBO) Rule which was issued later, since one of the options of responding to the SBO Rule was for a station to add an extra diesel generator.

Dr. Peterson noted that lessons learned from the Fukushima event will include assuring that physical resources are in place and available in order to support the full implementation of nuclear plant Severe Accident Management Guidelines (SAMGs) and Extensive Damage Mitigation Guidelines (EDMGs). Dr. Peck agreed and added that such guidelines could also potentially need to be implemented in an environment of high levels of radiation and radioactivity. Dr. Peterson also stressed the need to ensure that the organizational authority and responsibilities for key decision

making in response to postulated accident conditions at a nuclear plant are clearly defined and understood at all levels, both in the utility organization and in the government. He noted that these key aspects of responding to the Fukushima event were evidently neither sufficiently defined nor implemented by the various utility and governmental bodies.

Dr. Peck noted that a report will be forthcoming with respect to follow-up on the SAMGs. Other topics discussed by Drs. Peck and Peterson included seismic issues, fire protection, the 230kv system, reactor coolant pump seal leakage, loss of offsite power, and how these are addressed in the Final Safety Analysis Report.

3.3 Status of DCPP Implementation of the NRC Work Hour Rule Regarding Fatigue Management

The DCISC Fact-finding Team met with Paul Bemis, Assistant Director, Strategic Projects for an update on the status of DCPP's implementation of the NRC Work Hour Rule Regarding Fatigue Management. The DCISC last reviewed this topic in September 2010 (Reference 6.2) when it concluded the following:

> DCPP has satisfactorily implemented the NRC Fatigue Management Rule (FMR) with only minor issues.

As the name of the rule implies, the objective of the Fatigue Management Rule is to reduce the likelihood of on-the-job fatigue by managing the amount of overtime worked, primarily by those employees who physically perform work (e.g. operators and workers in maintenance, chemistry, radiation protection, and security) and by the immediate supervisors of such employees.

The FMR provides for a 6-week work cycle averaging 54-hours per week during non outage periods and requires that work does not exceed 16 hours in any 24-hour period; 26 hours in any 48-hour period; and 72 hours in any 7-day period. Minimum time off has been established between successive work periods. This minimum consists of a 10-hour break, with an exception allowing an 8-hour break between successive work periods when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts. Also a minimum 34-hour continuous break is required in any 9-day period.

Initial implementation by DCPP and the industry appeared to be going well, but as time progressed, it became more apparent to both DCPP and the industry that the administrative complexities of the rule were creating a burden for nuclear utilities. Mr. Bemis noted in particular that the rule prescribed rolling reporting periods, with each new day ending as well as beginning a new reporting period. Hours worked had to be calculated daily for each of these rolling reporting periods. This issue, along with the difficulties in determining and applying the actual "hours worked" in conformance with the Rule, led to a number of problems in the industry. Examples are as follows:

- Taking time off could actually result in a violation of the NRC rule because of complications created by the rolling reporting aspect.

- Reporting of hours worked was affected by the unique definitions of "work hours" associated with turnover periods between shifts.
- Definitions of how meetings were or were not considered to be "hours worked" for reporting purposes of the Rule became a complication.
- Hours worked, as reported during outages, were not clearly understood with regard to turnovers between incoming and outgoing shifts
- Average shift length calculations could also affect specific compliance with the Rule.
- Union contract issues resulted from the above difficulties.

Mr. Bemis said that the industry as a whole endorsed the objectives of the Rule, but widespread concern grew regarding the complexities and implications of various aspects of the Rule. Since the workers themselves recorded not just their total hours worked for pay purposes, but also the "hours worked" for reporting purposes under the Rule, the industry felt it important that the elements of the Rule be understandable to the workers. Mr. Bemis said that these complications led the Professional Reactor Operator Society to submit a change request regarding the Rule. The Nuclear Energy Institute also expressed a desire for the NRC and the industry to examine the issues and try to simplify elements of the Rule.

Mr. Bemis said that the NRC and the industry have engaged in this activity, and that the outcome appears to provide more clarity and flexibility in how to comply with the Rule, while achieving the desired objective of minimizing worker fatigue on the job. Along with this, DCPP has also striven to achieve greater worker understanding of the reporting definitions and requirements. At this point, Mr. Bemis felt that the elements of the Rule are achievable by DCPP and are now better understood by workers. He is continuing to provide some input and assistance regarding the reporting requirements, but such activity is at a considerably lower level than during last year and earlier this year.

Conclusion:

DCPP's implementation of the NRC's Fatigue Management Rule became a complicated process due to the details and complexities of the Rule and the need to obtain clear understanding by workers of the Rule's reporting requirements. During the past year, the industry has collaborated with the NRC to modify and/or clarify needed reporting aspects of the Rule and to obtain greater worker understanding. DCPP is now encountering considerably fewer problems with regard to worker reporting of hours worked. The DCISC should review DCPP status on this topic again by the third quarter of 2012.

3.4 2010 Annual Radioactive Effluent Release Report and 2010 Annual Radiological Environmental Operating Report

The DCISC Fact-finding Team met with John Knemeyer, Chemistry Engineer, to review DCPP's 2010 Annual Radioactive Effluent Release Report and its 2010 Annual Radiological Environmental Operating Report. The DCISC last reviewed these topics in July 2010 (Reference 6.3) when it concluded the following:

> DCPP's 2009 total liquid and gaseous radiological releases were very small fractions of amounts permitted by regulations and Technical Specifications. DCPP experienced an uncontrolled venting of two gas decay tanks in October 2009, which amounted to 0.02 percent of the allowable rate. The Radiological Environment Monitoring Program confirmed that the operation of DCPP had no significant radiological impact on the environment in 2009.

DCPP submitted its 2010 Annual Radioactive Effluent Release Report and its 2010 Annual Radiological Environmental Operating Report to the Nuclear Regulatory Commission (NRC) on April 28, 2011. The former report described the quantities of radioactive gaseous and liquid effluents released from the plant and the solid radioactive waste shipments during the year 2010. In all cases the releases were well below Technical Specifications limits for the year. The latter report provided the results of the radiological monitoring and sampling performed on and around the plant site in 2010.

Based on radioactive releases, the following whole body radiation doses to a theoretical "maximum exposed individual" at the site boundary approximately 800 yards from the plant and their corresponding percent of Technical Specifications limits for the year 2010 were calculated to be as follows:

Effluent Type	Calculated Radiation Dose	Percent of Tech. Spec. Limit
Liquid	0.0003 milliRem	0.011‰
Gaseous	0.0021 milliRad	0.018‰

The Radiological Environmental Operating Report describes the results of the Radiological Environmental Monitoring Program (REMP) used to assess the levels of radiation or radioactivity in the environment. The 2010 REMP included more than 1,100 samples (including Thermo-luminescent Dosimeters [TLD]) with approximately 2,300 radionuclide or exposure rate analyses being performed. Samples included surface water, drinking water, marine samples, vegetation, food crops, milk, and meat. The report concluded the following:

> The results of the 2010 REMP showed no unusual findings from site operations. These results were also compared to preoperational data and showed no unusual trends. The operation of DCPP had no significant radiological impact on the environment.

Direct radiation is continuously measured at 31 locations surrounding DCPP using thermo-luminescent dosimeters (TLD). These 31 locations are made up of 29 indicator stations and 2 control stations. The dosimeters are collected and read every calendar quarter. The results are trended with preoperational and historical operating values for adverse trends. No adverse trends were noted in 2010.

Beginning in October 2010, the DCPP Unit One (U-1) Reactor Head was replaced and the old U-1 Reactor Head was stored onsite within the Old Steam Generator Storage Facility (OSGSF). As of

December 31, 2010, the OSGSF contained eight old SGs and two old Reactor Heads. The OSGSF did not cause any changes to the ambient direct radiation levels in the DCPP environment during 2010.

The OSGSF sumps were inspected quarterly as part of the REMP. Rainwater was found in the U-2 Old SG vault # 30 sump. This rain water had tritium concentrations consistent with rain water washout concentrations. As a conservative measure, the rainwater from the sump was removed and processed via an approved radwaste discharge pathway.

Beginning in June 2009, DCPP began loading of the Independent Spent Fuel Storage Installation (ISFSI). Eight casks were loaded into the ISFSI by August 2009, and eight additional casks were loaded during 2010. In addition to the 31 TLD locations mentioned above, direct radiation is also continuously measured at eight locations surrounding the ISFSI using TLDs that are all well within the site boundary. Specifically, two TLDs are located on each of the four sides of the ISFSI pad. No adverse trends were noted in 2010 at this ISFSI inner ring of 8 TLDs due to the installation of the ISFSI casks.

Tritium levels in three monitoring wells beneath the power block were all below the Environmental Protection Agency (EPA) drinking water standard of 0.02 microCuries per liter. Ground water at the site all flows into the Pacific Ocean and is not a source of drinking water.

Conclusion:

DCPP's 2010 total liquid and gaseous radiological releases were very small fractions of amounts permitted by regulations and Technical Specifications. The Radiological Environment Monitoring Program confirmed that the operation of DCPP had no significant radiological impact on the environment in 2010.

3.5 Single Point Vulnerabilities

The DCISC Fact-finding Team met with Mark Baker, Senior Consulting Engineer – Program Manager Equipment Reliability, to review the status of the Single Point Vulnerability (SPV) studies. The DCISC last discussed the SPV studies at the December 17/18, 2008 Fact- finding Meeting (Reference 6.4) at which time it concluded the following:

> DCPP has completed the Single Point Vulnerability (SPV) studies of the systems that were identified to have vulnerabilities. As a result of the studies, DCPP has made changes with the preventive maintenance (PM) on some of the systems and have made about 12 design changes per unit that should improve reliability. They have also revised many procedures to prevent SPV problems They have also completed the Preventive Maintenance Optimization review to revise PMs as necessary to improve PM. It appears that as a result of these studies and the PM and design changes made, the overall reliability of DCPP equipment should improve. DCISC should review system reliability to determine the results of these improvements in the 4th quarter of 2009.

A component is an SPV component if its failure can result in a reactor trip or turbine trip, or a plant

decrease of greater than 2% power. An SPV failure must create the plant impact by itself.

DCPP first performed an SPV study in 2002 to identify single points of failure in the plant that could potentially adversely affect plant safety or reliability. That study was performed at a system and component level. Then in 2006, using external contractor engineers working with DCPP System Engineers and Operations, DCPP performed a more extensive SPV study and completed it in 2008. DCPP has completed the SPV study on all systems (about 20) that have an impact on generation or reliability. This has been a collaborative effort including support from industry organizations such as the Electric Power Research Institute (EPRI) and the Nuclear Energy Institute (NEI).

As a result of the studies, DCPP made changes to preventive maintenance (PM) on some of the systems. They have also revised a substantial number of procedures to remove SPVs. In addition, the Preventive Maintenance (PM) Optimization review was complete and PM activities were revised as necessary.

Safety equipment is not included in any of these studies as all Safety Equipment is covered by the NRC Maintenance Rule, and thus has already been reviewed for SPV. DCPP also worked with the Industry Working Group to review nuclear plant scrams in order to determine what caused the scrams and what was done to prevent future scrams (most scrams were caused by failed circuit cards).

Mr. Baker provided the DCISC Fact-finding Team a Report Summary of the SPV Project that referenced 20 plant systems that were covered by the study and noted that a total of 1,574 SPVs had been identified and evaluated for the two units (over 750 for each individual unit). These evaluations focused on whether changes were needed to a component's design and/or preventive maintenance requirements. Changes were then implemented as needed. As one example, Mr. Baker provided the Team with a copy of the final SPV system analysis report, which was on the Compressed Air (CA) System and completed in 2008. The 36-page report reflects a comprehensive system review to ascertain the potential SPV components. Based on the redundancy found throughout the system design and on a detailed component-by-component review, the only components found to have the potential to be SPVs were the system's 1,273 air supply regulators. Each of these regulators was then evaluated for failure consequence based on review of the system design up to the component(s) to which the regulator supplies air. As a result of this review, 49 air regulators were identified as SPVs. Further analysis was then performed to determine the appropriate PM for each of the SPV air regulators.

The DCISC Fact-finding Team reviewed recent DCPP corrective action documents and NRC reports contained in DCPP's periodic document transmittals to the DCISC for any noted deficiencies regarding SPVs. In the NRC's Integrated Inspection Report covering the period January 1, 2011 through March 27, 2011, the NRC noted that DCPP "failed to ensure that the design basis requirements for single failure criteria were correctly translated into auxiliary building ventilation system controls modifications." Specifically, the NRC noted that DCPP did not perform an adequate review of a modification to the Auxiliary and Fuel Handling Building Ventilation System. The modification included provisions to ensure that a suction damper would cycle closed within a

required time. The NRC specifically noted that this damper was an SPV damper, but had not been identified as such by DCPP. The subsequent failure of this damper to perform as expected then resulted in a loss of both Auxiliary Building exhaust fans, which created a loss of safety function for both Auxiliary Building ventilation trains. The DCISC Fact-finding Team recognizes, as noted above, that this event is a safety related situation and as such it does not fall within the specific nature of this particular Fact-finding topic. Nevertheless, it is a situation in which the failure of a single component simultaneously disabled what were designed to be two redundant systems.

The DCISC Fact-finding Team also examined DCPP's monthly Plant Performance Improvement Report (PPIR) to determine whether incidents regarding SPV Failures are tracked for reporting purposes and found that this specific performance category is not contained in the PPIR. However, given the definition of an SPV component (i.e. one whose failure can result in a reactor trip or turbine trip, or a plant decrease of greater than 2%.), each such failure would certainly have great visibility on its own. Nevertheless, since PMs on these components would have a high priority, the station might consider tracking the number of overdue PMs on SPV components as part of the Operational Focus Index, in the same manner that this index tracks indicators such as Operator Burdens, Control Room Deficiencies, Main Annunciators Defeated, and Deficient Critical Components.

Conclusion:

The Single Point Vulnerability (SPV) program appears to be comprehensive and fully functional. No overall indicators of performance appear to be tracked. Issues appear to be addressed on a case basis within the various affected systems. DCISC future reviews should be dictated by performance issues.

3.6 Unit 2 Reactor Manual Trip

The DCISC Fact-finding Team met with Ken Johnston, Operations Performance Manager, for a briefing of the events that led to a manual trip of the Unit 2 reactor on March 26, 2011. This is DCISC's first review of this topic. Prior to this discussion the DCISC Fact-finding Team was provided with DCPP's review and analysis of this event: "Root Cause Evaluation Report, Rev 1, MFP 2-1 Trip Results in Unit 2 Manual Reactor Trip, Order 60034557, Operation 60, Rev 1, June 15, 2011." (Reference 6.5) The following is the DCISC Fact-finding Team's summary and analysis of the above 54-page document and subsequent discussion with Mr. Johnston.

The Unit 2 reactor manual trip stemmed from a steam leak from the gasket on a steam relief valve on the shell (steam) side of a feedwater heater. This leak grew to the point where it wetted nearby control/annunciator loops for Main Feed Pump 2-1, causing that pump to trip. Since Unit 2 was operating above 80 percent power at that time, the Unit 2 reactor was tripped manually in compliance with station operating procedures that required such a trip due to the loss of a Main Feed Pump above 80 percent power. The reason for this required manual reactor trip was that an analysis of Unit 2 performance had determined that the loss of one Main Feed Pump would lead to a continuing decrease in Steam Generator water levels to below 15 percent, which would then result in an automatic reactor trip. The deliberate manual trip, therefore, maintains a larger water

inventory in the steam generators during the shutdown transient and allows the operators to exercise direct control of reactor and plant status.

DCPP's detailed and thorough analysis of this event focused on a number of contributing factors:

- The relief valve gasket had been leaking prior to the prior outage and a maintenance tag had been installed so that the leaking gasket would be replaced as a Corrective Maintenance activity in refueling outage 2R15. However, this valve was also one of a group of similar valves that were scheduled to have their gaskets replaced as part of a Preventive Maintenance activity during that same outage. The affected relief valve, in fact, had its gasket replaced during outage 2R15 under the Preventive Maintenance work order. The reasons this is relevant are two-fold. First, the directions for gasket replacement under Preventive Maintenance did not reflect the appropriate type of gasket to use and also did not reflect the correct torquing requirements for tightening the replaced gasket into the pipe flange. Rather the torquing was simply specified to make the gasket "snug." Therefore, the gasket was reinstalled in a manner that made it susceptible to leakage. Second, the tag for Corrective Maintenance was not removed after the Preventive Maintenance was completed since there were no specific instructions in the Preventive Maintenance directive to remove such a tag because one was not expected to be there. The significance of the tag being left on the valve will be discussed in the next paragraph.
- Unit 2 returned to operation on November 6, 2009. On March 23, 2011 an operator on shift noted a flange leak on the affected relief valve and updated the Notification associated with the tag on the valve. But he did not inform the Shift Foreman or include it in the log because he had become distracted by other things. It was concluded that the leak could have existed prior to this but might not have been reported because the tag on the valve could have caused other observers to believe that the leak had already been reported.
- On March 26, 2011, the leak was reported to have increased, prompting a decision to isolate the affected feedwater heater. During this process the leak increased significantly, wetting a nearby control panel for a main feedwater pump. About five hours after the leak had been reported, Main Feedwater Pump 2-1 tripped. Seven seconds later the Unit 2 Reactor was tripped manually from the Control Room because the unit was above 80 percent power, and the unit was then placed in a stable, shutdown condition.

DCPP identified the following Root and Contributing Causes to this event:

Root Causes

1. The maintenance procedure used to replace the leaking gasket did not require the proper gasket material and did not specify the proper method for tensioning the installed gasket.
2. The electronic components that were wetted by the spray from the leaking valve were not designed to be water resistant. (However, it was recognized that it is unrealistic to have all such components in a Turbine Building impervious to spray. The need is to control fluid leakage.)

3. The plant secondary systems (e.g. steam generators, steam, feedwater) were not designed to support a Main Feed Pump trip at or above 80‰ power without leading to an automatic reactor trip.

Contributing Causes

1. Corrective actions from a previous gasket failure had specified the proper gasket to use in the applicable Preventive Maintenance Work Instructions and also included proper torquing requirements. However, these changes were not sustained in those instructions.
2. Clear roles and responsibilities had not been established for monitoring and tracking secondary system and equipment leaks.
3. Unclear standards allowed completion of corrective maintenance using a preventive maintenance order without including standard elements of corrective maintenance work instructions.
4. There was no standard requiring operators and Operations to communicate and track the status of active plant equipment leaks.

The report also identified and discussed various human and organizational factors that were embedded in the above causes, and it examined the impact of "cultural" aspects such as Problem Identification and Resolution, Human Performance, and a Safety Conscious Work Environment on the causes. The overall conclusion with regard to these factors and aspects was that the DCPP organization was not sufficiently aligned to the importance of fluid leak management in secondary systems, compared to the strong focus that exists in the boric acid program and in safety related systems.

The DCPP root cause team (RCT) noted "DCPP leadership was aware of this culture and was very responsive in addressing the RCT's recommendations for corrective actions prior to Unit 2's refueling outage which was ongoing at the conclusion of the RCE."

The DCISC Fact-finding Team also reviewed the station's immediate and interim corrective actions to prevent recurrence as well as their Effectiveness Evaluation Plan that will subsequently be implemented to assess the future sustainability of the corrective actions. The actions appear to be appropriate.

Conclusion:

The automatic trip of Main Feed Pump 2-1 and subsequent manual trip of the Unit 2 Reactor were the results of an easily avoidable steam leak that was precipitated by the improper installation of the wrong type of gasket on the flange of a small steam relief valve on a feedwater heater. DCPP's evaluation of this event was penetrating, detailed, logical, and self-critical. Corrective actions to prevent recurrence and planned future actions to assess the sustainability of the improvements appear to be sound and appropriate.

3.7 Time Critical Operator Actions

The DCISC Fact-finding Team met with Ken Johnston, Operations Performance Manager and conducted follow-up inquiries with Peter Bedesem, Technical Assistant to the DCPP Site Services Director, former Human Performance Supervisor at DCPP, and Liaison to the DCISC. This is DCISC's first review of this topic.

Time Critical Operator Actions (TCOA) in the commercial nuclear power industry pertains to the mitigation of accidents. At DCPP they are discussed in the station's Interdepartmental Administrative Procedure OP1.ID2. The procedure states: "DCPP's licensing basis addresses automatic and manual actions for accident mitigation. Such actions may be in response to a fire event, station blackout, Steam Generator Tube Rupture (SGTR) or other event in the licensing basis. In some cases, credit is taken in the plant licensing basis for manual actions that are performed within a specified time; these actions may be described as Time Critical Operator Actions (TCOAs)." The procedure lists over 60 such TCOAs that pertain to a variety of potential accidents and/or conditions.

The station's ability to assure that the specific time requirements for performance of the TCOAs can be met is demonstrated through the processes of "validation" and "revalidation." This is discussed in DCPP's Procedure OP1.ID2, as follows: "Validation provides documented confirmation that the specified TCOA is achievable. Periodic revalidation demonstrates the continued ability to meet TCOAs. Periodic revalidation is a valuable tool for detecting an unexpected challenge to TCOA completion time, which may occur due to the aggregate of procedure and protocol changes and equipment modifications over time." The procedure further defines specific criteria for the periodicity of revalidations, which depend upon a variety of situations.

Validation is not considered part of operator training programs. The focus of validation is on being able to demonstrate that specific elements of specific procedures can be conducted within the specific time requirements of the various station procedures.

During the spring of 2010, DCPP encountered several issues pertaining to its revalidation of TCOAs. These issues were documented in May 18, 2010 Corrective Action Program (CAP) Order 60025168 and updated on September 22, 2010, as follows:

- The Steam Generator Tube Rupture (SGTR) scenario had not been formally revalidated for a number of years, although training had been routinely conducted on this scenario.
- One of the TCOAs of the SGTR was unable to be validated. This pertained to the time required from isolation of the steam generator to the initiation of cooldown. However, this timing issue was due to the fact that DCPP is able to achieve early isolation of the steam generator and a reduced overall time to initiating cooldown, thus improving overall accident mitigation. Therefore, this issue was resolved through engineering analysis.
- One operating crew was not able to meet specified time requirements in response to a Spurious Safety Injection (SSI) due to unnecessary delays, which were identified and corrected.
- In the Loss of (reactor) Coolant Accident (LOCA) scenario, there was difficulty in validating

> the expected time requirement for shifting from direct injection of coolant to recirculation of coolant from the containment sump, although this scenario had been performed multiple times. As a result, increased emphasis has been placed on this segment of the scenario and the TCOA has been revalidated.

The Apparent Cause Evaluation (ACE) for CAP Order 60025168 states: "All items in the TCOA database were reviewed for validation and acceptability. Of three identified as problematic, two were considered challenging. These were evaluated as a part of this ACE. All other TCOAs were appropriately revalidated within the criteria of OP1.ID2."

The DCISC Fact-finding Team concurs with the appropriateness of DCPP's above assessments and corrective actions. At this time there are no open issues pertaining to revalidation of TCOAs.

Conclusion:

DCPP encountered a few problems in 2010 pertaining to the revalidation of Time Critical Operator Actions (TCOAs) in some of its station emergency procedures. Those issues have been resolved. DCPP has also updated TCOA Procedure OP1.ID2. Any future DCISC reviews of TCOAs should be dictated by emergent issues on this subject.

3.8 Component Cooling Water System Review

The DCISC Fact-finding Team met with Sean Dunlap, Balance of Plant (BOP) Systems Group Supervisor, and Surendra Sabharwal, Component Cooling Water System Engineer. The DCISC last reviewed this topic in March 2007 (Reference 6.6) when it concluded the following:

> The DCPP Component Cooling System, which removes heat from many Engineered Safety Features, the Spent Fuel Pool, and the Residual Heat Removal System, among others, appears to be in good health with few outstanding issues. The System Engineer appeared knowledgeable about the system.

The CCW System is a closed-cycle safety-related cooling system that provides the following functions, as delineated in the system's Design Criteria Memorandum:

- Removes heat from safety-related and non-safety related system components during normal operation and transfers it to the Ultimate Heat Sink (UHS), i.e. the Pacific Ocean, via the Auxiliary Salt Water System (ASW).
- Provides for safe shutdown and cooldown of the reactor by removing heat from safety-related and non-safety related system components after any accident leading to an emergency shutdown, and transfers it to the UHS via the ASW System.
- Provides a monitored, intermediate barrier between components handling radioactive reactor coolant and the UHS or the atmosphere.

Many of the components and equipment served are either Engineered Safety Features (ESF) or have the potential for leakage of radioactive fluid into the CCW System.

The CCW system is comprised of three CCW Pumps, two CCW Heat Exchangers, a CCW surge tank, two chemical addition tanks, and connected valves and piping. Of the three parallel piping trains, two are separable redundant loops (each with one redundant pump) serving the ESF equipment and post-accident heat loads (i.e. vital loads). The third train serves non-vital equipment. CCW Pump motors are powered by the 4160V vital buses, which have emergency diesel generator backup. The CCW System serves the following major safety-related heat loads:

- Residual Heat Removal (RHR) System
- Containment Fan Cooler Units (CFCUs)
- Safety Injection Pump Coolers

Among the many nonsafety-related systems and components that are served by the CCW System are the following important loads:

- Reactor Coolant Pumps
- Reactor Vessel Supports
- Spent Fuel Pool Heat Exchanger
- Excess Letdown Heat Exchanger
- Seal Water System Heat Exchanger

Mr. Dunlap and Mr. Sabharwal reviewed the System Health Report. The health report is summarized below.

Component Cooling Water System Health Report

	Unit 1	Unit 2	
System Color Indicator	Green	Green	
Performance Indicator			
Items in MR (a)(1) Status	0	0	(Maintenance Rule)
POAs	0	0	(Prompt Operability Assessments)
Critical Equipmt Event Clock Resets	0	0	
Significant Adverse Trends	0	0	
Operating & Design Margins			
Components in Alert	0	0	
Control Board ARs	0	0	(Action Requests)
Critical Component Failures	0	0	
Corrective Maintenance Backlog	0	0	
Non-Green Performance indicators	0	0	
Operator Burdens/Workarounds	0	0	

Plant Health Issues noted as threats	0	0	

Common Issues: An "Enhancement Request" has been submitted for CCW surge tank level indication on the Plant Process Computer in order to facilitate Operations troubleshooting during in-leakage to the CCW System. Operations had been manually trending the surge tank level.

Unit 1 Issue: An initial scoping meeting has been held pertaining to the creation of a new superseding calculation for the CCW Heat Exchanger margin. A cost estimate needs to be developed.

Unit 2 Issues: None

The Plant Health Committee conducted its last review of the CCW System in January 2010. At that time the systems in both Units were rated Green. Mr. Dunlap and Mr. Sabharwal both commented that they could not recall when the rating of either system had been other than Green.

Conclusion:

The CCW Systems in both Units 1 and 2 appear to be in good condition and have been in healthy status for a number of years.

3.9 Per Peterson Meeting with Jim Becker, Site Vice President

Dr. Per Peterson met with Mr. Jim Becker, Site Vice President, to discuss topics pertaining to this Fact-finding visit and other topics of mutual interest.

3.10 Status of Component Mispositionings

The DCISC Fact-finding Team met with Jan Nimick, Operations Services Director. The DCISC last reviewed this topic in October 2010 (Reference 6.7), when it concluded the following:

DCPP has devoted substantial attention and effort to reducing component mispositionings. Significant improvement was achieved during refueling outage 1R16. Inconsistencies between the definitions of mispositioning significance levels in the monthly performance indicator sheet and in Procedure OP1.ID6, Definition and Measurement of Mispositioned Plant Components, still need to be resolved.

A "Mispositioned Plant Component" is defined by Procedure OP1.ID6, Definition and Measurement of Mispositioned Plant Components, as follows: "Any positionable component placed or left out of the required position for existing plant conditions when the component's required position is tracked by one or more of the following status control tools: procedures, clearances, work management process (e.g. orders), other similar authorizing documents that align or re-align components, any positionable component placed or left out of the required position or existing plant conditions due to inadequate or incorrect status control tools described above. This includes situations where a lack of process exists that should have controlled the configuration of the

component."

A tabulation of the number of mispositionings for the past six years is shown below. Levels 1 and 2 constitute mispositionings that have "Severe" and "Major" consequences to the plant respectively. Level 3 mispositionings have "Minor" consequences. Level 4s are those that are immediately identified and have minimal or no impact. Levels 5s are those that were imminent or possible but were averted. It should be noted that during 2008, the station became more conservative with regard to what constitutes a less consequential mispositioning. During 2008, the lower grouping in the tabulation below was expanded to include Level 4 and 5 mispositionings that were not identified or tracked in prior years.

	2006	2007	2008	2009	2010	2011 (thru May 2011)
Levels 1 & 2	8	2	3	0	0	0
Level 3 (2006/2007)	32	21	48	35	26	17
Levels 3-5 (2008-2011)						

Note: Using the less conservative definition from 2007 and earlier, the number of lower level mispositionings in 2009 would be 19 (vs 35), the number in 2010 would be 15 (vs 26), and the number in 2011, through May, would be 11 (vs 17).

Strictly from the numbers in the above tabulation, it can be seen that DCPP's focus on mispositionings since 2008 has been able to prevent severe and major plant consequences that could result from Level 1&2 mispositionings. However, the trend in the lower level mispositionings in recent years is less clear. From the Fact-finding Team's review of historical data and trends contained in DCPP's Plant Performance Improvement Report (see graph on next page), it was apparent that mispositionings were being dramatically reduced through the first seven months of 2010. However, during the period August 2010 through December 2010, which included refueling outage 1R16, mispositionings made a noticeable step increase. Also, the oval rating of Mispositioning Performance, which is determined monthly using a rolling 6-month average has been rated "Red" (unsatisfactory) for every month in 2011.

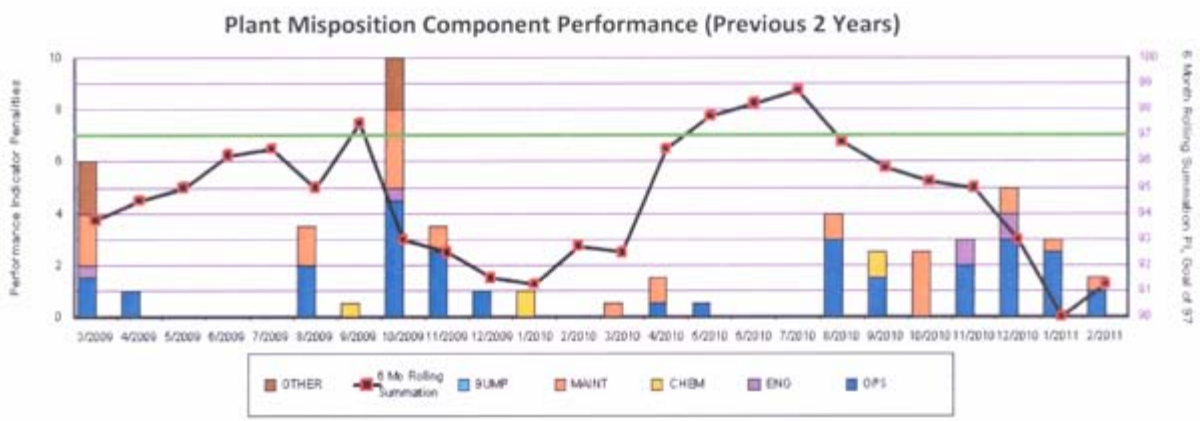
Mr. Nimick stated that DCPP had recognized this trend during the 2nd half of 2010, and he provided the Fact-finding Team with a copy of the Common Cause Analysis Report for this departure from an improving trend. The Abstract of that document reads as follows:

> "During the period from July 31, 2010 through February 2011, there has been a repeat of an adverse trend in mispositioning of plant components at Diablo Canyon. These events involved cross-discipline personnel, comprised of the following departments: Operations, Maintenance, and Engineering. A common cause analysis (CCA) was performed to review and analyze all 22 events. All of these events resulted in minimal impact to plant operations, safety, and station personnel. Common causes were identified and associated recommendations for corrective actions have been provided herein."

The CCA noted that 17 of the mispositionings resulted in minimal impact to plant operations, safety, and station personnel (Level 3). The remaining 5 also had minimal impact but were identified immediately (Level 4). The majority (73‰) occurred outside the 1R16 refueling outage. The Operations Department incurred 64‰ of the mispositionings, Maintenance had 27‰, and Engineering had 9‰. Bumping of components was most common cause with 23‰ of the mispositionings.

The report further noted three predominant causal factors: 1) Less than adequate verification practices. 2) Bumped components and 3) Failure to manage configuration control beyond work boundaries.

Plant Misposition Component Performance (Previous 2 Years)



The report also included an extensive list of recommendations to address the three common causes. In addition, Mr. Nimick noted that DCPP intends to benchmark industry Plant Status Control Programs by evaluating their procedures and metrics.

Conclusion:

DCPP's performance with respect to component mispositioning experienced a setback beginning in the second half of 2010. The large majority (73%) of those mispositionings examined by DCPP occurred during normal plant operation, rather than during an outage. DCPP's Common Cause Evaluation of these problems appears to be thorough. The station's intention to benchmark other similar programs in the industry is appropriate. The DCISC should review station progress on this issue no sooner than after the next refueling outage, which is currently scheduled for April/May 2012.

4.0 Conclusions

4.1

The Electronic Shift Operations Management System (eSOMS) appears to be functional and supportive of DCPP's clearance program. Nevertheless, one worker experienced an electrical shock during refueling outage 2R16 due to a lack of clarity in station drawings that were pertinent to that activity rather than due to an inadequacy in eSOMS. The station appears to have taken

appropriate actions to address this issue. Since eSOMS appears to be completely functional, the DCISC should focus any future reviews on issues related to DCPP's implementation of its clearance process.

4.2

DCPP's implementation of the NRC's Fatigue Management Rule became a complicated process due to the details and complexities of the Rule and the need to obtain clear understanding by workers of the Rule's reporting requirements. During the past year, the industry has collaborated with the NRC to modify and/or clarify needed reporting aspects of the Rule and to obtain greater worker understanding. DCPP is now encountering considerably fewer problems with regard to worker reporting of hours worked. The DCISC should review DCPP status on this topic again by the third quarter of 2012.

4.3

DCPP's 2010 total liquid and gaseous radiological releases were very small fractions of amounts permitted by regulations and Technical Specifications. The Radiological Environment Monitoring Program confirmed that the operation of DCPP had no significant radiological impact on the environment in 2010.

4.4

The Single Point Vulnerability (SPV) program appears to be comprehensive and fully functional. No overall indicators of performance appear to be tracked. Issues appear to be addressed on a case basis within the various affected systems. DCISC future reviews should be dictated by performance issues.

4.5

The automatic trip of Main Feed Pump 2-1 and subsequent manual trip of the Unit 2 Reactor were the results of an easily avoidable steam leak that was precipitated by the improper installation of the wrong type of gasket on the flange of a small steam relief valve on a feedwater heater. DCPP's evaluation of this event was penetrating, detailed, logical, and self-critical. Corrective actions to prevent recurrence and planned future actions to assess the sustainability of the improvements appear to be sound and appropriate.

4.6

DCPP encountered a few problems in 2010 pertaining to the revalidation of Time Critical Operator Actions (TCOAs) in some of its station emergency procedures. Those issues have been resolved. DCPP has also updated TCOA Procedure OP1.ID2. Any future DCISC reviews of TCOAs should be dictated by emergent issues on this subject.

4.7

The CCW Systems in both Units 1 and 2 appear to be in good condition and have been in healthy status for a number of years.

4.8

DCPP's performance with respect to component mispositioning experienced a setback beginning

in the second half of 2010. The large majority (73%) of those mispositionings examined by DCPP occurred during normal plant operation, rather than during an outage. DCPP's Common Cause Evaluation of these problems appears to be thorough. The station's intention to benchmark other similar programs in the industry is appropriate. The DCISC should review station progress on this issue no sooner than after the next refueling outage, which is currently scheduled for April/May 2012.

5.0 Recommendations:

None

6.0 References

6.1

"Diablo Canyon Independent Safety Committee Sixteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 – June 30, 2010", Approved November 17, 2010, Volume II, Exhibit D.1, Section (h3) 3.9, "Clearance Performance During Outage 1R15."

6.2

"Diablo Canyon Independent Safety Committee Twenty First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume II, Exhibit D.5, Section 3.6, "Fatigue Management Rule Implementation."

6.3

Ibid, Exhibit D.1, Section 3.2, "2009 Annual Radiological Releases."

6.4

"Diablo Canyon Independent Safety Committee Nineteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2008 – June 30, 2009", Approved October 15, 2009, Volume II, Exhibit D.6, Section3.3, "Single Point Vulnerability (SPV) Studies."

6.5

"Root Cause Evaluation Report, Rev 1, MFP 2-1 Trip Results in Unit 2 Manual Reactor Trip, Order 60034557, Operation 60, Rev 1, June 15, 2011."

6.6

"Diablo Canyon Independent Safety Committee Seventeenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2006 – June 30, 2007", Approved October 17, 2007, Volume II, Exhibit D.7, Section ???, "Component Cooling Water System Review."

6.7

"Diablo Canyon Independent Safety Committee Twenty First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume II, Exhibit D.6, Section3.5, "Status of Reducing Component Mispositionings."

22nd Annual Report, Volume 2, Exhibit D.2, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on August 9 – 11, 2011 by Robert J. Budnitz, Member, and R. Ferman Wardell, Consultant

1.0 Summary

The results of the August 9 – 11, 2011 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subject addressed and summarized in Section 3 was as follows:

1. Tsunami Hazard and Seismic Hazard
2. Plant Health Committee
3. Santa Barbara County Emergency Planning
4. NFPA-805 Implementation Status
5. Licensed Operator Training
6. Equipment Reliability
7. Training Oversight Committee
8. 2010 Radiological Environmental Monitoring Report
9. Second Quarter 2011 Quality Verification Site Status Report
10. Premier Survey
11. Robert Budnitz Meeting with Ken Peters, Vice-President of Engineering
12. Operator "No Solo" Status
13. Reactivity Management

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine ifPG&E's performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team's suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at

future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Tsunami Hazard and Seismic Hazard (Shoreline Fault)

The DCISC Fact-finding Team met with Stuart Nishenko, Senior Seismologist; Katie Wooddell, Engineering Seismologist; and Richard Klimczak, Director of the PG&E Geosciences Department to discuss the progress made recently on understanding two issues: the tsunami hazard at the DCPP site and the seismic hazard arising from the Shoreline Fault zone. Norman Abrahamson, Senior Seismologist, participated in the tsunami-hazard part of the meeting remotely by a speakerphone tie-in, because he was traveling at the time. The meeting took place in PG&E's corporate office in downtown San Francisco, and was led by Nishenko and Abrahamson.

The DCISC last reviewed the Shoreline Fault in September 2010 (Reference 6.1) and the tsunami hazard in May 2008 (Reference 6.2) when it concluded the following:

> *The preliminary results of the PG&E analysis of the Shoreline Fault rupture either (1) single segment, (2) all three segments together, or (3) all three segments together combined with a Hosgri rupture showed that the DCPP seismic design basis remained valid.*
>
> *The proposed PG&E risk-based Probabilistic Tsunami Hazard Analysis (PTHA) to determine the landslide-caused tsunami risk to DCPP would provide a very advanced understanding of tsunami risks at DCPP arising from near-shore landslide hazard. The work is to be strongly encouraged.*

Tsunami Hazard:

A few years ago, PG&E undertook to update their understanding of possible tsunami hazards off the Pacific coast that might threaten the DCPP site. The work began by supporting a study by research experts at the Pacific Earthquake Engineering Research (PEER) Center at the University of California-Berkeley. The scope of the PG&E study encompasses tsunamis both from distant sources (across the Pacific Ocean, for example) and from sources near the shore (landslides and nearby seismic sources, for example.) The report from the first phase of that project was published by the PEER Center in 2010. That first phase generated tsunami hazard inundation maps for an extensive region of the California coast but with grid resolution of only about 150 meters (roughly 500 feet). It was intended as a scoping study.

The DCISC reviewed this report in 2010, and has been awaiting further work by PG&E. The next

phase, which will account for local sources and tidal fluctuations, will extend the grid resolution down to about 10 meters (just over 30 feet).

The purpose of this meeting was to provide DCISC with a progress report on the next phase of the work.

The research has concluded that the only phenomenon that could produce a tsunami as high as 10 meters (about 30 feet) at the Diablo Canyon site is a local landslide offshore, triggered either by a local earthquake or perhaps by other forces such as major storms or tidal forces. Therefore the next phase of the research will emphasize the landslide aspect, emphasizing a more detailed understanding of the local topography off shore and the composition of the undersea ocean floor off shore. The seismic aspect of the tsunami study will be examining what the maximum magnitude might be for such a triggering earthquake, and the magnitude of the wave height that might result. The effort is concentrating on constraining the maximum seismic magnitude through seismological and geophysical evidence, including a study of the variability in the physical phenomena.

The issue of variability is critical, because the way the analysis is performed, one needs an estimate of the median properties (earthquake properties as well as characteristics of the wave-formation and wave-propagation phenomena), as well as a characterization of the variability in each of these – the extremes of the tails of the distributions of these various phenomena are what would produce the largest tsunami wave heights. Based on data and models, the approach is to do a simulation to determine the distributions of these properties out to at least two standard deviations, and possibly three, if supportable from the evidence. The problem is that the "high tails" of some of these distributions could yield values, if a blind extrapolation of the body of the distribution is used without data to support such an extrapolation, that might be un-physical, meaning that the extreme values of the distribution perhaps simply could not happen physically. The effort now, as summarized by the PG&E staff, is in part to understand the physical phenomena well enough to provide a constraint on the tails of these distributions, if it is physically correct to do so. Without such a constraint, the models could produce "results" out in the tails that are mathematically correct but physically not realizable.

The detailed effort, therefore, is concentrating in the near future both on gathering data offshore about local topography, local geology, and local seismic features, and on putting it into a validated analysis model that can do numerical simulations. A suite of such tsunami-generation simulation codes exists, some of them developed by the Southern California Earthquake Center. However, to be used near the DCPP site, these codes require both verification (that a code does the "arithmetic" correctly) and validation (that a code captures the physical phenomena correctly.) That is a major part of the analysis work for the next year.

A major aspect of the fieldwork during the next year will be taking measurements offshore --- bathymetry measurements and the mapping of offshore deposits that could be landslide sources. Fortunately. PG&E will be deploying a boat offshore to make certain seismic measurements (see below), and the equipment to assist in the tsunami investigations (multi-beam transducer bathymetry equipment for example) will be aboard too, in a piggyback arrangement.

The PG&E staff indicated that the results of this detailed technical work will be available about a

year hence. It is likely to be breaking new technical ground in the sense of being ahead of the current state of the art. It will therefore require and will receive peer review (supported by PG&E) in the community of tsunami experts.

Seismic Hazard and the Shoreline Fault:

The same meeting with PG&E personnel (Stuart Nishenko, Katie Wooddell, Robert Klimczak, and Norm Abrahamson) also discussed the latest work by PG&E to understand the seismic hazard near the Diablo Canyon site, including further characterization of the Shoreline Fault zone. This meeting was the latest in a long series of DCISC fact-finding meetings and briefings at DCISC public meetings about this issue.

The most important topic concerned the upcoming series of offshore measurements, using high-energy three-dimensional survey techniques, that PG&E will be undertaking in the next half year or so, using a heavily-instrumented boat. The boat will concentrate on the first three miles offshore, where the Shoreline fault zone is located. [As mentioned above, this same boat will also carry instrumentation for examining tsunami-source issues – landslide phenomena etc. – because it will be out in the water anyway doing the seismic survey.]

PG&E staff reported that they have already published a report on the methodology that is being used for studying the seismic data. The next report will be a companion piece with an extensive review of the existing data. PG&E is still awaiting state permits for some of the studies using air guns for geophysical measurements. They will survey approximately from San Simeon in the north to Avila Bay in the south. This offshore work will be supplemented by some onshore two-dimensional seismic geophysical studies from the DCPP site eastward toward Los Osos valley. This latter field study will try to examine the geology etc. down to a depth of about six miles.

The schedule for this work, both offshore and onshore, is that the measurements will take place over the coming year. Data analysis will occur concurrently but any final report will likely be thereafter, although any important interim findings will be reported to the NRC and the public as they arise.

Conclusion:

The PG&E technical studies of both the tsunami hazards and the seismic hazards (emphasizing the Shoreline Fault) are proceeding in an orderly way, indeed very quickly. The technical quality seems to be exemplary. Their progress to date has been substantial on both topics, and their increased understanding has helped both the DCPP team and the NRC to understand these issues more fully. The DCISC will definitely continue to follow both of these topics over the next year or more as the PG&E studies proceed.

Recommendations:

None

3.2 Plant Health Committee

The DCISC Fact-finding Team observed the August 10, 2011 DCPP Plant Health Committee (PHC) meeting. The Committee last reviewed the PHC in December 2010 (Reference 6.3) when it concluded the following:

> *The December 15, 2010 DCPP Plant Health Committee (PHC) meeting was well run, focused on system and program health improvement, and garnered good participation from attendees. The Committee's emphasis was on assuring action plans were being implemented to achieve acceptable plant health. It is apparent that the PHC has increased its effectiveness by more closely focusing on the health of plant systems, components, and programs than previously done, which has resulted in improvement in system health measures.*

The PHC is governed by DCPP Procedure OM4.ID16, "Plant Health Committee" and is a management team responsible for:

- Continual review of system and program health issues
- Routinely monitoring the status of plant health issues on the plant health issues list for action status and completion
- Routinely monitoring the status of the system health tactical list
- Review and approval of action plans to address plant health issues that originated from system health reports, maintenance rule, operator workarounds, program health reports, emergent issues, and others deemed important to monitor
- Review and monitoring of plant health issue plans that are presented to the PHC

Membership and expected attendance is:

- Plant Health Committee Chairman and Facilitator (currently Jim Welsch, Plant Manager)
- Project Engineering Manager
- Operations Director
- Engineering Director or Senior Director
- Maintenance Director
- Outage Management Director
- Reliability Engineering Supervisor
- Administrative Support Person

Others are invited to the meetings as necessary.

Plant health issues that require PHC review include:

- Issues that result in a red or yellow (unacceptable health) system health color (reviewed at

least every 6 months)

- Programs that are rated red or yellow health color (reviewed at least every 6 months)
- Equipment performance issues that result in a red or yellow component health color
- Issues that result in a Maintenance Rule (a)(1) system
- Chronic system, program, or component health problems
- Issues that require special management attention or extensive resources to address
- High Critical (1A) Preventive Maintenance deferral requests and appeals

The PHC procedure appeared appropriate. The PHC uses a Plant Health Issue Plan Data Base (active issues are contained in the Plant Health Issues List) to collect, rank, score, prioritize, and provide a status for plant health issues. The Committee assures that there are effective action plans to address health issues (to return to white or green health status) and monitors the plans/schedules until completion. The action plans are included in the appropriate section of the system, program, or component health reports.

The August 10, 2011 PHC meeting agenda consisted of the following:

1. Safety Message: drive carefully and slowly on-site.
2. Work Control Status Update
3. Main Steam System
4. System/Component Engineer System Health Presentations:
    a. Steam Generator Blowdown System
    b. Turbine Gland Steam System
    c. Spent Fuel Cooling System
5. Emergent Issues
6. Action Item Review
7. PHC Member Discussion

The System Engineer for each of the above systems discussed his/her system using the System Health Report as a basis. The health of the above systems was as follows:

System	Unit 1	Unit 2
Steam Generator Blowdown	Green	Green
Comments:	None	
Turbine Gland Steam	Green	Green
Comments:	1. MSR Tube Bundle Partition Plate gaskets have experienced some failures. 2. Flow control valve needs replacement due to internal parts damage. 3. 35‰ steam dump valves being	

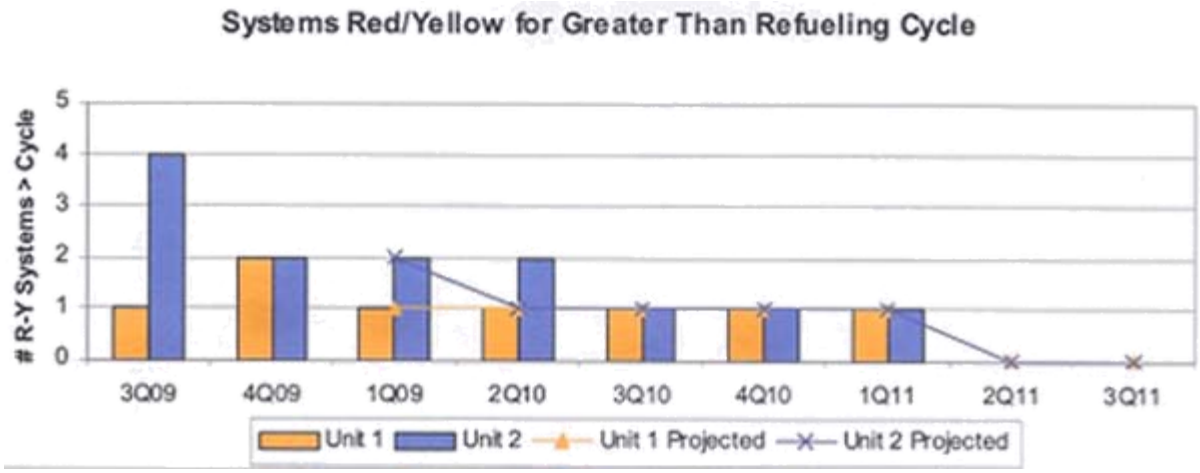
	eliminated to reduce maintenance and operating costs.	
Spent Fuel Cooling System	Green	Green
Comments:	1. Heat exchanger inspections successful. 2. HX outlet valves showing some wear and will be replaced. 3. Portable backup Spent Fuel Pool cooling system procured and available. 4. Minor SFP pump bearing oil leakage. 5. Skimmer pumps have some seal leakage. 6. Wide-range level instrumentation to be added based on insights from the Fukushima accident in Japan.	

The PHC discussed systems in Yellow and Red health. There were no Red systems. The Yellow systems were:

System	Months Unhealthy	Expected Return to Healthy
Unit 1 Circulating Water	7	10/2011
Unit 1 Reactor Coolant	1	1R17
Unit 1 Emergency Diesel Generator	7	4/2012
Unit 1 HVAC	1	9/2011
Unit 1 4kV (relay replacements)	16	1R18
Unit 2 Circulating Water	7	10/2011
Unit 2 Emergency Diesel Generator	7	4/2012
Unit 2 HVAC	2	11/2011
Unit 2 Nuclear Instrumentation	4	7/2011
Unit 2 4kV (relay replacements)	16	2R17

Actions were in-place to resolve each of the above unhealthy system items. These were included on the DCPP Tactical List.

The PHC appears to be making progress in reducing the numbers and durations of Red and Yellow systems as shown in the following chart.



Conclusion:

The Plant Health Committee continues to show improvement by focusing its resources on system and component health. The August 2011 meeting was successfully carried out with system health improvement as its top priority.

Recommendations:

None

3.3 Santa Barbara County Emergency Planning

DCISC Fact-finding team met with Mike Ginn, Manager of DCPP Emergency Planning, and Jay McAmis, Emergency Manager for Santa Barbara County., The purpose was to provide Mr. McAmis with the DCISC's independent evaluations on DCPP emergency planning and radiation release modeling. Mr. McAmis was interested in these two aspects of DCPP operations as requested by the Santa Barbara Board of Supervisors:

- How is the plume modeling that is used for response planning purposes validated by an independent source?
- What independent body evaluates the seismic studies impacting the Diablo Canyon Power Plant (DCPP)?

The DCISC Fact-finding Team provided the following information to Mr. McAmis regarding Question 1:

- DCPP is the only reactor site in the nation that has an independent, state-appointed safety review committee, and as such, has historically undergone additional plant safety scrutiny since it was built.
- DCPP has complex terrain, which makes the dispersion patterns of any release complex. DCPP uses the most advanced plume modeling system used in the industry, MIDAS II, which incorporates nine different meteorological data sets that match DCPP's geographical location.
- DCPP has deployed 13 fixed Pressure Ionization Chambers (PICs) throughout San Luis Obispo County to capture real-time plume monitoring to use with existing plume models. These are in addition to the required Field Monitoring Teams. PICs are not standard at every power plant.
- Four distinct plume-modeling systems used by three separate agencies are part of an elaborate peer review process in response planning.
- The DCISC has reviewed/observed all aspects of DCPP emergency planning for over 20 years and has found them satisfactory, including as recently as within this past year.
- Overall, DCPP's approach to plant safety is considered by the DCISC to be conservative.

The DCISC Fact-finding Team provided the following on Question 2:

- The lead agency in evaluating all seismic issues is the U.S. Geological Survey. For nuclear power plants, the Nuclear Regulatory Commission has regulatory responsibility for seismic acceptance/approval.
- Evaluation of all seismic data is a peer-reviewed collaborative process, which includes leading experts from public, private and academic organizations.
- Consensus on seismic hazards is primarily achieved by using what's called the Probabilistic Seismic Hazard Analysis (PSHA) methodology developed by the Senior Seismic Hazard Analysis Committee (SSHAC) in 1997. PSHA is a rigorous peer-review process and the so-called SSHAC methodology is now an international standard.
- USGS has been monitoring the Hosgri Fault zone with separate equipment and scientists since the original seismic study was conducted.
- The raw data for the Shoreline fault was captured by USGS at the same time as DCPP scientists and evaluated using the SSHAC methodology.
- Recent ground motion studies conducted with updated equipment and analysis methods show smaller ground motion values at the DCPP site than previously believed.
- Peer review of all seismic data is a rigorous program of study by research units within the California UC system, primarily at UC Berkeley and UC Los Angeles and is reviewed periodically by DCISC.
- Current seismic studies of the Hosgri/Shoreline fault zones, including the new 3D modeling, use the latest technology available and are due to be completed within a year.
- DCISC is confident that all DCPP seismic studies are part of the most rigorous and extensive peer-review system in the world.

Conclusions:

- In addition to NRC and the DCISC, plant operations have garnered high ratings from the Institute for Nuclear Power Operations (INPO), an independent, not-for-profit organization charged with evaluating plant operations throughout the nation.
- For over 20 years the DCISC has concluded that DCPP has operated safely, including its emergency planning and seismic capability.

Conclusion:

The DCISC Fact-finding Team (FFT) met with the Santa Barbara Emergency Manager to provide information about DCPP in two areas: (1) plume modeling for potential radiation releases, and (2) independent review of seismic studies. The DCISC provided information that appeared to be satisfactory to the Emergency Manager.

Recommendations:

None

3.4 DCPP Conversion to National Fire Protection Association Standard NFPA 805

The DCISC Fact finding team met with Paul Bemis, Internal DCPP Consultant, to discuss the progress being made to convert the NRC regulatory fire protection program at Diablo Canyon from its current requirements under 10CFR50 Appendix R to the new optional approach that implements the National Fire Protection Association Standard NFPA 805. After the NRC changed its regulations to allow such a conversion to NFPA 805, more than half of the US nuclear plants undertook to make the conversion of their fire-protection programs. DCPP committed to the transition in December 2005, and must submit its request to amend its NRC license by June 2013.

The DCISC last reviewed this topic during its Fact Finding meetings on January 25, 2011 (Reference 6.4), when it concluded:

> *Conversion to National Fire Protection Association Standard NFPA 805 is an immense, complex, analytical effort requiring specialized skills and knowledge in Probabilistic Risk Assessment, fire protection systems, and the operation of plant safety systems. DCPP appears to be adequately implementing this program; hence, the DCISC should defer further review of this matter until after the station receives NRC approval of its License Amendment Request. Then the DCISC should focus its fire protection reviews on any future plant vulnerabilities that may be identified by the implementation of this program and its methodologies.*

The main difference between the older and the new NRC regulatory approaches is that the NFPA 805 approach is performance-based, allowing the fire protection program to modify its scope and depth of coverage to emphasize those aspects of the program whose contribution to safety is more critical, with less emphasis on certain other aspects. The NRC's decision to allow a plant to comply with the changed regulations is based on the conviction that the new approach will achieve comparable safety, or in many areas improved safety, with a more transparent and reviewable program that is also more efficient.

The transition activity itself is complicated and extensive. It involves performing engineering analyses that include engineering evaluations, a fire PRA, and calculations that model fire growth and spread. Each plant must also evaluate changes to determine whether defense-in-depth and safety margins are maintained. For the resulting fire protection program, each plant must document the results of analyses, ensure the quality of the analyses, and maintain configuration control of the resulting plant design and operation.

A major aspect of the DCPP work to convert to NFPA 805 has been to develop a modern fire probabilistic risk assessment (PRA) that must to be used as an integral part of the plant's demonstration that it will meet the NFPA 805 requirements. That fire PRA, which has been undertaken by the DCPP staff in accordance with the ASME-ANS 2009 Combined PRA Standard, has been largely completed and is ready for use in this activity. It has also been the subject of an industry peer review that found it satisfactory.

One requirement for the conversion is that the core-damage frequency from internal fires, as analyzed in the fire PRA, is at or below 5×10^{-5} per year. Some of the modifications (see below) are

needed to meet this goal.

This Fact Finding review consisted of a progress report that described the completion of the fire PRA in October 2010 and the subsequent peer review that gave if very high marks. One of the outcomes of the fire PRA is the identification of areas where a plant change – either a configuration change, a procedure change, or another fire-protection program change -- is necessary to meet the new NFPA 805 regulation. Several modifications have now been identified, and the work is underway. For some of the changes, DCPP is moving ahead on its own (where it can, consistent with regulations), rather than waiting for the final submittal and NRC approval of the transition. This will provide improved safety or improved efficiency, or often both, without the delay that would ensue if the plant were to wait for its full regulatory approval for the conversion to NFPA 805.

Conclusion:

Conversion to an NRC fire-regulation regime under National Fire Protection Association Standard NFPA 805 is a very extensive and complex activity. Based on this review, DCPP appears to be adequately implementing this program. The DCISC should undertake a further review of this area when the plant has identified the important plant modifications (configuration, procedures, training, etc.) required for the conversion, and they are therefore ready for DCISC review. In the future, the DCISC should focus its fire protection reviews on any future plant vulnerabilities that may be identified by the implementation of this program and its methodologies.

3.5 Licensed Operator Training

The DCISC Fact-finding Team attended and observed a Licensed Operator Continuing Training Class on Extreme Damage Mitigation Guidelines (EDMGs). The DCISC last observed a licensed operator training class in March 2010 (Reference 6.5) when it concluded the following:

> *The Simulator training of DCPP Operator "E" Crew was well planned and executed. The instructors were prepared and knowledgeable of the events, procedures, and plant response. The operators responded properly to the events, used the correct procedures, used appropriate human error prevention tools, and participated effectively in the discussions.*

The DCPP EDMGs provide initial guidance for the Emergency Response Organization (ERO) to respond to a beyond-design-basis event such as a fire or explosion that could damage a large area of the plant, resulting in a loss of plant control or monitoring capability. The Guidelines also aid in determining short-term mitigation strategies, which can be utilized by the ERO to stabilize the situation or delay event degradation, while long-term strategies are being developed. EDMGs are implemented only if control of the plant cannot be established from the Control Room or the Hot Shutdown Panel, or if damage has occurred to the Spent Fuel Pool (SFP) that results in leakage greater than the capability of normal make-up to the SFP. The EDMGs include the following:

1. Fire System Management Strategies

2. Internal Spent Fuel Pool Makeup
3. External Spent Fuel Pool Makeup
4. Spent Fuel Pool Cooling via Spray
5. Spent Fuel Pool Leakage Control Strategies
6. Refueling Water Storage Tank Makeup
7. Makeup to Condensate Storage Tank
8. Manually Depressurize the SGs to Minimize RCS Inventory Loss
9. Manual Operations to Control Steam Generator Water Level
10. Use of Fire Engine to Supply Water to Steam Generators
11. Containment Flooding with Portable Pump
12. Vent Containment
13. Start Diesel Generator without DC Power
14. Portable Sprays

The instructor, in accordance with the lesson plan, began the discussion with the earthquake and tsunami damage and corresponding response at the Japanese Fukushima Plant in March 2011. Then, the following guidelines were discussed:

1. Locally start the Emergency Diesel Generator with no DC power
2. Operate the Backup Spent Fuel Cooling System
3. How to manage Firewater System inventory to provide water for plant cooling
4. Providing temporary ventilation for the switchgear rooms
5. Operation of the Diesel-driven Long-Term Cooling Water Pumps

Following the classroom session, the instructor led the students on an In-Plant Walkdown of EDMG Equipment; however, the DCISC did not observe this part of the training. This included hands-on familiarization of the following "how tos":

1. Operate motor-operated valves using electrical contactors
2. Vent Containment
3. Control SFP leakage
4. Trip the reactor by de-energizing rod control circuits
5. Fill the SFP from the Firewater System both internally and externally
6. Spray the SFP using the fire engine
7. Spray the SFP using the crane boom
8. Suppress a radioactive breach of Containment using fire water

9. Isolate a damaged fire water header
10. Align temporary ventilation to the Vital 48V switchgear room

Conclusion:

The Licensed Operator Continuing Training Class and subsequent equipment walkdowns on Extreme Damage Mitigation Guidelines were professionally and effectively taught. The instructor was knowledgeable and engaging, the class materials were appropriate, and the students were knowledgeable and participated actively.

Recommendations:

None

3.6 Equipment Reliability

The DCISC Fact-finding Team met with Pat Nugent, Manager of Technical Support Engineering, and Ken Bych, Engineering Supervisor of Reliability and Program Engineering, for an update on DCPP Equipment Reliability (ER). The DCISC last reviewed ER in August 2010 (Reference 6.6) and concluded:

> *DCPP appears to be managing the Equipment Reliability (ER) Program well based on the ER Program health report improving from Yellow to White in the 2nd quarter of 2010 and the potential to return to Green in the 1st quarter of 2011. ER at DCPP has improved as a result of the Preventative Maintenance (PM) Program and the PM Optimization. The next area to be included in the ER program is critical spares and critical spare management. They have just started on the program and it will take 2 to 3 years to complete. DCISC should follow the addition of the critical spares and critical spare management to the ER program.*

The DCPP ER Program Health Report showed the program to be in White (satisfactory) health. The program was not in Green health due to the following White program cornerstone issues:

- Outage performance was greater than 50‰ over original goals for scope, dose, budget, or duration.
- Operating Experience Implementation – a corrective action implementation plan is not in place.
- The ER Index is White.
- Adverse trends

The ER Index for the Second Quarter 2011 is shown below.

Data, DCPP Unit 1 and Unit 2

This Index measures 19 leading and lagging indicators in the following areas with various weighting factors:

- Electric Generation – Forced Loss Rate, Unplanned Power Changes per 7000 Hours Critical, and Post Refueling Outage Performance
- Challenges to Operations – Unplanned LCO Entries, Operator Workarounds, and High Critical Component Failures
- System Health – Safety System Unavailability – MSPI, System Health Action Effectiveness
- Maintenance – Corrective Critical Work Backlog (Non-outage), Deficient Critical Work Backlog (Non-outage), Deferral of Preventive Maintenance (PM), Maintenance Feedback, and Timely Completion of Critical PMs
- Work Management – Work Week Scope Survival and Work Week Schedule Completion
- Long-Term Planning – Long-Term Plan Implementation Effectiveness and Age of Red and Yellow Systems
- Monitoring and Trending – Chemistry Effectiveness
- ER Process – PM Program Bases

The Index had been White for both units through the Fourth Quarter 2010, when Unit 1 became Green in the First Quarter 2011 and Unit 2 Green in the Second Quarter.

Of the 19 indicators, the following are White, along with dates to re-gain a full (green) rating:

Indicator	Estimated Date for Green
Unit 2 Forced Loss Rate	3Q2012 (3rd quarter 2012)
Unit 1 Unplanned Power Changes Per 7000 hours critical	4Q2011
Unit 2 High Critical Component Failures	3Q2011
Unit 2 Deferral of PMs	3Q2011

Three primary Action Plans have been initiated:

1. Evaluate the adverse trend in critical equipment failures and Clock Resets – this has been completed, and the Corrective Action Review Board (CARB) has approved an Action Plan.
2. Evaluate the adverse trend in the Balance of Plant (BOP) System Performance – this has been completed, and the CARB has approved an Action Plan. A Phase II evaluation is in progress.
3. Evaluate the ERI sub-indicator PM Deferral, updated to include the First Quarter 2011 Unit 2 performance – complete.

The DCISC Fact-finding Team reviewed the Action Plan for the Adverse Trend in the BOP Systems. The Action Plan was the result of a STARS (Strategic Teaming and Resource Sharing) assessment. The Plan consisted of 14 recommendations as follows to reduce system leaks:

1. Improve the procedure for torquing/re-torquing bolted connections
2. Revise piping specifications to require Engineering approval when changing gasket material
3. Use hardened washers more widely on bolted connections
4. Revise the procedure specifying bolting torque values to require checking against manufacturer specifications to assure proper gasket compression
5. Add thread sealant specifications to the piping specification
6. Evaluate hot re-torquing for newly installed bolting to help reduce the number of leaks by eliminating gasket creep
7. Provide added specification of gasket types/materials
8. Perform a training needs assessment for Engineering and Maintenance on gasket and packing practices
9. Evaluate the purchase of the EPRI Flange Bolting Performance Demonstration Unit to demonstrate bolting good practices
10. Revise the valve packing procedure to include additional steps and rigor in the valve packing process
11. Re-evaluate delayed or previously rejected Single Point Vulnerabilities (SPVs) – other plants have found that using modifications to eliminate SPVs works best, whereas DCPP has implemented fewer modifications than most
12. Perform a multi-discipline team review of two BOP systems which have contributed to plant scrams
13. Request an INPO assist visit for BOP systems
14. Evaluate a potential adverse trend in non-leakage Air-Operated Valve issues

These actions appeared appropriate to reduce the number of BOP flanged joint leaks.

Conclusion:

DCPP has an aggressive Equipment Reliability Program, which has been producing good results.

DCPP has effective measures and has corrective actions to correct problem areas.

Recommendations:

None

3.7 Training Oversight Committee

The DCISC Fact-finding Team attended and observed a meeting of the DCPP Training Oversight Committee (TOC). This was the first time the DCISC has observed this committee.

The TOC is a site level committee providing senior management oversight, direction, support, and accountability for the implementation and maintenance of all site accredited and non-accredited training programs. The TOC also provides oversight of station performance and direction as to how training may be used to improve station performance. The Site Vice-President chairs the TOC. Two other related committees are the Training Advisory Committee, a department level committee to evaluate program effectiveness, improve performance, and ensure compliance with accreditation objectives. The Curriculum Review Committee is a working level committee that determines the details of a training program to ensure that incumbents receive the training needed to maintain and improve their performance. Each of these committees meets at least quarterly. These committees have charters contained in DCPP Interdepartmental Administrative Procedure TQ2.ID7, "Training Committee Guidance."

The August 10, 2011 TOC meeting met using the following charter:

1. Safety Discussion
2. Review and Approve Previous TOC Minutes
3. Status Open Action Items
4. Qualification Issues
5. Selected Training Program Review and Challenges
    a. Initial License Operator Training – L091 NRC Exam Status
    b. Licensed Operator Continuing Training – reschedule annual exam to 1/9/2012
    c. Shift Technical Advisor
6. Review Training Accreditation Renewal Activities
7. Discuss Site Training Planning and Issues – Training Building Roof Repairs
8. Review Selected TOC Performance Indicators
    a. Review station performance gaps and training needs
    b. Learning Services Health Card
9. Review Other Topics of Discussion

10. Review New Action Items
11. Conduct a Plus/Delta Critique of the TOC Meeting
12. Schedule Next Meeting
13. Executive Session

The DCISC Fact-Finding team observed Agenda Items 1 – 5 and found that the TOC performed a detailed, thorough presentation and review of the training programs specified. The discussions went into appropriate detail, and probed for additional specifics in some areas. Attendance was good, and the discussions/questions were focused and penetrating.

Conclusion:

DCPP's August 10, 2011 Training Committee Meeting was well planned and executed. The agenda topics were appropriate and timely. The attendee participation was good, and questions were thoughtful.

Recommendations:

None

3.8 2010 Radiological Environmental Monitoring Report

The DCISC Fact-finding Team met with Tim Irving, Radiation Protection (RP) Manager, and Marty Wright, RP Senior Engineer and Owner of the Radiological Environmental Monitoring Program (REMP), to discuss the 2010 REMP Report to NRC. The DCISC last reviewed this topic in July 2011 (Reference 6.7), concluding the following:

> *DCPP's 2010 total liquid and gaseous radiological releases were very small fractions of amounts permitted by regulations and Technical Specifications. The Radiological Environment Monitoring Program confirmed that the operation of DCPP had no significant radiological impact on the environment in 2010.*

The REMP monitors/samples the following pathways:

- Direct radiation – 31 measuring stations using thermo-luminescent dosimeters (TLDs)
- Airborne radioactivity
- Waterborne radioactivity
- Marine biological, beach sand, and ocean sediment
- Food crops
- Milk
- Meat

The 2010 Annual Radiological Environmental Operating Report was approved on April 18, 2011 and

submitted to NRC soon thereafter. The report stated, "The results of the 2010 REMP showed no unusual findings from site operations. These results were also compared to preoperational data and showed no unusual trends." The report further stated the following:

- Site operations had no significant impact on:
  - Airborne radioactivity in the environment
  - Surface water radioactivity
  - Drinking water radioactivity
  - Marine life radioactivity
  - Aquatic or terrestrial vegetation radioactivity
- The ambient direct radiation levels in the DCPP environs did not change and were within the preoperational range
- Food crops, milk, and meat samples detected only naturally occurring radioactivity, and therefore had no impact from site operation
- Concentrations of Tritium were detected in three monitoring wells beneath the DCPP power block. The Tritium is attributed to rain washout of gaseous Tritium exiting the plant vent system (via an approved discharge path). [The groundwater at DCPP is not currently used as a source of drinking water but flows into the Pacific Ocean.]

The above report conclusions apply to the power station proper as well as the Independent Spent Fuel Storage Installation (ISFSI) and Old Steam Generator Storage Facility.

The Fact Finding team discussed several issues among the many in the report, and found the knowledge and responsiveness of the DCPP staff to be satisfactory.

Conclusion:

DCPP's Radiological Environmental Monitoring Program (REMP), a comprehensive system of radiological monitoring and sampling, concluded that DCPP operations showed no unusual trends compared to preoperational data and had no significant radiological impact on the environment.

Recommendations:

None

3.9 Second Quarter 2011 Quality Verification Site Status Report

The DCISC FFT met with Dennis Petersen, Director of Quality Verification, to discuss the most recent Quality Verification Site Status Report (QVSSR). The DCISC last reviewed the Quality Verification status at its June 20-21, 2011 Public Meeting (Reference 6.8).

The QVSSR reported the following:

1. QV Director Top Three Concerns

    a. Maintenance – untimely and inadequately documented responses to QV audits related to rework, Seismically Induced System Interactions (SISI), supplemental personnel, and Foreign Material Exclusion (FME) programs. Maintenance Services has developed action plans to address these items. The plans were satisfactory to QV; however, QV will follow up.

    b. Human Performance (HU) – three loss of start-up power events occurred during Outage 2R16 due to human error. Operations and Strategic Projects have not met their HU goals for the past six months. Plant misposition performance has not met its goal for nearly a year. Three of the four components in the HU area are Red in the NRC crosscutting aspect dashboard. Final corrective actions from a root cause evaluation are expected to be completed in September 2011, and QV plans to follow up.

    c. Security Programs – a QV audit determined that Security training is not being conducted in accordance with the systematic approach to training (SAT) process. Initial training of Security instructors has not been completed. Security management needs to better manage the procedure upgrade project. QV identified a gap in guidance on configuration control of security barriers during outages. Security holding areas have longstanding uncorrected deficiencies, including ventilation, sinks, drains, air-conditioning units and windows.

2. QV Issues in Elevation/Escalation

    a. First Level Escalation – untimely completion of required site emergency signal testing. This has been completed, and maintenance of the signals has been institutionalized. Item closed.

    b. First Level Escalation – untimely resolution of internal independent oversight findings in Maintenance Services, which have been outstanding for two years.

3. QV Issues and Trends

    a. Engineering Programs – adverse trends in training attendance, leadership/accountability, and untimely closure of Corrective Action Program (CAP) items.

    b. Operations – outage schedule delays were caused by delayed equipment clearances, long-standing equipment issues presented challenges (Plant Process Computer, fire computer).

    c. Outage Management – numerous schedule deficiencies in 2R16, excessive number of outage safety schedule changes made, and inadequate outage testing contingency planning.

    d. Problem Prevention and Resolution – untimely root cause evaluations (RCEs) and apparent cause evaluations (ACEs) were due to the limited number of analysts. Outage trend data not effectively communicated during 2R16.

    e. Radiological Contamination Management – an adverse trend in radiological worker

practices was identified due to lack of awareness and enforcement of radioactive materials tagging and handling.

f. Chemistry – weaknesses in the use of the Corrective Action Program by the technical staff.

Cause evaluations and/or corrective actions were in place for the above issues and trends.

Conclusion:

DCPP Quality Verification (QV) is aggressive in identifying quality problems and adverse trends and following up on corrective actions. The Site Status Report is an effective tool for communicating the major quality issues to management in a concise manner.

3.10 Premier Survey

Due to the sensitive nature and confidentiality of Premier Survey data/results, only an overview of the information is presented.

The DCISC Fact-finding Team met with Jacqui Hinds, DCPP Chief of Staff, to review the results of the most recent Premier Survey conducted in 2010. The DCISC last reviewed this topic in August 2010 (Reference 6.9), concluding:

The Premier Survey, like other employee surveys conducted on a regular basis, remains effective both because of being a communication tool between management and employees and because of its measure of employee thinking, and it should be continued. To the extent that this company-wide survey communicates with company-wide management, it can play a special role. DCISC should review the actions taken as a result of the action plan developed to address this survey's findings.

The Premier survey is conducted periodically by PG&E company-wide, meaning that it covers a far wider scope than just the Diablo Canyon Power Plant. The prior Premier Survey was conducted in October 2009. The survey received wide participation among the DCPP employees, with 71% participation, which is considered excellent by PG&E personnel conducting the survey. DCPP participation for the 2010 survey was 57%.

DCPP measures the results of the survey with an Employee Engagement Index (EEI), which is an overall measure of employee opinions on job satisfaction, opportunity for advancement, management, training, adequacy of job tools and instruction, safety, etc. The EEI improved by 6% from the previous survey in 2009. Based on the survey results, Employee Engagement Plans are developed for each department at DCPP, e.g., Operations, Engineering, Maintenance, Security, etc. Plan focus areas include the following examples:

- Learning and Career Development – succession planning, performance management, training, industry participation, career path discussions

Systems, Processes and Policies – Continuous Simplification and Innovation (CSI) plans and actions, procedure improvement

- Leadership – improved communications, all hands meetings,
- Work Life Balance – reduce overtime, encourage more employee vacation vs. year-end vacation pay

A principal goal of the survey is to enhance company-wide communication in both directions, both from senior management to the employees and from the employees to the management. An emphasis has been placed on Continuous Simplification and Innovation (CSI) using the latest computer-based communications tools to reach everyone.

The next Premier Survey is scheduled for September 2011.

Conclusion:

DCPP uses the PG&E Company-wide Premier Survey to gauge employee satisfaction in the areas of learning and career development, systems/processes/policies, leadership, and work life balance. Each DCPP department develops an Employee Engagement Plan based on the survey results to improve its Employee Engagement Index rating.

Recommendations:

None

3.11 Robert Budnitz Meeting with Ken Peters, Vice-President of Engineering

DCISC Member Dr. Robert Budnitz met with DCPP Engineering Vice-President, Ken Peters, to discuss selected topics from this fact-finding meeting and other subjects of mutual interest.

3.12 Operator "No Solo" Status

The DCISC Fact-finding Team met with Paula Gerfen, Operations Services Manager, for an update on operator fitness and "no solo" status. The DCISC last reviewed this topic in November 2007 (Reference 6.10), when it concluded the following:

> *DCPP Operations appears to be planning appropriately for staffing, training and licensing new personnel to adjust for attrition and transfers to other plant departments. Changes are being made to new license class training to assure a high pass rate on NRC operator licensing exams. The number of operator "no solos" (limitations on operators abilities due to health reasons) are trending down, a positive trend, and do not pose a risk to effective plant operations.*

Operator "no solo" limitations (i.e., operators not being able to work alone due to health reasons (mostly fitness-related cardiovascular) have the potential to adversely affect the capability of the operations crew. "No solo" status is a factor mainly for control operators who go out into the plant

as a normal part of their duties, rather than licensed operators who work in the Control Room.

The DCISC has been following this subject at DCPP and its concern centers around having enough "solo" operators during emergency situations. DCPP has never approached having a significant problem with its numbers of "no solos". The trend in numbers of "no solo" DCPP operators for all five shifts is as follows:

Time Period	No. of "no solos"
Year-end 2001	18
Year-end 2003	14
September 2005	10
November 2007	7
August 2011	6

This is a positive trend. Ms. Gerfen had no concerns regarding the number of "fit" operators to handle any plant situation, including emergencies.

Conclusion:

The number of DCPP "no solo" operators (i.e., operators who cannot work alone on shift due to health limitations) has steadily declined in the last ten years, which is a positive trend. The current number is six, which does not adversely the operating crews' ability to handle normal or emergency situations.

Recommendation:

None

3.13 Reactivity Management

The DCISC Fact-finding Team met with Paula Gerfen, Operations Services Manager, for an update on DCPP Reactivity Management (RM). The DCISC last reviewed RM in May 2010 (Reference 6.x) concluding:

> *The DCPP Reactivity Management Program appears to be healthy and effective in that there have been no recent minor or significant reactivity events and RM performance measures have been high and improving.*

Reactivity is defined in DCPP's RMP procedure as "the fractional change in neutron population from one neutron generation cycle to the next, or the measure of departure from criticality." In general, it is a measure of the potential for a nuclear core to increase or decrease in its chain reaction rate or power level. It is important to control reactivity in order to maintain safe control of the nuclear reactor itself.

The DCPP RMP is controlled by Procedure OP1.ID3, "Reactivity Management Program." This procedure is in alignment with the latest Institute of Nuclear Power Operations (INPO) standard for

RM event classification and performance indicators. The program defines the roles, responsibilities and actions associated with the control of reactivity to ensure safe and reliable operation. It provides the guidance to ensure that all plant evolutions affecting reactivity will be controlled, safe, and conservative. The goal of the Reactivity Management Program is to prevent reactivity events. The procedure states

> *The Reactivity Management Program ensures conservative reactivity management by promoting a reactivity conscious culture when operating and maintaining the plant, and by providing reactivity management expectations and standards. The standards are derived from industry standards and reactivity management experience. The proper control of core reactivity and spent fuel has been a long-standing fundamental principle in maintaining nuclear plant safety and reliability.*

The procedure appeared appropriate for an effective reactivity management program at DCPP.

The Operations Manager is responsible for plant reactivity management, including the direct control of reactivity, and for ensuring conservative actions with regard to nuclear fuel integrity during operations, fuel handling, and storage. He/she has the single-point accountability for operational decision-making associated with reactivity management and is responsible for the overall implementation of the Reactivity Management Program and the Reactivity Management Leadership Team (RMLT). The RMLT is a team of individuals representing Operations Services, Maintenance Services, Engineering Services, Learning Services, and the Corrective Action Program. The team reviews reactivity events and adverse trends to identify needed corrective actions and recommend additional training or qualification for groups that can affect reactivity.

RMLT activities include the following:

a. Develop and implement reactivity management performance indicators.
b. Review the following areas for reactivity events, adverse trends, and needed corrective actions or opportunities for Reactivity Management Program improvements:
    - Notifications and event trend records
    - Reactivity Management Program performance indicators
    - Plant and industry operating experience, self-assessment recommendations and benchmarking trip lessons learned
    - Maintenance schedules and corrective maintenance backlogs
    - Licensed operator initial and continuing training
c. Classify and categorize reactivity events.
d. Recommend additional training or qualification for groups that can affect reactivity to improve performance.

Reactor Operators (ROs) and Senior Reactor Operators (SROs) are responsible for implementing

the Reactivity Management Program, including (1) ensuring that expected responses to a reactivity change are identified and fully understood prior to initiating any action that affects reactivity, (2) closely monitoring appropriate indications for reactivity changes to verify the expected magnitude, direction, and effects, (3) remaining alert for situations that could affect reactivity, and initiating appropriate conservative corrective actions, (4) reducing reactor power or tripping the reactor without the concurrence of the unit Shift Foreman or reactivity SRO when the reactor operator deems that the action is immediately necessary to protect the reactor core, and (5) maintaining the reactor core parameters within established limits.

Reactor Engineering provides technical support for the RMP and a Reactor Engineering representative to the RMLT. Reactor Engineering is responsible for providing reactivity management recommendations to Operations with the greatest emphasis on reactor safety, based on the most accurate core information available.

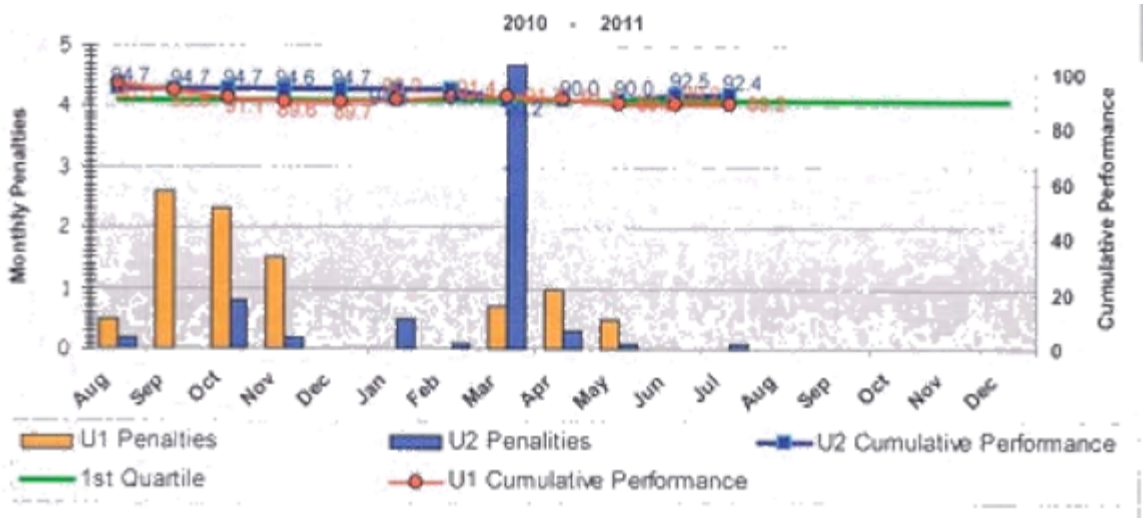
Reactivity manipulations for the operation of Control Rods, Reactor makeup control, and Main Turbine control are described and controlled by procedure. Other system operations, surveillance test procedures or maintenance activities that may affect reactivity are required to be preceded by an operating crew reactivity brief to ensure that the reactivity impact is understood and managed. Examples include starting a Reactor Coolant Pump, manual control of Steam Dump Valves, paralleling or stopping a Turbine Generator, Main and Auxiliary Feedwater Pump operational changes at power, and core offload and reload.

The Shift Foreman conducts reactivity briefs at the beginning of each operating shift, prior to planned plant evolutions, and following plant transients. Reactivity briefs include a review by the operator at the controls of expected control rod movement, Reactor Coolant System boron level dilutions and increases and turbine load changes anticipated to maintain or establish desired plant conditions. The beginning of shift reactivity brief includes all control room licensed operators for the unit and a review of the Reactor Engineering Reactivity Briefing Sheet. Reactivity manipulations require oversight by an active SRO, normally the unit Shift Foreman. The operator at the controls must obtain SRO approval and oversight for each reactivity manipulation during normal operation. Activities that might distract the operator at the controls are suspended during reactivity manipulations.

The DCISC Fact-finding Team reviewed the December 2009 and March 2010 RMLT minutes. The RMLT began meeting quarterly instead of monthly beginning in June 2010. Operations reported on refinements to the preplanned reactor ramp (power increase or decrease) plans and requested Reactor Engineering's evaluation of BEACON Code Boron predictions for ramp plans. Reactor Engineering reported that both units were operating without fuel failures. Learning Services reported on Simulator training provided to operators in advance of plant reactivity changes for a load decrease to 770MWe for a shutdown Heater Drain Pump and a ramp to 50‰ power for Condenser Circulating Water tunnel cleaning. Simulator training was also given for potential future rapid load changes.

The DCPP RM Program appears to be healthy and effective, although the Unit 1 RM Performance Indictor is White (satisfactory) but almost Green (89.2 vs. 90.0 for Green) due to some 2010 events.

Unit 2 is just Green (90.0). There have been no recent significant reactivity events, the performance indicators have been stable for Unit 1 and slightly declining for Unit 2, and the program has had no negative reviews by NRC, INPO, or internally by audits or self-assessments.



Conclusion:

The DCPP Reactivity Management (RM) Program is generally satisfactory; however, Unit 1's performance indicator is White (satisfactory) but almost Green, and Unit 2 is just Green (good) but almost White. An action plan is in effect to improve the indicators. The DCISC should review the action plan and indicators at its next RM review.

4.0 Conclusions

4.1

The PG&E technical studies of both the tsunami hazards and the seismic hazards (emphasizing the Shoreline Fault) are proceeding in an orderly way, indeed very quickly. The technical quality seems to be exemplary. Their progress to date has been substantial on both topics, and their increased understanding has helped both the DCPP team and the NRC to understand these issues more fully. The DCISC will definitely continue to follow both of these topics over the next year or more as the PG&E studies proceed.

4.2

The Plant Health Committee continues to show improvement by focusing its resources on system and component health. The August 2011 meeting was successfully carried out with system health improvement as its top priority.

4.3

The DCPP Fact-finding Team (FFT) met with the Santa Barbara Emergency Manager to provide information about DCPP in two areas: (1) plume modeling for radiation releases, and (2) independent review of seismic studies. The DCISC potential provided information that appeared to be satisfactory to the Emergency Manager.

4.4

Conversion to an NRC fire-regulation regime under National Fire Protection Association Standard NFPA 805 is a very extensive and complex activity. Based on this review, DCPP appears to be adequately implementing this program. The DCISC should undertake a further review of this area when the plant has identified the important plant modifications (configuration, procedures, training, etc.) required for the conversion, and they are therefore ready for DCISC review. In the future, the DCISC should focus its fire protection reviews on any future plant vulnerabilities that may be identified by the implementation of this program and its methodologies.

4.5

The Licensed Operator Continuing Training Class and subsequent equipment walkdowns on Extreme Damage Mitigation Guidelines were professionally and effectively taught. The instructor was knowledgeable and engaging, the class materials were appropriate, and the students were knowledgeable and participated actively.

4.6

DCPP has an aggressive Equipment Reliability Program, which has been producing good results. DCPP has effective measures and has corrective actions to correct problem areas.

4.7

DCPP's August 10, 2011 Training Committee Meeting was well planned and executed. The agenda topics were appropriate and timely. The attendee participation was good, and questions were thoughtful.

4.8

DCPP's Radiological Environmental Monitoring Program (REMP), a comprehensive system of radiological monitoring and sampling, concluded that DCPP operations showed no unusual trends compared to preoperational data and had no significant radiological impact on the environment.

4.9

DCPP Quality Verification (QV) is aggressive in identifying quality problems and adverse trends and following up on corrective actions. The Site Status Report is an effective tool for communicating the top major quality issues to management in a concise manner.

4.10

DCPP uses the PG&E Company-wide Premier Survey to gauge employee satisfaction in the areas of learning and career development, systems/processes/policies, leadership, and work life balance. Each DCPP department develops an Employee Engagement Plan based on the survey results to improve its Employee Engagement Index rating.

4.11

The number of DCPP "no solo" operators (i.e., operators who cannot work alone on shift due to health limitations) has steadily declined in the last ten years, which is a positive trend. The current number is six, which does not adversely the operating crews' ability to handle normal or emergency situations.

4.12

The DCPP Reactivity Management (RM) Program is generally satisfactory; however, Unit 1's performance indicator is White (satisfactory) but almost Green, and Unit 2 is just Green (good) but almost White. An action plan is in effect to improve the indicators. The DCISC should review the action plan and indicators at its next RM review.

5.0 Recommendations:

None

6.0 References

6.1

"Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume II, Exhibit D.5, Section 3.3 "Shoreline Fault status."

6.2

"Diablo Canyon Independent Safety Committee Fifteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2007 – June 30, 2008", Approved October 17, 2008, Volume II, Exhibit D.5, Section 3.3 "Shoreline Fault Status."

6.3

"Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume II, Exhibit D.7, Section 3.2 "Plant Health Committee (PHC) Meeting."

6.4

Ibid., Volume II, Exhibit D.8, Section 3.2 "DCPP Conversion to National Fire Protection Association (NFPA) Standard 805."

6.5

"Diablo Canyon Independent Safety Committee Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 – June 30, 2010", Approved October 16, 2010, Volume II, Exhibit D.7, Section 3.11 "Operator Simulator Training."

6.6

"Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume II, Exhibit D.2, Section 3.2 "Equipment Reliability."

6.7

"Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October XX, 2012, Volume II, Exhibit D.1, Section 3.4 "Annual Radiological Release Reports."

6.8

"Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume II, Exhibit B.9, "Quality Verification (QV) Organization's Perspective on Plant Performance, the Quality Performance Assessment Report (QPAR) and QV's Top Issues."

6.9

Ibid., Exhibit D.2, Section 3.6, "Premier Survey Action Plan."

6.10

"Diablo Canyon Independent Safety Committee Fifteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2007 – June 30, 2008", Approved October 17, 2008, Volume II, Exhibit D.4, Section 3.11 "Operator Training, Fitness and Aging."

6.11

"Diablo Canyon Independent Safety Committee Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 – June 30, 2010", Approved October 16, 2010, Volume II, Exhibit D.9, Section 3.3 "Reactivity Management."

22nd Annual Report, Volume 2, Exhibit D.3, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on September 7 – 8, 2011 by Robert J. Budnitz, Member, and David C. Linnen, Consultant

1.0 Summary

The results of the September 7 – 8, 2011 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 are as follows:

1. Operations Group's Use of the Station Probabilistic Risk Assessment (PRA); Status of Converting to Safety Monitor
2. Critical Equipment Event Clock Resets
3. Benchmarking Activities
4. Auxiliary Feedwater (AFW) System Review
5. Emergency Diesel Generators (EDG) Systems Review
6. Unit 1 Containment Concrete Inspection Results
7. Status of Large Station Transformers
8. Robert Budnitz Meeting with Jim Becker, Site Vice President
9. Status of Problem Evaluation Action Plan
10. Status of Engineering Organization
11. Update on Actions Stemming from Fukushima
12. Meeting with Nuclear Regulatory Commission (NRC) Senior Resident Inspector
13. Quality Verification (QV) Department's Assessment of Primary Equipment and Support Load Combinations Regarding Seismicity
14. Status of Performance Improvement (PI) Action Plan

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine ifPG&E's performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team's suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Operations Group's Use of the Station Probabilistic Risk Assessment (PRA); Status of Converting to Safety Monitor

The DCISC Fact-finding Team met with Rasool Baradarian, Probabilistic Risk Assessment (PRA) Supervisor, and Nathan Barber, Senior Engineer. DCISC last reviewed this general topic of PRA at its February 2011 Public Meeting (Reference 6.1) and last examined the specific topic of PRA's use by the Operations Group at its August 2010 Fact-finding Meeting (Reference 6.2) when it concluded the following:

> *"The Self-Assessment of Risk Management/Protected Equipment Results and of other activities of the PRA group was very effective. The purpose of this self assessment was to align Diablo Canyon with industry best practices for performing on-line risk assessment as required by 10 CFR 50.65(a)(4). The Key Finding was that the process for assessing and managing the risk related to on-line maintenance activities at DCPP was found to be well defined and consistent with paragraph (a)(4) of the Maintenance Rule. However, the program cannot be described as industry leading. There was one Strength and Positive Findings, two Areas for Improvement/ Gaps, and three Key Recommendations and Results Expected identified."*

Until recently, DCPP Operations had been using a software system known as ORAM, Outage Risk Analysis Maintenance, for managing on-line and shutdown risk. Another software tool with a similar purpose is Safety Monitor. Both ORAM and Safety Monitor are proprietary software tools used widely in the industry to evaluate the risk to nuclear safety posed by various plant, system, and equipment configurations, with Safety Monitor being a more recent and more advanced tool. Although ORAM has been widely used within the industry for many years, the vendor has stopped providing support, essentially driving the system toward obsolescence. Years ago, DCPP made a decision to convert to the more supportable program, Safety Monitor. However, the conversion process has taken longer than intended.

Initially, conversion to Safety Monitor was planned for the first two quarters of 2009. The DCISC has followed this process prior to and since that time. During this period, progress appears to have been affected by reduced staffing in the PRA group. In part because of the staffing difficulties,

during the transition process DCPP has utilized outside peer reviewers to assess how well DCPP is assessing risk via use of PRA. These external reviewers have indicated that, while DCPP's program for managing on-line risk was well defined and consistent with section (a)(4) of the Maintenance Rule, it was not considered to be industry leading "due primarily to not being a fully quantitative program, and due to a declining awareness of risk management status resulting from the program changes…" One of the comments from external reviewers also noted that "DCPP continues to use a blended (use of both quantitative and qualitative processes) approach to risk management. Industry leading performance for on-line risk management is to manage risk via a fully quantitative model. For DCPP this would be implementation of Safety Monitor with direct input of risk information from SAP Order Operation User fields."

DCPP has also conducted its own internal reviews of this area. On May 6, 2010, SAP Order 60025021 was written regarding an adverse trend in PRA risk identification. One of the recommendations noted a performance gap due to the use of ORAM. Another recommendation was to commence implementation of Safety Monitor, which, in this case, would serve to address performance gaps that involved the ability to display discussions of risk significant equipment in shift briefs and in Plan of the Day (POD) checklists.

During this September 2011 Fact-finding Trip, the DCISC Fact-finding Team was informed that Safety Monitor will soon replace ORAM on September 19, 2011 for both on-line risk assessment and shutdown safety modeling (both had been used in parallel during the transition process). (This was to be less than two weeks after the Fact-finding visit.) Both Operations and Work Control personnel will be using Safety Monitor to assess risk. There are several main distinctions between Safety Monitor and ORAM. One major distinction is the number of specific components that can be loaded into the system. ORAM has a limitation of two components, which allows the user to make a simple input and get a quick, simple output. In comparison, many specific components can be input into Safety Monitor since it provides a representative model of the system. However, the large amount of input can lead to information overload and confusion for the user. Therefore, DCPP purchased, and modified, an additional program called Risk Man to reflect how specific components would affect plant risk by being declared inoperable. Another distinction is that Safety Monitor has "remain in service" and "return to service" capabilities that allow assessment of these conditions from a risk perspective. While planning and executing the transition process, DCPP has used other plants as benchmarks for its activities, not only with regard to assessing risk, but also with regard to communicating the assessment of risk appropriately within the station.

Conclusion:

Although the transition from Outage Risk Analysis Maintenance (ORAM) to Safety Monitor has been a prolonged one, DCPP appears to be on the threshold of final conversion, now scheduled for September 19, 2011. While planning and executing the transition process, DCPP has appropriately and effectively used other plants as benchmarks for its activities, not only with regard to assessing risk, but also with regard to communicating the assessment of risk appropriately within the station. DCISC should review the effectiveness of DCPP's implementation of Safety Monitor during the second half of 2012 in order to assess how well the system was used during power operation as well as in shutdown conditions during refueling outage 1R17.

3.2 Critical Equipment Event Clock Resets

The DCISC Fact-finding Team met with Mark Baker, Senior Consulting Engineer, Equipment Reliability Group. This is the DCISC's first review of this topic.

A Critical Equipment Event is defined by the occurrence of any the following as the result of equipment failure:

- Automatic or manual unit trip
- Submittal of a Licensee Event Report to the Nuclear Regulatory Commission (NRC), i.e. the equipment failure results in an NRC reportable condition under 10CFR50.72 or 10CFR50.73
- Unplanned Entry into a Limiting Condition of Operation (LCO), i.e. the equipment failure directly results in an unplanned entry into a short (less than or equal to 24 hours) shutdown or derate Technical Specification Action Statement
- Unplanned Down-power, i.e. the equipment failure directly results in either an unplanned reduction in power greater than 2 percent or a forced unit outage.

DCPP records, evaluates, tracks, and trends all Critical Equipment Events at the station. Information regarding station performance in this area is also shared within a group of seven utilities known as the STARS Group (Strategic Teaming and Resource Sharing), although the reporting systems are not identical. DCPP's monthly Performance Indicator report shows the number of Events for each month on a Bar Graph. Since, these types of events typically occur infrequently, performance is assessed based on the number of events occurring on a rolling 12-month basis, i.e. the most recent 12 months. This assessment is graded as follows (where Green is considered Good):

- Green: Less than or equal to 6 events in most recent 12 months
- White: Less than or equal to 8 events
- Yellow: Less than or equal to 10
- Red: Greater than or equal to 11

The DCISC Fact-finding Team examined the most recent station-wide monthly performance indicator report, i.e. the Plant Performance Improvement Report (PPIR) (July 2011), with regard to DCPP performance on this topic. Station performance reported in July was rated White due to the fact that 8 Critical Event Clock Resets had occurred during the most recent 12 months. However, during the most recent 3 months of May, June, July there were zero clock resets, which demonstrates that sustained performance is required in order to show improvement in the rating scale.

Therefore, the DCISC Fact-finding Team examined clock resets on a monthly basis for the prior two years to try to ascertain any possible pattern of events or commonalities among the various clock resets. Also, the station's PPIR refers to the Corrective Program documents that analyze the causal factors for each Event Clock reset, and the Fact-finding Team reviewed a number of these

documents as well. No trends were found in the two years of Event Clock Resets. Rather, the station experienced alternating sustained periods of great success and periods where performance declined to some degree. Specifically, the grouping of Resets is shown below:

March 2009 – August 2009	(6 months)	8 resets
September 2009 – August 2010	(12 months)	2 resets
September 2010 – April 2011	(8 months)	8 resets
May (2011)	July (2011)	zero resets

The DCISC Fact-finding Team noted that during the period September 2010 through April 2011, fluid leaks appeared to be associated with a number of the Event Clock Reset conditions. The Fact-finding Team presented this observation to Mr. Baker and asked whether DCPP had examined this as a possible issue, along with the resurgence of Event Clock Resets during the period September 2010 through April 2011.

In response, Mr. Baker provided two Corrective Action Program Documents:

- Notification 50373593, title: Adverse Trend Critical Equipment Failures- Clock Resets, dated February 3, 2011, noted the reversal of a prior period of outstanding performance in this area. Among other things, this document refers to collaboration that is taking place among the STARS plants to identify corrective actions for addressing causes of Event Clock Resets and discusses the involvement of DCPP's Corrective Action Review Board (CARB) in this matter. Concurrence was provided on August 4, 2011 that this Notification could be closed because it is being completely addressed by the following document that was generated to address what was considered to be an unacceptable number Balance of Plant (BOP) system leaks.
- Notification 50380944, title: Adverse Trend – BOP System Performance noted the increase in the number of consequential leaks that had occurred at DCPP. Corrective actions that were identified included more effective inspections, and improvements in bolt torquing requirements for flanges and fasteners, and more effective use of packing, gaskets, washers, and sealants.

In addition, Mr. Baker provided the Fact-finding Team with a DCPP Equipment Failure Trend Report for the second Quarter of 2011, which evaluates a number of types of equipment failures, one of which pertains to those resulting in Event Clock Resets. Five Clock Resets had occurred in 2011up to the time of that report, and three of those were leaks. Corrective actions had been taken on all five.

Conclusion:

DCPP's performance with respect to Critical Equipment Event Clock Resets has varied during the past two years. In the first half of 2011 the number of such events was higher than desired, with system leaks being associated with a lot of them. The station has evaluated the events, determined causes, and implemented corrective actions on an ongoing basis to minimize the future occurrence of similar problems. DCISC should review this topic during or after the 3rd quarter of 2012 to assess station progress in this area of performance.

3.3 Benchmarking Activities

The DCISC Fact-finding Team met with Anne Shatara, Performance Improvement Supervisor, and Derek Schmidt, Performance Improvement Coordinator, in the Problem Prevention and Resolution Department to review DCPP's Key Benchmarking Activities during the past year. The DCISC last reviewed this topic in July 2008 (Reference 6.3) when it concluded the following:

> *The DCPP Benchmarking Program appears sound. Individual benchmarking reports reviewed were satisfactory, and ideas for improvement were captured in Action Requests in the Corrective Action Program for implementation and tracking. There were some ideas captured from non-benchmarking trips and meetings. This is a good practice which would benefit the plant more if it were institutionalized and more widely practiced.*

Mr. Schmidt provided a copy of the DCPP "Self-Assessment and Benchmarking Procedure, OM15.ID4." The procedure defines benchmarking as "a study which first identifies best practices in one or more organizations and subsequently compare DCPP programs, processes, products, and services to identify gaps, develop recommendations, and set targets to improve performance." "Formal" benchmarking involves using a structured methodology, conducting a site visit, and following through with actions to achieve improvement. "Informal" benchmarking may consist of telephone interviews, surveys resource sharing, attendance at industry meetings, querying site visitors, etc. Informal benchmarking may also include a site visit, but without the structure of a formal program. The purpose is to identify gaps between your station and the organization being benchmarked which can then be evaluated to identify and implement actions for improvement.

The station's Safety and Audit Review Board (SARB) is the governing and reviewing body for all formal benchmarking. Every six months station departments look ahead 18 months to determine the possible schedule for various Benchmarking and Self-Assessment activities. This involves examining NRC interactions as well as department needs. The departments then submit their desired activities to SARB, whose members review the department input and determine the overall schedule. Recently, department level Corrective Action Review Boards (CARBs) have been reviewing items that go to the higher review body.

Station departments have the latitude to conduct informal benchmarking without having to schedule them through SARB. These can be conducted by phone or e-mail. Also, effectiveness reviews are expected to be conducted at the department level for Benchmarking activities. However, Self-Assessments are tracked at the plant level.

The Fact-finding Team was provided with copies or summaries of some of the Benchmarking activities that were conducted during the past few years, as follows:

1. Fluid Leak Management *
2. Configuration Control Using the Electronic Shift Operations Management System (eSOMS)
3. Outage Training Management

4. Components of a Leadership Academy
5. Refueling Outage Milestones
6. Strategic Projects
7. Feedwater Dispersant for Iron Transport *
8. Work Planning; Work Package Quality *
9. Fire Department Performance
10. License Change Process

(Items above that are marked by an asterisk, *, were reviewed by the DCISC Fact-finding Team.)

In addition, the Fact-finding Team extracted and reviewed the following reports from the Benchmarking sections of DCPP's monthly Plant Performance Indicator Reports covering the past 12 months.

11. Achieving System Health Effectiveness
12. Outage and Project Improvement
13. Information Sharing Meeting with Utilities in NRC Region IV
14. Station Leadership Review of Corrective Action Program (CAP) Products
15. Use of Performance Improvement Programs

Information in the reports reviewed by the DCISC Fact-finding Team appeared to be clear and focused, and would be expected to be of potential help to any station.

The Fact-finding Team also reviewed a report in the Self-Assessment/Benchmarking section of DCPP's most recent monthly document transmittal to the DCISC. The report discussed various management systems and was developed by visitors/observers from a number of utilities in the STARS group (Strategic Teaming and Resource Sharing) to which DCPP belongs. As such the review focused on DCPP (rather than on a plant other than DCPP that would have been benchmarked). Nevertheless, the DCISC Fact-finding team believes it appropriate to highlight one area on which the STARS group focused. The area was Instrumentation and Control (I&C), and there were two aspects to the issue. On the one hand the reviewers noted that deficiencies in work package quality (e.g. errors in various packages) have resulted in I&C workers needing to rely on their own knowledge and skills to complete work. On the other hand, in another section of the same report it is noted that I&C may be facing significant personnel attrition in the near future. It was noted that DCPP has developed a comprehensive plan for knowledge preservation, but the potential loss of personnel could still pose a problem. The DCISC Fact-finding team concurs with this assessment.

Conclusion:

DCPP has an active Benchmarking Program that provides for examination of a broad range of

station performance areas. Information in the reports appears to be clear and focused. The potential near-term loss of Instrumentation and Control (I&C) personnel, coupled with inadequacies in the information contained in I&C work packages, could hamper the ability of the I&C department to meet station needs.

3.4 Auxiliary Feedwater System Review

The DCISC Fact-finding Team met with Amanda Sorensen, Auxiliary Feedwater (AFW) System Engineer, to review the status of the AFW System. The DCISC last reviewed this topic at the August 2007 Fact-finding Meeting (Reference 6.4) when it concluded the following:

> *DCPP conducted an appropriate review and evaluation of potential gas or debris entrainment in its Auxiliary Feedwater (AFW) System in response to NRC's Information Notice 2007-18. The review concluded that there was not a safety problem with its AFW System but did recommend two appropriate procedural steps to provide additional assurance of trouble-free operation.*

Design Criteria Memorandum S-3B provides a comprehensive discussion of the AFW System's design basis and a thorough description of the system. The AFWS is a safety-related system that serves as a backup to the Main Feedwater System (MFWS). During normal power operation the MFWS supplies feedwater to the secondary side of the steam generators, where water is pumped to the Steam Generators (SGs) in which the water is boiled into high pressure steam. This steam is then supplied to and spins a turbine generator to produce electricity, after which it is condensed back into water that is pumped back to the secondary side of the SGs.

The AFWS is relied upon to prevent damage to the nuclear reactor fuel and to prevent overpressurization of the reactor coolant system in the event of transients such as a loss of normal Main Feedwater or a pipe rupture on the secondary side. During normal plant shutdown the AFWS replaces the MFWS and serves as a cooldown system to maintain hot standby and to proceed further through cooldown to a point where the Residual Heat Removal (RHR) System can be placed in operation, which can be accomplished when Reactor Coolant System temperature goes below 350 degrees. The AFWS is also used during normal plant startup prior to placing the MFWS in service.

The AFWS consists of three feedwater supply trains with diverse means of turning the pumps. One train consists of a full-capacity steam turbine-driven pump, aligned to all four of the SGs. The other two supply trains consist of half-capacity electric-motor-driven pumps, each supplying flow to two of the four SGs, with the capability to be aligned to any of the four SGs.

DCPP employs a broad color coding system for grading the overall health of plant systems:

- Green – Healthy
- White – Achievable Action Plans in place to return system to complete Healthy status
- Yellow – Needs Improvement

- Red – Unsatisfactory

Currently, Unit 1's AFWS is rated Yellow and Unit 2's is Green.

With regard to system status on both units: The AFWS control systems on both Units 1 and 2 are outdated, and upgrades are scheduled to be implemented during refueling outages 1R17 and 2R17, respectively. Also the Eagle 21 systems on both Units 1 and 2 have been found to have an Eagle 21 rack/AFW interface issue in that a single failure of Rack 4 or 8 can disable two trains of the AFWS. This is being addressed through a License Amendment Request, which was submitted to the NRC in June 2011 and is expected to be approved by April 2012.

With regard to specific units:

- Unit 1:
  - For the Unit 1 AFWS, the System Health was recently changed from White to Yellow due to a leak on the outboard mechanical seal of AFW Pump 1-1during the past month. Water was found in the oiler for the outboard bearing at a level of 800 parts per million (ppm), which is of concern even though it is below the reporting threshold of 2,000 ppm. The most likely cause of this water intrusion was determined to be a water leak in the outboard bearing mechanical seal.
  - Another issue is that the Unit 1 Turbine Driven AFW Pump exhibited unexpected behavior after its governor was replaced during refueling outage 1R16. This was determined to be due to the fact that updated specifications had not been provided for setting the governor. As a result, the testing interval for the pump has been changed to 46 days. Ms. Sorensen stated that the AFW turbines employ air speed control and that DCPP was the first plant to use this particular type governor for speed control.
  - A third issue for Unit 1 is that all electro-hydraulic level control valves will have their actuators replaced during refueling outage 1R17. This is due to an undersized oil pump shaft.
- Unit 2:

  No issues were identified for Unit 2.

The following table, consisting of information extracted from the AFW System Health Reports for each Unit, provides the number of Items in each Unit that pertain to various performance characteristics. (Note in particular that Prompt Operability Assessment (POAs) are performed on equipment to demonstrate that it is safe for the equipment to continue operating even though there is an apparent problem.)

(Unless otherwise indicated in the table below, the Performance Characteristic is rated Green):

Performance Characteristic	U1	U2

Critical Component Failures	0	0
Critical Equipment Clock Resets	0	0
Causes of Reductions in Unit Capacity	0	0
Causes of Unit Trips	0	0
Emergent Work Orders	0	0
Conditions Requiring Prompt Operability Assessments (POA)	0	0
Other Non-conforming Conditions (Other than POA)	2	1
(Red for Unit 1 and Yellow for Unit 2)		
Aging Issues Affecting Reliability (White for both Units)	1	1
Margin Issues (White for Unit 1)	1	0
Causes of Operator Workarounds/Burdens	0	0
Operability Issues in the Past 180 Days (Yellow for Unit 1)	1	0
Adverse Equipment Trends	0	0
Design Deficiencies Affecting System Performance or Reliability	3	1
(Red for Unit 1, White for Unit 2)		

Action Plans have been developed for the issues discussed above, and Ms. Sorensen expressed confidence in the station's ability to implement them. Corrective actions are intended to be performed during upcoming refueling outages.

Conclusion:

Both AFW systems are operable, but Unit 1 has some non-conforming conditions that can affect system reliability. While Unit 2's AFW Health Rating is Green, Unit 1's rating was recently changed from White to Yellow due to a leak on its outboard seal. Both units share one design deficiency involving outdated control systems. Unit 1 has several others pertaining to the governor of the turbine driven pump and to the actuators of electro-hydraulic level control valves. The station plans to address the issues during upcoming refueling outages.

3.5 Emergency Diesel Generators System Review

The DCISC Fact-finding Team met with Larry Price, Senior Advising Engineer, and Tiffany Bierly, Diesel System Engineer, to review the status of the station's Emergency Diesel Generators (EDGs). The DCISC last reviewed this topic at the December 2005 Fact-finding Meeting (Reference 6.5) when it concluded the following:

> *The system health report for the Emergency Diesel Generator System listed a large amount of work required on the system for it to be changed from Yellow to Green. Many of these problems had been identified in prior years, 2003, but had not been corrected and will not be fixed until 2R13 and 1R14 (2006 & 2007.)*

The EDGs are safety-related pieces of equipment whose functions are as follows:

To furnish sufficient power to mitigate a design basis accident in one unit and safely bring the other unit to cold shutdown when both offsite power sources are unavailable.

- To act as a backup source of power to enable the reactor to continue to produce power for 72 hours whenever there is no accident condition, but one of the two offsite power sources is inoperable.
- To furnish power sufficient for an emergency shutdown of the plant whenever the main turbine-generator and the offsite power sources are not available.

The system has no direct non-safety related function.

The EDG fuel oil supply system is designed with enough fuel capacity to provide 7 days of onsite power generation in order to operate: (a) the minimum required Engineering Safety Features (ESF) equipment following a loss-of–coolant accident (LOCA) for one unit, and the equipment in the second unit in either the hot or cold shutdown condition, or (b) the equipment for both units in either the hot or cold shutdown condition.

Each nuclear operating Unit is supported by three EDGs. Each diesel-generator set is provided with two 100‰ capacity starting air trains, with each train having two starting air motors.

Each EDG is designed to start automatically on any of the following signals:

- A Safety Injection signal from either Train A or Train B of the plant protection system.
- Undervoltage on the preferred offsite sources to each of the 4160V vital buses; this starts its respective diesel.
- Undervoltage on any of the vital 4160V buses; this starts its respective diesel.

These automatic starts are to ensure that the EDGs are available with minimal delay to mitigate any operational or accident condition that may exist at the time of the signal. The Safety Injection signal, by itself, is an indication of an accident condition. The undervoltage signal from any vital bus is an indication of a loss of both onsite and offsite power sources. DCPP employs a broad color coding system for grading the overall health of plant systems:

- Green – Healthy
- White – Achievable Action Plans in place to return system to complete Healthy status
- Yellow – Needs Improvement
- Red – Unsatisfactory

Currently, the EDG Systems of both Units are rated Yellow. The System Health Reports for both units indicate that the normal scoring process for system health would have rated the EDG Systems for each Unit as Red. However, the ratings were overridden to Yellow by obtaining management approval on a number of Prompt Operability Assessments of various conditions of the EDG systems.

One significant issue that confronts the EDGs of both units is Material Condition, and a significant component of this issue is Equipment Obsolescence. The following concerns appeared in the EDG System Health Report for each Unit:

- The EDG control system components are over 40 years old and obsolete.
- Replacements for some components are not available at all. A few components can be refurbished only on a limited basis.
- The last available potentiometer, which sets the speed reference for the governor, was installed during refueling outage 1R15, and the company that has supplied those potentiometers no longer manufactures them. An upgrade replacement is available from another manufacturer, but it will require a design change to use.
- Replacement of the control system was requested in 1996, but not pursued due to a refurbishment program that was available at that time.

Current status is as follows:

- The project to replace the EDG Controls was presented to the Plant Review Committee on July 30, 2009 and approved on January 20, 2010. This included approval of the proposed budget for this project. The basis for approval was overall system vulnerability. Parts had been critical since refueling outage 1R15. However, the 2010 budget and outage 1R17 milestones could not be supported.
- The scoping/design change meeting is set for January 2012, with the design change to be complete by January 2013.
- Implementation is planned for outages 1R18 and 2R18 with completion by 2015.

Also, Prompt Operability Assessments (POAs) have been performed to analyze a number of issues pertaining to the EDGs. Prompt Operability Assessments (POAs) are performed on equipment to demonstrate that it is safe for the equipment to continue operating even though there is an apparent problem. These POAs are listed in the tabulation below and then specifically discussed in the paragraph that follows the tabulation. These current EDG POAs pertain to:

- Maximum allowable loads and allowable load testing requirements (both are being addressed by new time-dependent load calculations
- Diesel fuel oil day tank low level setpoint.

The following table, consisting of information extracted from the EDG System Health Reports for each Unit, provides the number of Items in each Unit that pertain to various performance characteristics (unless otherwise indicated in the table below, the Performance Characteristic is rated Green):

Performance Characteristic	U1	U2
Critical Component Failures	0	0

Critical Equipment Clock Resets	0	0
Emergent Work Orders	0	0
Conditions Requiring Prompt Operability Assessments (POA)	2	2
with Compensating Measures (Red for both Units) Conditions Requiring Prompt Operability Assessments (POA)	3	3
With No Compensating Measures (Yellow for both Units) Degraded/Non-conforming Conditions (Other than POA)	0	0
Aging Issues Affecting Reliability (White for both Units)	1	1
Margin Issues (White for both Units)	1	1
Causes of Operator Workarounds/Burdens	0	0
Operability Issues in the Past 180 Days (Yellow for Unit 1)	1	0
Adverse Equipment Trends	0	0
Design Deficiencies Affecting System Performance or Reliability (White for both Units)	1	1

The DCISC notes that one Performance Characteristic in the above listing is rated "Red" for both Unit 1 and Unit 2. This pertains to "Conditions Requiring Prompt Operability Assessments (POA) with Compensating Measures." Both Units 1 and 2 share the same two conditions, as follows:

- The first condition pertains to the fact that various current DCPP Technical Specification Surveillance Requirements are not consistent with NUREG-1431, Revision 3.1, concerning surveillance voltage and frequency requirements. Additionally, the frequency recovery time for the Auxiliary Feedwater Pump loading for EDGs 1-1 and 1-3 does not meet Regulatory Guide 1.9 Revision 0 requirements for frequency restoration. The ability of the EDGs to respond to load sequencing ensures that Bus voltage and frequency remain within specific limits to assure that those loads already being carried by the Bus can function as designed. Should these parameters not be restored, the sequential loading could challenge the EDG Governor and Voltage Regulator, potentially resulting in degraded conditions that could inhibit 4160 volt loads (Engineered Safety Feature pumps) and 480 volt loads (Fans and Motor Operated Valves) from performing their design function. A License Amendment Request (LAR) was submitted March 28, 2011 to 1) Revise Technical Specification Surveillance Requirements to verify that minimum frequency and voltage as well as steady state frequency and voltage are within limits following an EDG start and 2) Revise the Updated Final Safety Analysis Report to specify an exception to Regulatory Guide 1.9, Revision 0, for frequency recovery for the Auxiliary Feedwater (AFW) pump loading for EDGs 1-1 and 1-3.
- The second condition pertains to the fact that the maximum load value in Surveillance Requirement 3.8.1.10, for the DG full load rejection surveillance, is non-conservative. The current surveillance requires a maximum load value of 2600 KW. However, load calculations reveal that the maximum bus loads on DGs 1-1, 1-3, 2-2, and 2-3 exceed 2600 KW when channel and loop uncertainty is taken into account. A new time-dependent load profile study is in progress. If the maximum calculated loads are determined to be low enough, the time-dependent load profile study methodology can be adopted without requiring a License

Amendment Request. The timetable for completing these actions extends to May 2013.

On three separate occasions during Refueling Outage 2R16, work on the 230kv system caused unanticipated and undesired auto-start signals to the three Unit 1 EDGs. In each situation, all three EDGs performed as designed.

Conclusion:

As assessed by DCPP, the System Health of the Emergency Diesel Generators (EDGs) needs improvement (rated Yellow). The major impediments to the EDGs' Health in both Units 1 and 2 appear to pertain to obsolescence issues and several licensing issues. The obsolescence issues focus primarily on the EDG Control Systems. The station has deferred addressing these issues in recent years, and is now in a position where obsolescence could have an increased impact on the plant. The issues related to licensing appear to be addressed in a logical, deliberate manner. Since the EDGs of both Units are currently rated Yellow, and since the action plans for the major issues span several years, the DCISC should conduct a progress check during the third or fourth quarter of 2012.

3.6 Unit 1 Containment Concrete Inspection Results

The DCISC Fact-finding Team met with David Wong, Civil Engineering Supervisor, to review the results of the concrete inspection of the Unit 1 Containment Structure that was conducted during June, July, and October 2010. The Fact-finding Team was provided a copy of the Inspection Report. A similar report for Unit 2 was still in preparation at the time of this Fact-finding Meeting. The DCISC's last review of this topic was in September 2010 (Reference 6.6), when it concluded the following:

> *DCPP Containment Systems are robust concrete structures with internal steel liners designed to maintain their leak tightness up to a design pressure of 47 psig and a temperature of 267 degrees F. Their function is to prevent release of radiation during normal and accident conditions and protect against external missiles. The Containments have successfully passed all periodic visual inspections and pressure tests.*

The Unit 1 Containment Structure consists of approximately 98,800 ft^2 of concrete surface area. Some portions of this area are not included in this inspection, being exempt for one or another reason. These exempt portions include areas that are covered by the liner (including penetration sleeves), foundation material or backfill, or are otherwise obstructed by adjacent structures, components or parts. The total area obstructed and inaccessible for examination on Unit 1 is 9,230 ft^2. Therefore, 90.7‰ of Unit 1 Containment's total surface area can be, and was, examined. The previous examination of the Unit 1 Containment was conducted in November 2000. The requirement is that this examination be conducted every 10 years.

The examination was performed to meet inservice inspection requirements and to evaluate the properties of the concrete. It consisted of a visual examination of 100‰ of the accessible exterior concrete surface of the Containment Structure for cracks, areas of distressed concrete, and

previously repaired areas. Examiners are trained and certified to specific requirements of the American Concrete Institute. The location of deteriorated or distressed concrete is recorded with an accuracy of 6 inches in elevation and 0.50****** in azimuth. The lengths of the cracks are determined within an accuracy of 1 inch and crack widths within 0.002 inches. The sizes of other indications are determined to an accuracy of 2 inches.

The examination was conducted directly (within 4 feet of the concrete surface), or remotely at a distance not exceeding the qualification distance of the visual examination apparatus. Lighting, including any combination of portable sources, ambient indoor or outdoor lighting must be a minimum of 50 foot candles. Battery powered portable lighting was not used in this examination.

The inspection requires strict adherence to a formal three-tiered level of inspection. If indications are within first-tier limits, the certified inspector is authorized to accept them. If not, those indications not meeting the first tier are evaluated by the Responsible Professional Engineer (RPE) using the second-tier criteria. First-tier limits are characterized by more than a dozen acceptance criteria. Second-tier limits requiring an RPE evaluation are also characterized by more than a dozen acceptance criteria. Those indications not meeting the second-tier are then evaluated by the RPE for structural integrity. Supplemental tests or measurements may be used to characterize fully the identified conditions. The Report tabulates the breakdowns of the results of first and second level criteria.

The overall results of the inspection are as follows:

- A total of 990 reportable indications were recorded (compared to 546 in the 2000 inspection). Of these 990, 12 were greater than second tier indications (compared to 13 in the 2000 inspection). The indications found were primarily leaching, passive cracks, and form tie repairs (Plugs).
- Of the 990 reportable conditions, the following were the most predominant:
    - 241 (24.3‰ of the total) were passive cracks, 80.1‰ of which were located on the dome
    - 620 (62.6‰ of the total) were leaching, 57.3‰ of which were located on lifts 8, 9, and 10
    - 85 (8.6‰ of the total) were indications of deteriorated form tie repairs (Plugs), all above the 140 foot elevation

Other types of indications were of the following forms: spalling, embedded wood, delamination, poor consolidation, active crack, and damaged strain gage cover plates.

For the predominant types of indications above, their proportions of the total number of indications are about the same for both the 2010 and the 2000 inspections.

Since a large proportion of the reportable indications were in the form of leaching, particular attention was devoted to evaluating this mechanism. With regard to this, the report noted that all of the recorded indications were of the form of efflorescence (flowering) on the concrete surface. It appeared that the efflorescence was caused by rainwater flowing off the containment structure.

There were no observations of rust staining that would have been indicative of water causing corrosion of reinforcing steel embedded in the concrete.

The inspection report provided the following conclusions: "The condition of the Unit 1 Containment concrete appears structurally sound. There is no apparent loss of structural capacity; however, Civil Design Engineering (EDC) shall assess the results of the examination for acceptance and evaluation. From the results of this examination, it appears that no repairs are required at this time. This will have to be confirmed by EDC."

The initial inspection results were then provided to an individual referred to in the Report as the Responsible Professional Engineer (RPE) who is certified to conduct a more in-depth evaluation of the identified indications. The results of this in-depth evaluation were that none of the evaluated indications require repair at this time.

Conclusion:

The examination of the Unit 1 containment concrete was a carefully constructed and thoroughly implemented process. The indications that were identified were subjected to several levels of review culminating in a review by a certified Responsible Professional Engineer. The results of this in-depth evaluation were that none of the evaluated indications require repair at this time.

3.7 Status of Large Station Transformers

The DCISC Fact-finding Team met with Joe Goryance, Electrical Systems/Components Engineering Supervisor, to review the status of completed and planned upgrades to the large station transformers. The DCISC last examined this topic at the April 2010 Fact-finding Meeting (Reference 6.7) when it concluded the following:

> *DCPP has become more deliberate, aggressive, and organized in its approach to solving the station's longstanding problems pertaining to the reliability of large power transformers and to the accompanying effect on the safety of station personnel. Unless dictated by station events, the DCISC should perform its next periodic progress review after the next refueling outage, 1R16.*

Another summary of station status on this topic was provided at DCISC's November 2010 Public Meeting. In that meeting, it was stated that DCPP's intent is to become an industry leader for large power transformer reliability. This is to be accomplished through improvements in maintenance and performance monitoring programs as well as through improvements in utilization of industry operating experience.

Mr. Goryance noted that DCPP has been continuing to implement the Action Plan that grew out of the 2008 failure of Unit 2's phase C transformer, and he provided the following update:

- The Unit 2 C phase GE transformer that was installed after the 2008 failure will be replaced by an Elin transformer during refueling outage 2R17. This will make it compatible with Unit 2's A and B phase transformers that are also Elin.

- Various reliability enhancements have been implemented regarding cooler replacements for main bank transformer B, and startup and auxiliary transformers for Units 1 and 2.
- Replacement of Unit 2 transformer yard porcelain insulators (main bank transformer high voltage bushings, lightning arresters, capacitance coupled voltage transformer) with polymer insulators is now scheduled for refueling outage 2R18.
- Porcelain bushings for the Unit t main transformer, startup transformers, and lightning arresters are being planned for replacement by polymer bushings.
- The preventive maintenance instructions for acoustic monitoring of large oil filled transformers are scheduled to be complete by the end of 2011.
- Upgrades to the Dissolved Gas Monitors for oil filled transformers are scheduled for completion during refueling outages 1R18 and 2R18, with the potential for completion during the 17th refueling outages.
- Preventive maintenance to perform acoustic monitoring of large oil filled transformers is scheduled to be implemented by the end of 2011.

The Station Transformer System Health Reports are rated Green (Healthy) for both units. Each report assesses the status of 27 different indicators of system performance. For Unit 1, all are Green except for three that are rated White (however, plans are in place to return to Green). One is a "Margin" issue, pertaining to a 230kv pilot wire alarm that has been disabled. The second pertains to "Spare parts issues affecting preventive maintenance or corrective maintenance of Critical Equipment." This involves the need to purchase a replacement for the spare Auxiliary Transformer. The third is a "Design Deficiency impacting system performance affecting reliability." This pertained to making a Unit 2 relay configuration consistent with Unit 1, which work has since been completed during refueling outage 2R16.

For Unit 2, 26 of the 27 indicators are Green, and one is White. The White indicator pertains to the same Design Deficiency of the need for consistency between Units 1 and 2 that is discussed directly above and has been resolved.

Conclusion:

DCPP continues to achieve progress and to demonstrate resolve with respect to upgrading the status of large transformers and supporting equipment. The current System Health of the large station transformer systems is commendable, especially considering the improvements that were needed several years ago. Throughout 2011 the station has experienced no forced outages or power reductions due to problems with large transformers. The DCISC should consider reviewing status again in early 2013, after the seventeenth refueling outages have been completed for both Units.

3.8 Robert Budnitz Meeting with Jim Becker, Site President

Dr. Robert Budnitz met with Mr. Jim Becker, Site Vice President, to discuss topics pertaining to this Fact-finding visit and other topics of mutual interest.

3.9 Status of Problem Evaluation Action Plan

The DCISC Fact-finding Team met with Pat Nugent, Manager of Technical Support in Engineering Services, to discuss the status of DCPP's Problem Evaluation Action Plan. The DCISC last reviewed this topic in March 2011 (Reference 6.8) when it concluded the following:

> *DCPP has responded aggressively to the significant performance gaps identified in its engineering evaluation thoroughness and rigor. DCPP has developed a detailed, comprehensive Evaluation Thoroughness Action Plan. The Plan should be effective if implemented well; however, DCPP has not satisfactorily completed its first significant measure of corrective action, a self-assessment to have been performed in 2010. The DCISC should closely monitor the actions and performance measures in the Plan.*

The DCISC also provided the following Recommendation from the March 2011 Fact-finding Trip:

> *The DCISC recommends that DCPP initiate and promptly complete its first self-assessment of the significant gap in engineering evaluation thoroughness, which was to have been completed by the end of 2010.*

The issue of problem evaluation dates back to 2009 and earlier. In its 2009 End-of-Cycle Letter of March 2010, NRC identified a significant cross-cutting aspect for the lack of thoroughness in engineering evaluations in the P.1.c cross-cutting area. Selected excerpts of the NRC's perspective in the above mentioned letter are as follows:

> "The staff first identified this item in the 2008 annual assessment letter, dated March 4, 2009. This theme continued through the 2009 mid-cycle assessment as discussed in our September 1, 2009 letter."
>
> "While you have implemented a range of substantial corrective actions to address the crosscutting theme, these actions have yet to prove effective in mitigating the continuing trend."
>
> "The NRC has concluded that you should assess why past corrective actions have not been effective in mitigating the trend and make adjustments as appropriate to ensure that you achieve results in correcting the trend."

In response to the NRC's concerns DCPP developed an extensive action plan, through which the DCISC has tracked progress. Initially, this plan had included a section containing actions aimed at improving the Corrective Action Program (CAP), which is an important component of Problem and Identification and Resolution. During the second half of 2010, management of the CAP improvements was transferred to DCPP's Director of Site Services and tracked in the station's Performance Improvement Plan, which is discussed in another section of this Fact- finding Report. As a result, the remaining portions of what has become the "Evaluation Thoroughness Action Plan" are focused on identifying and solving Engineering, Licensing, Technical, and Design Basis problems.

The DCISC Fact-finding Team reviewed the most recent status report of the Evaluation Thoroughness Action Plan (August 11, 2011). (DCISC's recent March 2011 Fact-finding Report contains descriptions of each of the nine performance sections of the status report as well as summaries of action status in each section.) Overall, at the time of this September 2011 DCISC Fact-finding Visit, progress continues to be satisfactory. Of the 94 action items, 17 remain to be completed, of which six pertain to the long-term Licensing Basis Verification Project, four pertain to training, and the remaining seven pertain to the last performance section of the report: "Objective 9: Monitor performance and provide feedback to fully ingrain the new methods and standards of performance into the way the Station does business." None of the incomplete action items is shown as overdue.

The most challenging component of the Action Plan involves updating DCPP's Licensing Basis documents. This verification project, initially expected to be complete in 2014, has had its expected completion horizon moved back to 2015, which was communicated to the NRC in a July 15, 2011 meeting. However, considerable work is being conducted on this project. In this regard, Mr. Nugent noted that training with respect to design basis documents is being conducted on an enhanced Design Criteria Memorandum (DCM) format,

Mr. Nugent also noted the success of Engineering Work Product Review Teams (EWPRT) that review a myriad of products (typically Apparent Cause Evaluations) before they are reviewed for approval by DCPP's Corrective Action Review Board (CARB). During the past six months only one such document needed additional work prior to obtaining CARB approval. The EWPRT also is involved in addressing how to prepare technical evaluation documents and is examining how a template might be used for prescribing the approach to take for informal evaluations.

Mr. Nugent further noted that DCPP has benchmarked another nuclear station that has an excellent training program for engineers based on NASA and the space shuttle Challenger incident. The training discusses how attitudes and cultural aspects can influence technical decisions, how individuals can shape and be shaped by culture, and how significant events can also be used to affect culture.

Conclusion:

DCPP continues to make progress in the area of engineering related problem evaluations. The Engineering Work Product Review Team has had success in increasing the approval rates of both engineering products and Corrective Action documents. DCPP has also shown innovation in some aspects of its approach to the training of technical personnel through the use of benchmarking. The time-to-completion for the extensive and detailed Licensing Basis Verification Project has been extended from 2014 to 2015. Nevertheless, DCPP has been able to make considerable progress on this project as well.

3.10 Status of Engineering Organization

The DCISC Fact-finding Team met with Pat Nugent, Manager of Technical Support in Engineering Services. The DCISC last reviewed this topic in its June 2010 Public Meeting. The DCISC's most recent Fact-finding Visit on this subject, in December 2009 (Reference 6.9), focused on

concerns within the Engineers Union as well as on DCPP Management's assessment of the relationship. DCISC's conclusions were as follows: first from viewing a representative perspective of the engineers' union members, and second from viewing DCPP management's perspective:

> ***Member's Perspective:*** *From one union member's viewpoint, the DCPP Engineers and Scientists of California Union (ESC) had been voted in by DCPP engineers and technical personnel in response to their beliefs that management had too short-term a view, stressed performance over quality, intimidated some engineers, and did not provide for adequate knowledge transfer for departing engineers. The view was that although there were no nuclear safety issues, the plant was experiencing some loss of margin due to lack of knowledge by inexperienced or newly-assigned engineers.*
>
> ***Management's Perspective:*** *Management has taken a number of actions which address union concerns, some in direct response to and some independently of the union. The actions address work hours, advancement, job descriptions, and most importantly, a knowledge preservation process to assure that departing engineers impart their job knowledge to their successors. These actions appeared timely and appropriate. The DCISC should follow up on these areas.*

DCISC can affirm that, since the time when the above Fact-finding Visit was held, DCISC has neither observed nor been informed by any engineering personnel of any similar instances reflecting conditions described in the above engineering concern. DCISC did encounter one situation brought to its attention by a plant operator concerning a personal performance issue that affected a management decision on whether or not to provide a promotion opportunity. The DCISC has not observed any effects of any of these personnel issues on nuclear safety.

During the June 2010 Public Meeting, the DCISC was informed that DCPP was certainly aware of the need to hire and train new engineering personnel and had been taking actions to do so. Three classes of 10 engineers each were hired in 2000, 2002, and 2004 to provide an avenue for knowledge transfer before experienced people retire. Hirings did not occur during 2006 through 2008 because attrition was less than predicted. They were resumed in 2009 during which an additional 7 engineers were hired. Engineering personnel are hired up to two years before a person is assigned to a formal position in the engineering group in order to provide time dedicated to indoctrination and training. This two-year period can include rotational assignments and outage assignments, depending on the individual's experience and qualifications. Efforts are also ongoing for hiring future replacements of operations and craft personnel.

Mr. Nugent noted that he manages the program for hiring and indoctrinating new engineers. This involves personally interviewing potential new engineers. He noted that 5 new engineers were hired in 2010 and he hopes to add 10 more during 2011. He said that DCPP has instituted new classifications of titles and pay for engineers and that this process was a joint effort with the engineering collective bargaining unit. He noted that new engineers do not immediately become members of the engineers' bargaining unit. He also noted that some of the newly hired engineers are placed in technical positions outside the engineering division after their period of training and

indoctrination is complete.

Mr. Nugent mentioned further that another way to avoid losing knowledge and talent is to retain employees who are approaching retirement. In this regard, DCPP benchmarked another nuclear station that was having some success with new methods to encourage personnel to defer retirement.

Finally, Mr. Nugent mentioned that the relationship between DCPP management and engineers in the bargaining unit appears to have improved. Dr. Budnitz commented in response that the Fact-finding Team members on this visit have clearly noted and been impressed by the number of recently hired engineers who have represented DCPP for the various technical topics being reviewed. These new engineers were knowledgeable and appeared enthusiastic.

Conclusion:

DCPP appears to have an active, ongoing program for hiring new engineers and preparing them to assume technical positions in the station. The relationship between DCPP management and engineers in the bargaining unit appears to have improved. The station has provided opportunities for newly trained and indoctrinated engineers to assume responsible positions in the Engineering Division.

3.11 Update on Actions Stemming from Fukushima

The DCISC Fact-finding Team met with Bill Guldemond, Special Assistant to the DCPP Site Vice President, to discuss the status of DCPP's responses to the Fukushima accident in Japan. The DCISC last reviewed this topic during its June 2011 Public Meeting. The most recent Fact-finding Visit on this topic was in April 2011(Reference 6.10) when DCISC concluded the following:

> *DCPP's preliminary review of severe accidents and beyond-design-basis events, as related to the Japanese Fukushima event, appeared satisfactory, though there were some corrections to be made. NRC's initial review is expected at the end of April 2011. DCPP expects additional reviews and responses to be conducted.*

On May 11, 2011, in response to the Fukushima accident in Japan, the NRC issued Bulletin 2011-01, "Mitigating Strategies," to request licensees to provide a comprehensive verification of their compliance with the regulatory requirements of Title 10 of the Code of Federal Regulations (10 CFR) 50.54(hh)(2), Conditions of Operating License. Responses were required to be submitted in 30 days and 60 days.

The DCISC was provided a copy of DCPP's 60 day response, dated July 11, 2011. The response was divided into certain categories that had been predetermined in the NRC's May 11 letter, as follows:

- Periodicity of preventive maintenance activities pertaining to various types of listed portable equipment that would be employed to mitigate the effects of severe accidents which could cause extreme damage to the plant

Periodicity for periodically testing the above described types of equipment (The testing is required to be performed using nonpermanently installed plant equipment.)

- Descriptions of the controls for assuring that the above equipment is available when needed - this included inventory frequencies, special storage controls, and types of equipment
- Descriptions of how configuration and guidance management is assured so that strategies remain feasible. Examples included:
    - Measures taken to evaluate any plant configuration changes for their effect on feasibility of the mitigating strategies
    - Measures taken to validate that the procedures or guidelines developed to support the strategies can be executed, e.g. drills, exercises, procedure walk-throughs
    - Measures taken to ensure procedures remain up-to-date an consistent with the current configuration of the plant
    - Description of the training program implemented in support of the mitigating strategies and the manner in which its effectiveness is evaluated

Mr. Guldemond also noted that DCPP and the industry are in the process of identifying near term and longer term actions that could be performed to assess station capabilities for mitigating accidents that go beyond the design bases of the plants. Examples of possible short-term actions:

- Evaluate instrumentation and equipment needed to monitor spent fuel level, temperature, and area radiation levels including situations in which existing battery power is depleted
- Evaluate possible additional methods for adding water to the spent fuel pool or other means of cooling spent fuel
- Evaluate additional instrumentation needed for monitoring the condition of the reactor core
- Evaluate the capability of providing fuel to power equipment needed in emergencies
- Perform seismic and flood protection walkdowns to identify any plant specific vulnerabilities and verify adequacy of monitoring and maintenance practices for protective features
- Examine potential effects on multi-unit stations
- Procure additional needed equipment as necessary
- Evaluate existing Emergency Operating Procedures, Severe Accident Management Guidelines, and Extensive Damage Mitigation Guidelines for Possible Appropriate Changes in the aftermath of Fukushima.

Examples of longer-term actions would include implementing the appropriate responses dictated by the above short term actions plus actions dictated by future NRC Rulemaking activities or Orders.

Conclusion:

DCPP responses thus far to the insights derived from the Fukushima accident, including the

identification of future short and longer-term actions, appear to be appropriate.

3.12 Meeting with Nuclear Regulatory Commission (NRC) Senior Resident Inspector

The DCISC Fact-finding Team met with Dr. Michael Peck, NRC Senior Resident Inspector at DCPP to discuss topics of mutual interest, with a primary focus on seismic issues. Ms. Laura Miciewski, another NRC resident inspector, also attended the meeting. The meeting covered mostly topics related to seismic safety.

3.13 Quality Verification (QV) Department's Assessment of Primary Equipment and Support Load Combinations Regarding Seismicity

The DCISC Fact-finding Team met with Gloria Lautt, General Supervisor, Quality Verification, to discuss QV's assessment of the analyses of primary equipment and support load combinations on seismicity. This is the DCISC's first review of QV's assessment of this issue.

As Ms. Lautt explained, and as documented in DCPP's recent document, SAPN 50403188, the underlying issue, as explained therein and in some related documents, is an error in certain seismic-load/Loss of Coolant (LOCA)-load/dead-load load-combination calculations and analyses done by DCPP back in the 1970s. These errors, uncovered only recently, have now been understood by DCPP. As the issue is understood by the Fact-finding team, none of these errors has produced a plant condition at DCPP that in any way threatens the plant's safety or its licensing basis. This is because of the existing large margins in the plant, and also because modern calculations and analyses of the same load combinations allow the use of different damping values whose effect helps to compensate for the effects of the errors.

However, in discussions during the Fact finding meeting, it was agreed that perhaps the errors identified so far may not be limited to just the few that are discussed in the reports above. Perhaps these errors, or similar ones, might exist (undetected) in other calculations or analyses. This is what is termed an "extent of condition" issue. After the Fact-finding trip, and in response to a request by P. Bedesem of DCPP, Dr. Budnitz sent a note to Bedesem calling his attention to this possible extent-of-condition issue.

Conclusion:

DCPP's actions, after having discovered certain errors in very old load-combination calculations, have been appropriate. New calculations and evaluations using modern methods and modern acceptance criteria have been performed. These demonstrate that the plant's safety remains acceptable despite these old errors.

3.14 Status of Performance Improvement (PI) Action Plan

The DCISC Fact-finding Team met with Steve David, Director, Site Services, to discuss the status of the station's Performance Improvement (PI) Action Plan. The DCISC last reviewed this area in October 2010 (Reference 6.11) when it concluded the following:

The DCISC does not typically review organizational and process related areas unless considered warranted to examine aspects that could be tied to specific plant performance issues related to safety. Organizational structure and management methods are considered to be the purview of the utility. This, however, was DCISC's first review of the Performance Improvement Action Plan, and it became apparent that the Plan is almost exclusively organizational and process-oriented in nature. Therefore, DCISC will refrain from further reviews of this Plan unless certain aspects can be clearly tied to station performance issues related to safety.

However, the DCISC recognizes through earlier Fact Finding Meetings and reports that DCPP has had difficulties with evaluating and addressing station problems, including the area of engineering evaluations. Additionally, the NRC has issued DCPP a significant cross-cutting aspect for deficiencies in its Corrective Action Program, a major program included in DCPP's Problem Prevention and Resolution area. The DCPP Performance Improvement Action Plan is an appropriate vehicle for helping to correct and improve DCPP's performance. DCISC concludes from this review that some causal factors related to this problem may be due to an inadequate number of trained and qualified personnel as well as to a lack of clarity in personnel responsibilities. DCISC also concludes from its review of the Plant Performance Indicator Report that performance indicators that have remained Red or Yellow from month to month are not being highlighted to the same degree as those that have improved or declined in the most current month.

During the latter part of 2010, the framework of the Performance Improvement Action Plan was changed considerably. The plan was reorganized into seven focus areas:

- Leadership
- Corrective Action Program
- Self-Assessments and Benchmarking
- Operating Experience
- Trending
- Human Performance
- Observations by Management

It is apparent to the DCISC that the total number of assigned actions in the Plan has increased significantly compared to those in last year's Action Plan.

With the exception of Human Performance, which has its own action plan, actions on the above areas are being tracked through the main body of the Performance Improvement Action Plan, over which Mr. David has oversight responsibility. Mr. David said that he meets periodically with managers and directors to review status of all elements of the above Action Plan.

Mr. David noted that oversight of the Corrective Action Program (CAP) improvement effort was

transferred from the station's Problem Evaluation Action Plan into this Performance Improvement Initiative. The CAP section of the Action Plan is the largest section, comprising about one third of the Plan and stems from the Nuclear Regulatory Commission's (NRC) longstanding issues regarding the difficulty DCPP has had in recent years in identifying, reporting, and solving problems of a regulatory nature. Mr. David noted that three individuals are now qualified Cause Analysts and another eight have been assigned to go through the qualification process. (The DCISC notes that during its October 2010 Fact-finding Visit, DCISC was informed that four to five years ago the station had 22 qualified Cause Analysts in the Problem Prevention and Resolution Department, and at the time of DCISC's October 2010 review, that number had been reduced to 5. The intent at the time of the October 2010 visit was to have the responsibility for Cause Analysis spread among the other DCPP line departments rather than being focused in the Problem Prevention and Resolution Department.)

Mr. David noted that each of the above listed areas in the Action Plan was established last year to concentrate on the above focus areas for performance improvement, and the intent has been to assign responsibility to an appropriate area for management oversight. For example, oversight for Human Performance was assigned to the Maintenance Services Director and the Operations Director because much of this performance issue is oriented toward those two areas. To illustrate the issue Mr. David commented that Maintenance personnel have demonstrated that they know what to do and that they have the capability of doing their jobs. The issue is how to approach their work in order to avoid human error pitfalls.

To determine the extent to which actual performance is being measured**, reported, and tracked** by DCPP on the above performance areas (as opposed to **reporting the status of Actions** in the Performance Improvement Initiative Integrated Action Plan) the DCISC examined the station's most recently received monthly Plant Performance Improvement Report (PPIR) (July 2011). The Fact-finding Team notes that Performance Indicators and reports exist for each of the above listed segments of the Action Plan, except Leadership (which is understandable). Measured and reported performance of each of the remaining six focus areas of the Action Plan are summarized below. Monthly performance is highlighted for the current months and for each of the prior two months so that short-term trends can be noted. Also, the Performance Indicator pages contain a summary of Actions that are underway to address ongoing issues. The station uses a color coding system for describing performance. Each color is almost always justified by quantitative measures of performance, as shown on each indicator in the PPIR. Each performance area may have its own specific definition of what each color expresses. However a general picture of performance could be described as follows:

- Green – Good
- White – Moving Toward Green
- Yellow – Needs Improvement but Moving Toward White and Green
- Red – Needs Improvement and More Actions Need to be Taken

A performance area could have any of the above ratings and still be considered safe.

Corrective Action Program (CAP)

- Page 34 of the PPIR individually assesses each of many performance factors related to CAP performance at the station level, as well a monthly trend graph for the past year. Current month performance = Yellow; Prior month = Green; Two months prior = Yellow
- Pages 35 through 42 of the PPIR each provide similar assessments for 8 individual station organizations. For July, however, each report was annotated as "no update; in transition."
- Page 65 of the PPIR assesses "Cause Analysis Program Health Implementation Cornerstone." This focuses on whether problems are identified either internally or by external sources. It also evaluates trends in the cause analysis program and product quality. Current month performance = Yellow; Prior month and Two months prior = Green

Self-Assessment and Benchmarking

- Page 43 of the PPIR assesses each of the listed Self-Assessments and Benchmarking Visits based on the timeliness/completeness of the report's development and on the quality of the report as assessed by the station's Safety and Audit Review Board (SARB). Of 12 listed reports, 11 were assessed as Green for timeliness and completeness, and one was listed as Red.
- Regarding report quality as determined by the SARB, the following grading system was used on page 43: 3 = Accepted, No revisions requires; 2 = Accepted, Minor revisions required; 1 = Not accepted, Required rewrite and resubmittal. Of the eleven reports: One was rated 3; Nine were rate 2; and One was rate 1.
- Page 43 does not provide an overall grade for the current month or the two prior months.

Operating Experience

- Page 70 of the PPIR provides an assessment of the program's effectiveness based on internal notifications, evaluations of external sources of information and the quality of the station's operating experience reports as assess by the station's SARB. Performance was rated Green for the current month and for each of the prior two months.
- Page 53 rates the Screening Cycle Time on incoming operating experience information from the industry, measured as the difference between time received and screening completion. Three colors are used in the rating: Green, Yellow, and Red. DCPP's rating was Green for the current month and prior two months.
- Page 54 rates the timeliness for sharing DCPP's operating experience with the industry. The rating was Yellow for the current month and White for the prior two months.

Trending

- Page 71 of the PPIR assesses DCPP's implementation of the Trending Analysis Program. This includes grading based on internal and external examinations of the program and the generation and approval of the quarterly site trend report. The grade for the current and

prior month was White; the grade for the second month prior was Red.

Human Performance

- Page 44 of the PPIR provides the **station composite** indicator for the total number of departmental-level events per 10,000 hours worked. The stationwide indicator is based a**12-month average error rate looking back from and including the current month**. The ratings are Green, Yellow, and Red. Current month rating was Yellow; ratings for each of the two prior months were Green.
- Various station departments were rated on the same basis and results are as follows:
  - Operations Section – Red for current month and each of two prior months
  - Chemistry – Green for current month and prior two months
  - Radiation Protection – Yellow for current month, Green for two prior months
  - Engineering Services – Red for current month, Green for prior two months
  - Maintenance Services – Green for current and prior two months
  - Site Services – Green for current and prior two months
  - Strategic Projects – Red for current and prior two months

Management Observations

- This performance indicator presented on pages 107 and 108 of the PPIR focuses on the number of monthly management observations that are conducted by each of thirty four station work units, listed on page 107, compared to their individual goals. A composite rating is also provided for the station. The composite station rating system is based on the percentage of work groups that have met their individual goals. The rating system is as follows: Green: > 95‰ of work groups met their individual goal; Yellow: > 80‰ and< 95‰ of work groups met goal; Red: < 80‰ of work groups met their goal. Detailed performance data are also provided for each work group listed on the performance indicator page. Overall performance for the station was rated as Yellow for the current and two prior months.

Although there is no PPIR page for assessing "Leadership," the Performance Improvement Action Plan clearly focuses on using DCISC leadership to clarify management's vision of what success looks like and to employ appropriate methods to maintain applicable standards current with good industry practices. In that regard Mr. David provided the Fact-finding Team with a copy of a report on a DCPP benchmarking trip that focused on another station's implementation of its Corrective Action Program (CAP). Mr. David was the team leader and the DCPP Site VP was the sponsor of that activity. Although the focus was on the CAP, as a member of DCPP senior management, Mr. David was also able to obtain relevant information on other areas of station performance including industrial safety, work control, security, the Management Review Committee, and the Station Ownership Committee.

Conclusion:

The Performance Improvement Focus Area Action Plan has been restructured into a logical organizational framework during the past nine months, and the number of specific actions has been expanded considerably. The vast majority of actions are completed, with the remainder on track for completion this calendar year. The station's Plant Performance Improvement Report (PPIR) is serving as an effective vehicle for gauging the degree to which implementation of the Action Plan is achieving the desired results. Recognizing that performance for any given area can, and does, change from month to month, it appears to the DCISC Fact-finding Team that, at this time, the primary areas in need of attention are the Corrective Action Program, due to the need to expand the number of qualified Cause Analysts, and Human Performance in Operations and Engineering.

4.0 Conclusions

4.1

Although the transition from Outage Risk Analysis Maintenance (ORAM) to Safety Monitor has been a prolonged one, DCPP appears to be on the threshold of final conversion, now scheduled for September 19, 2011. While planning and executing the transition process, DCPP has appropriately and effectively used other plants as benchmarks for its activities, not only with regard to assessing risk, but also with regard to communicating the assessment of risk appropriately within the station. DCISC should review the effectiveness of DCPP's implementation of Safety Monitor during the second half of 2012 in order to assess how well the system was used during power operation as well as in shutdown conditions during refueling outage 1R17.

4.2

DCPP's performance with respect to Critical Equipment Event Clock Resets has varied during the past two years. In the first half of 2011 the number of such events was higher than desired, with system leaks being associated with a lot of them. The station has evaluated the events, determined causes, and implemented corrective actions on an ongoing basis to minimize the future occurrence of similar problems. DCISC should review this topic during or after the 3rd quarter of 2012 to assess station progress in this area of performance.

4.3

DCPP has an active Benchmarking Program that provides for examination of a broad range of station performance areas. Information in the reports appears to be clear and focused. The potential near-term loss of Instrumentation and Control (I&C) personnel, coupled with inadequacies in the information contained in I&C work packages, could hamper the ability of the I&C department to meet station needs.

4.4

Both AFW systems are operable, but Unit 1 has some non-conforming conditions that can affect system reliability. While Unit 2's AFW Health Rating is Green, Unit 1's rating was recently changed from White to Yellow due to a leak on its outboard seal. Both units share one design deficiency involving outdated control systems. Unit 1 has several others pertaining to the governor of the

turbine driven pump and to the actuators of electro-hydraulic level control valves. The station plans to address the issues during upcoming refueling outages.

4.5

As assessed by DCPP, the System Health of the Emergency Diesel Generators (EDGs) needs improvement (rated Yellow). The major impediments to the EDGs' Health in both Units 1 and 2 appear to pertain to obsolescence issues and several licensing issues. The obsolescence issues focus primarily on the EDG Control Systems. The station has deferred addressing these issues in recent years, and is now in a position where obsolescence could have an increased impact on the plant. The issues related to licensing appear to be addressed in a logical, deliberate manner. Since the EDGs of both Units are currently rated Yellow, and since the action plans for the major issues span several years, the DCISC should conduct a progress check during the third or fourth quarter of 2012.

4.6

The examination of the Unit 1 containment concrete was a carefully constructed and thoroughly implemented process. The indications that were identified were subjected to several levels of review culminating in a review by a certified Responsible Professional Engineer. The results of this in-depth evaluation were that none of the evaluated indications require repair at this time.

4.7

DCPP continues to achieve progress and to demonstrate resolve with respect to upgrading the status of large transformers and supporting equipment. The current System Health of the large station transformer systems is commendable, especially considering the improvements that were needed several years ago. Throughout 2011 the station has experienced no forced outages or power reductions due to problems with large transformers. The DCISC should consider reviewing status again in early 2013, after the seventeenth refueling outages have been completed for both Units.

4.8

DCPP continues to make progress in the area of engineering related problem evaluations. The Engineering Work Product Review Team has had success in increasing the approval rates of both engineering products and Corrective Action documents. DCPP has also shown innovation in some aspects of its approach to the training of technical personnel through the use of benchmarking. The time-to-completion for the extensive and detailed Licensing Basis Verification Project has been extended from 2014 to 2015. Nevertheless, DCPP has been able to make considerable progress on this project as well.

4.9

DCPP appears to have an active, ongoing program for hiring new engineers and preparing them to assume technical positions in the station. The relationship between DCPP management and engineers in the bargaining unit appears to have improved. The station has provided opportunities for newly trained and indoctrinated engineers to assume responsible positions in the Engineering Division.

4.10

DCPP responses thus far to the insights derived from the Fukushima accident, including the identification of future short and longer term actions, appear to be appropriate.

4.11

DCPP's actions, after having discovered certain errors in very old load-combination calculations, have been appropriate. New calculations and evaluations using modern methods and modern acceptance criteria have been performed. These demonstrate that the plant's safety remains acceptable despite these old errors.

4.12

The Performance Improvement Focus Area Action Plan has been restructured into a logical organizational framework during the past nine months, and the number of specific actions has been expanded considerably. The vast majority of actions are completed, with the remainder on track for completion this calendar year. The station's Plant Performance Improvement Report (PPIR) is serving as an effective vehicle for gauging the degree to which implementation of the Action Plan is achieving the desired results. Recognizing that performance for any given area can, and does, change from month to month, it appears to the DCISC Fact-finding Team that, at this time, the primary areas in need of attention are the Corrective Action Program, due to the need to expand the number of qualified Cause Analysts, and Human Performance in Operations and Engineering.

5.0 Recommendations:

None

6.0 References

6.1

"Diablo Canyon Independent Safety Committee Twenty First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 5, 2011, Volume II, Exhibit B.6, "Status and Plans for the Probabilistic Risk Assessment Group."

6.2

Ibid, Exhibit D.2, Section 3.11, "PRA Overview."

6.3

"Diablo Canyon Independent Safety Committee Nineteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2008 – June 30, 2009", Approved October 15, 2009, Volume II, Exhibit D.1, Section 3.4, "Benchmarking Program."

6.4

"Diablo Canyon Independent Safety Committee Eighteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2007 – June 30, 2008", Approved October 15, 2008, Volume II, Exhibit D.2, Section 3.8, "Entrainment of Gas or Debris in Auxiliary Feedwater Systems."

6.5

"Diablo Canyon Independent Safety Committee Sixteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2005 – June 30, 2006", Approved October 14, 2006, Volume II, Exhibit D.5, Section 3.8, "Emergency Diesel Generator System."

6.6

"Diablo Canyon Independent Safety Committee Twenty First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 5, 2011 Volume II, Exhibit D.5, Section 3.4, "Containment System Review."

6.7

"Diablo Canyon Independent Safety Committee Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 – June 30, 2010", Approved November 17, 2010, Volume II, Exhibit D.8, Section 3.5, "Status of Transformers and Associated Equipment and Components."

6.8

"Diablo Canyon Independent Safety Committee Twenty First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 5, 2011, Volume II, Exhibit D.9, Section 3.8, "Engineering Evaluation Rigor Improvement Action Plan."

6.9

"Diablo Canyon Independent Safety Committee Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 – June 30, 2010", Approved November 17, 2010, Volume II, Exhibit D.5, Sections 3.6 and 3.7, "Engineers' Union – Member Perspective – and Management Perspective."

6.10

"Diablo Canyon Independent Safety Committee Twenty First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 5, 2011, Volume II, Exhibit D.10, Section 3.7, "DCPP Response to Fukushima Event."

6.11

"Diablo Canyon Independent Safety Committee Twenty First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 5, 2011, Volume II, Exhibit D.6, Section 3.6, "Status of Performance Improvement Action Plan."

22nd Annual Report, Volume 2, Exhibit D.4, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on November 15 – 16, 2011 by Per Peter Lam, Member, and R. Ferman Wardell, Consultant

1.0 Summary

The results of the November 15 – 16, 2011 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subject addressed and summarized in Section 3 was as follows:

1. Meeting with NRC Senior Resident Inspector
2. Maintenance Services
3. Self-Assessment Program
4. Licensing Basis Verification Project
5. Stranded Plant Procedure
6. Auxiliary Feedwater Pumps
7. Nuclear Fuel
8. DCISC Member Meeting with Site Vice-President

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine ifPG&E's performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team's suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Meeting with the NRC Senior Resident Inspector

The DCISC Fact-finding Team met with Dr. Michael Peck, NRC Senior Resident Inspector, and Laura Micewski, Resident Inspector, for an update on NRC activities and issues. The DCISC last met with the NRC Resident Inspector in July 2011 (Reference 6.1).

Independent Safety Review

The Fact-finding Team (FFT) was interested in the NRC's evaluation of DCPP's Nuclear Safety Oversight Committee (NSOC), compromised primarily of external members. Dr. Peck stated that their conclusions were contained in their Fourth Quarter 2011 Inspection Report.

The NRC had some questions about the scope of both the Nuclear Safety Oversight Committee (NSOC) and Quality Verification (QV) regarding the independent review at DCPP required by NRC Regulation. Until recently, QV had been responsible only for verification of compliance with NRC Quality Assurance requirements (10CFR50, Appendix B) regulations; however, that is being broadened to include aspects of operational safety.

The Resident Inspector had a concern that the NRC was finding many more issues than the internal DCPP review organizations, e.g., QV and NSOC. This was attributed to two conditions:

1. NSOC was not fully effective because of their part-time nature in that they did not spend much time at the plant, typically, three two-day visits per year.
2. QV was not fully effective because of their limited resources.

The DCISC should follow this concern.

230 kV Power System

DCPP uses the 230 kV off-site power system as its primary source of off-site emergency power. Dr. Peck provided the status of NRC's open item on the DCPP design basis for the 230kV offsite power system, an item the DCISC has been following. At question is whether the system has enough emergency power capacity to support shutdown of both units simultaneously. This issue has been partly resolved and is now going through the Task Interface Agreement (TIA) process. This TIA consists of a request to the Office of Nuclear Reactor Regulation (NRR) to concur with the Region IV (resident inspector's regional office) interpretation of the Diablo Canyon current licensing basis (CLB) for the 230 kV system as described in the Final Safety Analysis Report Update (FSARU). The schedule for full resolution has yet to be determined.

Fire Protection

This is an active issue with the Resident Inspectors in which they state that DCPP is not meeting

FSAR design basis aspects for fire barriers and related compensatory actions in fire hazards analyses. The Senior Resident Inspector concluded that the NRC was a step ahead of the plant, which is the reverse of what should be the case, similar to the independent safety review above.

Control Room HVAC

NRC had identified some issues with Control Room habitability in their Third Quarter Integrated Inspection Report (Reference 6.2) regarding Failure to Maintain the Control Room Habitability System in the Design Configuration and Inconsistent Control Room In-Leakage Test Results Reported to NRC. They are working with DCPP to resolve these issues.

Conclusion:

The FFT recommends that the DCISC continue to follow these and other issues with DCPP and with the NRC.

3.2 Maintenance Services Department Update

The DCISC Fact-finding Team met with John McIntyre, the new Director of Maintenance Services, for an update on that Department. The DCISC last reviewed Maintenance at the DCISC December 2009 Public Meeting (Reference 6.3). As the new Director Mr. McIntyre shared with the DCISC Fact-finding Team (FFT) his high-level concerns and plans.

Following concurrent problems in Electrical Maintenance with procedure "concurrent" verifications, i.e., procedure steps performed by one worker and concurrently verified by another on location, resulting in loss of the 230kV offsite power system, which supplies the plant with emergency power. These three occurrences happened during Refueling Outage 2R16 and resulted in the issuance of three Licensee Event Reports (LERs) to the NRC. DCPP is performing a Root Cause Evaluation (RCE) of the three events. The DCISC is reviewing these events separately.

Maintenance has been performing 100‰ management observations of concurrent verifications in Electrical Maintenance. An Institute of Nuclear Power Operations (INPO) team also saw problems with concurrent verifications as well as other Human Performance error prevention tools. Training is in progress to help improves the use of error prevention tools.

Mr. McIntyre stated that more input is needed in providing better work instructions to the craft workers. Many of Maintenance's procedures are not meeting INPO's Significant Operating Event Report (SOER) standards on large transformers. Additionally, the plant depends too heavily on "skill of the craft," i.e., dependency on worker experience and knowledge instead of prescriptive procedures. He believed there were too many informal work-arounds, i.e., job short-cuts and non-proceduralized steps in accomplishing repetitive tasks. He plans to address this with procedure evaluation and augmentation.

Regarding Maintenance Performance Indicators (PIs), Mr. McIntyre is concentrating on Maintenance Rework, which has been "Yellow" (unacceptable) for five months. After analysis of the trends, data, and PI design, Mr. McIntyre had the metric changed to better reflect actual

conditions. He is pushing for actions to take the Indicator to the "Green" (excellent) level.

Mr. McIntyre stated that Maintenance has been taking "hits" from Quality Verification (QV) in that there have been a number of escalated QV issues, particularly in electrical safety where a worked received a non-fatal electrical shock. This is another major area of his focus.

Conclusion:

The new Director of Maintenance Services is beginning his tenure by tackling Maintenance's most significant issues, i.e., poor practices in procedure concurrent verification, high maintenance rework, less-than-desirable procedure quality, and inadequate electrical safety practices. He appeared to be taking appropriate actions based on sound information and data with a clear direction for improvement.

Recommendations:

None

3.3 Self-Assessment Program

The DCISC Fact-finding team met with Derrick Schmidt, Self-Assessment (S-A) and Benchmarking Coordinator, and Ann Shartara, Performance Improvement Supervisor, for an update on the DCPP Self-Assessment Program. The DCISC last reviewed DCPP Self-Assessments in March 2008 (Reference 6.4) when it concluded the following:

> *The self-assessment of the Self-Assessment Program has identified areas, which should lead to many improvements. The DCISC should review this program in first quarter of 2009 (after the Quick Hit assessment) to observe the improvements and effectiveness of this self-assessment.*

The objective of the Self-Assessment Program (S-AP) is to promote continuous improvement. Current performance is compared to management expectations, industry standards of excellence, and regulatory requirements to identify areas needing improvement. Self-assessments also identify strengths applicable to other station groups. DCPP has three types of self-assessments:

1. Formal Self-Assessment – an evaluation of a particular program, process, system or potential problem area using a structured methodology involving scheduling, planning, one or more industry peers, a team of DCPP personnel, training, documentation in written reports and Notifications, and report-outs to management and follow-through.
2. Independent Assessment – an evaluation of organizations, programs, processes, activities, potential problem areas, etc. that are routinely scheduled and performed by independent oversight groups such as QV, NSOC, INPO, etc.
3. Ongoing Self-Assessment – an ongoing evaluation of performance and processes performed by station personnel al all levels on a regular basis, e.g., management observations, trend analyses, critiques, etc.

4. Quick Hit Assessment – a narrow, snapshot look at a specific program, process, or issue, usually of one-to-two day duration, typically performed by one or two persons.
5. Recurring Assessment – an assessment having a specified recurrent frequency.

The DCPP S-AP is described and controlled by Procedure OM15. ID4, "Self-Assessment and Benchmarking." This procedure describes the various station responsibilities for performing, reviewing, reporting and approving S-As. IT outlines the process and requirements for all types of S-As, especially formal S-As. Formal S-As are subject to effectiveness reviews approximately six months after the final S-A recommendation is complete. The SARB reviews each effectiveness review to determine if results have been achieved as expected.

The DCPP Self-Assessment Review Board (SARB), consisting of the Site Vice-President or Station Director and all Directors, sets the number of formal S-As for the upcoming calendar year. DCPP typically performs 10-to-15 formal self-assessments per year as well as typically 10 benchmarking trips to other nuclear facilities. The self-assessments are planned in advance for the year ahead and are carried out in accordance with the S-A procedure milestone schedule. The SA Coordinator keeps track of the progress of each S-A with the milestone schedule. Effectiveness reviews are performed on each S-A upon completion.

DCPP S-As are monitored and reported in the monthly Plant Performance Improvement Report (PPIR). The report lists all ongoing and planned S-As along with the lead organization/manager, milestones progress, and effectiveness review status. As of the date of this Fact-finding meeting, the overall S-AP health was reported as "Green," Excellent. There were several White and Yellow scores for delayed activity completions. Performance Improvement is one of DCPP's high-level 2011 Operating Plan Key Areas consisting of seven Performance Improvement measures, one of which is S-A Effectiveness of 75‰ success on improvements on formal S-A recommendations. The value though October 2011 was 74%, and the plant expects to meet the 75‰ goal by year-end.

The DCISC FFT reviewed the S-AP procedure and determined it was comprehensive and effective. IT reviewed the following S-As:

1. Surveillance Testing Implementation (Daily Work Control Group)
2. Licensed Operator Requalification Program and Simulator (Learning Services)
3. Operability Determination Program (Operations)
4. Outage Work Control Program (Outage Management Group)
5. Performance Improvement and Corrective Action Program (Site Services/Problem Prevention & Resolution Group)
6. Oversight of Supplemental Personnel (Strategic Projects & Maintenance)
7. Security Performance and Criteria (Security Services)
8. Maintenance Rule Periodic Assessment (Technical Support Engineering Group)
9. DCPP Electrical Safety Awareness (Maintenance Services)

10. Weaknesses in Operator Fundamentals (Operations & Learning Services)
11. Electrical Temporary Power (Electrical Maintenance)

These assessments were thorough and comprehensive. Overall, programs were determined to be satisfactorily implemented; however, a number of deficiencies and gaps-to-excellence were reported, which were to be corrected.

The DCISC FFT reviewed the following S-A Effectiveness Reviews:

1. Command and Control (Operations)
2. On-Line Chemistry Data Management and Retrieval Capabilities (Chemistry)
3. On-Line Risk Management Maintenance Rule (a)(4)
4. Technical and Maintenance Training (Learning Services)
5. Initial License Training (Learning Services)
6. INPO Accredited Training Programs (Learning Services)
7. Human Performance Program (Problem Prevention and Resolution Group)
8. Controls for High Radiation Areas (Radiation Protection)
9. Foreign Material Exclusion (Maintenance)
10. Fire PRA Model Update (Problem Prevention & Resolution Group)
11. Emergency Planning Program (Emergency Planning Group)
12. Component Design Basis Inspection (Engineering)
13. Post-SAP Implementation of CAP (Problem Prevention & Resolution Group)
14. ALARA Planning (Radiation Protection)
15. Plant Status Control (Operations)
16. On-Line Risk Management (Operations)
17. ALARA Program Implementation (Radiation Protection)
18. Radioactive Material Controls (Radiation Protection)

The effectiveness reviews were thorough and essentially all S-As reviewed were determined to be effective.

Conclusion:

DCPP's program for performing (and reviewing the effectiveness of its) self-assessments appears to be effective.

Recommendations:

None

3.4 Licensing Basis Verification Project (LBVP)

The DCISC Fact finding team met with Eric Nelson, LVBP Project Manager, for an update. The DCISC last reviewed the DCPP LBVP in December 2010 (Reference 6.5) when it concluded the following:

> *The DCISC Fact-finding Team believes the DCPP Licensing Basis Verification Project (LBVP) is warranted based on past license basis problems, which both DCPP and NRC have identified. The nearly completed initial Phase I work has provided a good foundation for moving forward with Phase II, the main project initiative. DCPP has established a strong project team and process for the LBVP. The DCISC should follow up periodically to review the project until its completion in 2014.*

The stated objective of the DCPP LBVP is the following:

> *The LBVP will improve DCPP regulatory performance by revalidating and correcting any and all deficiencies in the DCPP current licensing basis and produce a reconstituted Final Safety Analysis Report (FSAR) starting 2/2010 and completing 12/31/2015 for a project cost to not exceed $95.9 million.*

Since completion of the original Final Safety Analysis Report (FSAR), many changes to DCPP licensing and design bases have been made. DCPP had determined that some of these changes were inaccurate, inconsistent, inadequately evaluated (with the 10CFR50.59 process), or based on incorrect interpretations of NRC requirements. Based on this, DCPP management authorized the LBVP. The DCISC has reviewed many of these discrepancies and agrees that a broad study be undertaken to evaluate the problem and correct any deficiencies. The LBVP is designed to perform a review an evaluation of licensing, design, and analysis changes from the original FSAR to the present. The ultimate goal of the project is an updated Final Safety Analysis Report (FSAR).

The LBVP is designed to perform a review an evaluation of licensing, design, and analysis changes from the original FSAR to the present.

Project Overview

1. Identify, consolidate, and reconcile any inconsistencies in the DCPP Current Licensing Basis (CLB)
2. Perform a review modeled after the Component Design Basis Reviews (CDBRs) for eight risk-significant systems after the corresponding system licensing basis is verified
3. Reconcile any inconsistencies in the CLB searchable document databases
4. Enhance the full-text search capabilities for the CLB searchable databases
5. Validate the implementation of the FSAR into plant documents (e.g., operating and surveillance procedures)

The LBVP is carried out on a project basis with a dedicated Project Manager and some DCPP personnel, but with most work being done by contractors, including Shaw/Stone and Webster and Westinghouse, the Nuclear Steam Supply System supplier, all of whom are experienced in LBVP. The LBVP utilizes a Review Board, which consists of several Senior Consultants with previous NRC licensing, inspection, or enforcement experience and/or mechanical/electrical engineers with previous nuclear plant licensing, design, or operations experience.

Currently the team is performing system-by-system licensing basis reviews (LBRs) to identify the accompanying licensing bases and their source documents. Following the LBRs, some systems will be reviewed using an NRC-style component design basis review, which is a vertical "slice" of requirements/bases of the system. The following systems/areas are currently being reviewed:

System/Area	Percent Complete
230 kV LBR	100 (5/26/11)
230 kV System Review	100 (11/4/11)
Component Cooling Water LBR/System Review*	99
Auxiliary Saltwater (Ultimate Heat Sink) LBR	65
125 VDC LBR	55
Geology/Seismology LBR	45
Station Blackout LBR	70
Emergency Diesel Generators LBR	70
Solid State Protection LBR	70
Diesel Generator Dynamic Loading Analysis	50
Condition III/IV Fault LBR	40

* Combined Licensing Basis/System Review

There have been 281 Notifications initiated to-date documenting and tracking issues for resolution. Many are minor, such as procedure typographical errors, missing component tags, and document discrepancies. Some are more significant, requiring engineering evaluation. None has yet required a Licensee Amendment Request (LAR) to be submitted to NRC; however, three (feedline break issue, Class II inputs into Reactor trip system, and Emergency Diesel Generator dynamic loading analysis) are likely. The following Prompt Operability Assessments (POAs) have been performed:

1. CCW Relief valve backpressure impacts on CCW System
2. CCW Relief valve flow capacity
3. Feedline break issue
4. Class II inputs in to Reactor trip system (Accident analysis)

The LVBP staff appeared to have been handling these issues appropriately.

The LBVP is 23% complete overall with the 230kV System LBR having been completed on May 26,

2011 and its System Review on November 4, 2011 as the first completions. Any discrepancies are handled with a Corrective Action Program Notification and, if necessary, a Prompt Operability Assessment, and/or a License Amendment Request to NRC. The Project has a "fit it" support team and will maintain coordination with Operations and Engineering Staffs to enable the Project to deal with issues on a timely basis. The LBVP Review Board, the LBVP Executive Oversight Board, Quality Verification oversight, planed independent self-assessments, and communication with NRC by LBVP management assure the quality of each review.

The Project scope has recently been expanded to include seismic building working models.

Conclusion:

The DCPP Licensing Basis Verification Project (LBVP), a project to develop an updated Final Safety Analysis Report (FSAR) with verified licensing bases, is proceeding as planned with a scheduled completion date of December 31, 2015. The process of reviewing and verifying the licensing bases on a system basis appears appropriate. Any problems or discrepancies are tracked to resolution in the DCPP Corrective Action Program and, if necessary, resolved with a Prompt Operability Assessment and/or License Amendment Request to NRC.

3.5 Stranded Plant Procedure

The DCISC Fact-finding Team met with Maureen Zawalick, Emergency Preparedness Specialist, to discuss the DCPP Stranded Plant Procedure. This is the first DCISC review of this procedure.

The Stranded Plant Procedure provided guidelines for actions to be taken in the case of an event affecting DCPP, outside the power block, which may physically isolate the plant. Actions include the following:

- Ensuring adequate staffing
- Establishing an off-site muster area
- Establishing a County liaison
- Establishing and maintaining emergency communications

The procedure contains a checklist of the following actions to assure appropriate actions are considered:

- Event reportability
- Emergency response impact due to plant access degradation
- Early work release
- Communicate with plant staff
- Communicate with off-site personnel and agencies
- Check weather conditions

- Establish site muster locations
- Personnel transportation – personal vehicles or plant provided shuttle
- Sleeping arrangements
- Food arrangements
- Shift staffing
- Evaluate workload
- Plant materials conditions
- Other actions to consider
    - Ensure Emergency Diesel Generators are ready to run, if required
    - Ensure Intake screens are ready for possible high water and debris
- If a security event:
    - Evaluate Security staffing
    - Road checks
    - Update plant call-in number for road conditions
    - Evaluate alternate plant access routes

The stranded plant procedure was initiated in 1995 by a landslide blocking the main entrance road. The procedure is put into readiness in instances of high winds or severe winter conditions. A Fall 2006 drill started out with storms and tsunami resulting in a stranded plant. The resultant actions necessitated an upgrade to the procedure. It was used following the Japanese Fukushima event in March 2011 when a tsunami warning was issued for the California coast and the port at Avila was closed.

The DCISC FF Team found the procedure acceptable.

Conclusion:

The DCPP Stranded Plant Procedure, implemented when the plant is inaccessible because of road blockage due to weather, landslides or other causes, appeared appropriate to assure the plant has adequate staffing to continue safe operations.

Recommendations:

None

3.6 Auxiliary Feedwater Pumps

The DCISC Fact-finding Team met with Amanda Sorensen, Auxiliary Feedwater System Engineer, to discuss the Auxiliary Feedwater A(FW) System Pumps. The DCISC last reviewed the AFW System in September 2011 (Reference 6.6) when it concluded the following:

Both AFW systems are operable, but Unit 1 has some non-conforming conditions that can affect system reliability. While Unit 2's AFW Health Rating is Green, Unit 1's rating was recently changed from White to Yellow due to a leak on its outboard seal. Both units share one design deficiency involving outdated control systems. Unit 1 has several others pertaining to the governor of the turbine driven pump and to the actuators of electro-hydraulic level control valves. The station plans to address the issues during upcoming refueling outages.

The AFW System is a safety-related system that serves as a backup to the Main Feedwater (MFW) System. During unit startup and shutdown, the AFW System provides feedwater to the Steam Generators (SGs) below and above a pre-determined power level, respectively. During normal power operation the MFW System supplies feedwater to the secondary side of the steam generators, where water is pumped to the Steam Generators (SGs) in which the water is boiled into high-pressure steam. This steam is then supplied to and spins a turbine generator to produce electricity, after which it is condensed back into water that is pumped back to the secondary side of the SGs.

The AFWS is relied upon to prevent damage to the nuclear reactor fuel and to prevent overpressurization of the Reactor Coolant System (RCS) in the event of transients such as a loss of normal Main Feedwater or a pipe rupture on the secondary side. During normal plant shutdown the AFWS replaces the MFWS and serves as a cooldown system to maintain hot standby and to proceed further through cooldown to a point where the Residual Heat Removal (RHR) System can be placed in operation, which can be accomplished when Reactor Coolant System temperature goes below 350 degrees.

The AFWS consists of three feedwater supply trains with diverse means of powering the pumps. One train consists of a 100‰-capacity steam-turbine-driven pump, aligned to all four of the SGs. The other two supply trains consist of 50‰-capacity electric-motor-driven pumps, each supplying flow to two of the four SGs, with the capability to be aligned to any of the four SGs. The system can be started and operated from the Main Control Room, the Hot Shutdown Panel, and at the pumps themselves.

The TDAFWP is rated at 880 gallons per minute (gpm) at a pressure of 1400 pounds per square inch (psi). These pumps are tested quarterly and consistently pass their test acceptance criteria. The DCISC FFT reviewed the test performed on May 26, 2011 and found it satisfactory. The pump test verifies the operability of the pump, the manual start capability from the Control Room, and the stroking of selected key valves, the speed control governor, the turbine and pump lubricating oil levels.

The DCISC was particularly interested in the steam-turbine-driven AFW Pump (TDAFWP) because it is the means of providing feedwater to the SGs (and thus heat removal for the reactor core decay heat) if electric power is lost, such as in the case of the Japanese Fukushima nuclear plant tsunami event in March 2011.

The FFT toured the major components of the AFW System, focusing on the TDAFWP. The pump can be operated without AC or DC power manually at the pump to provide feedwater to the SGs. If needed for long-term cooling, when the suction water source from the normally aligned Condensate Storage Tank is exhausted, alternate sources of water can be manually aligned to the pump suction. These include, in priority order. The following:

- Fire Water Storage Tank (safety-related)
- Raw Water Reservoir (non-safety-related, gravity feed)
- Condenser Hotwell (make-up to CST)
- Makeup Water Transfer Tank (non-safety-related)
- Fire Water Storage Tank using Diesel-driven Long-Term Cooling Water Pump

DCPP has procedures covering operation in this manner. The FFT was not able to review the emergency procedure nor talk with operators because of time constraints and recommends that a future FFT review it.

The System Health Reports reported the Unit 1 AFW System in Yellow (unacceptable) Health and Unit 2 in Green (excellent) Health. Neither unit had significant problems with its pumps.

Conclusion:

In the event of a station blackout situation, i.e., loss of all AC and DC electric power, the Steam-Turbine-Driven Auxiliary Feedwater Pump can be relied on to provide the necessary cooling water to the Steam Generators to remove heat from the secondary system and ultimately decay heat from the reactor core to maintain hot shutdown conditions. The pumps are tested quarterly and are in reliable operating condition.

Recommendations:

None

3.7 Nuclear Fuel

The DCISC Fact-finding Team met with Mark Mayer, Reactor Engineering Group Supervisor, for an update on DCPP's nuclear fuel. The DCISC last reviewed nuclear fuel in September 2010 (Reference 6.7) when it concluded the following:

> *DCPP nuclear fuel has performed well, especially Unit 1 fuel, which has had 12 cycles of defect-free fuel. Unit 2 fuel is improving, having had three cycles defect-free, preceded by three clean cycles followed by a debris-caused leak. DCPP has experienced fuel assembly thimble tube wear in some instrumented assemblies due to flow-induced vibration. This is becoming an industry problem, which is being closely by DCPP and its fuel vendor, Westinghouse. The DCISC should follow this issue.*

DCPP Unit 1 has run without any fuel defects since Cycle 4 and is currently in Cycle 16. Unit 2 has run

without fuel defects since Cycle 14, when it had a debris-caused single rod failure. Prior to that, it had run defect-free since Cycle 11. DCPP identified a fuel leak in one of its Unit 2 assemblies prior to Outage 2R16 in which it replaced the leaking rod with a stainless steel rod. The affected assembly had been unknowingly leaking during a previous cycle and removed from the core for other reasons. It had been re-inserted in Outage 2R15 and began leaking following a reactor trip. The cause was determined to be a debris fretting failure caused by a piece of an eddy current testing probe from a previous outage. The leak had been undetectable in the prior outage because DCPP's radiochemistry techniques were less sophisticated than now, though, looking back, there had been traces of fission products in the coolant.

DCPP performed an Apparent Cause Evaluation (ACE), which determined the apparent cause as "the industry standard for failed fuel identification in Cycle 12 was less sophisticated and could not detect a very small tight fuel defect." A contributing cause was a missed opportunity to perform additional exams when debris was found. Corrective actions included:

1. Review Unit 2 Cycle 12 fuel for radiochemistry data for fuel defects.
2. Perform ultrasonic tests on the eight fuel assemblies from Cycle 12 in the Core 17 core.
3. Enhance radiochemistry procedures to better detect fuel defects based on reactor coolant radiochemistry analysis.

DCPP updated its Failed Fuel Prevention and Mitigation Procedure to accomplish the following:

- Prevent the "intentional reinsertion of failed fuel into a core"
- Incorporate the latest industry (Electric Power Research Institute and Institute of Nuclear Power Operations) guidance
- With or without failed fuel, perform a video camera examination of all core assemblies during offload or prior to reload
- Augment the radiochemistry sampling and analysis of reactor coolant

These enhancements appear appropriate.

DCPP is looking at moving from its current 19-to-21-month fuel cycles to 24-month cycles. This would permit more precision in scheduling refueling outages to target the spring and fall low demand periods more precisely. The increased cycle periods would mean higher burnups and larger diameter fuel rods containing more U-235 at the same current 5‰ maximum enrichment. The larger rods mean a seismic, structural question to be studied. Currently DCPP burnup is approximately 60,000 MWD/MTU (megawatt days per metric ton of uranium). The increased cycle length would mean 72,000 MWD/MTU burnup. DCPP and Westinghouse are performing analyses to determine whether it is advantageous to move to the 24-month cycle. The 24-month cycle could begin as early as 2016. The DCISC should follow this issue.

Conclusion:

With the exception of a small leak in a fuel assembly (not identified in a previous cycle) DCPP's Unit 2 fuel has been performing defect-free since Cycle 14. DCPP's failed fuel procedure has been satisfactorily enhanced to better detect failed fuel. Unit 1 had been defect-free since Cycle 4. DCPP continues to study the feasibility of going to 24-month fuel cycles from the current 19-21-month cycles.

Recommendations:

None

3.8 Peter Lam Meeting with Jim Becker, Site Vice-President

DCISC Member Dr. Peter Lam met with DCPP Site Vice-President, Jim Becker to discuss selected topics from this fact-finding meeting and other subjects of mutual interest. More specifically, some current activities in the Licensing Basis Verification Project (LBVP) were discussed.

Conclusion:

None

4.0 Conclusions

4.1

The FFT recommends that the DCISC continue to follow these and other issues with DCPP and with the NRC.

4.2

The new Director of Maintenance Services is beginning his tenure by tackling Maintenance's most significant issues, i.e., poor practices in procedure concurrent verification, high maintenance rework, less-than-desirable procedure quality, and inadequate electrical safety practices. He appeared to be taking appropriate actions based on sound information and data with a clear direction for improvement.

4.3

DCPP's program for performing (and reviewing the effectiveness of its) self-assessments appears to be effective.

4.4

The DCPP Licensing Basis Verification Project (LBVP), a project to develop an updated Final Safety Analysis Report (FSAR) with verified licensing bases, is proceeding as planned with a scheduled completion date of December 31, 2015. The process of reviewing and verifying the licensing bases on a system basis appears appropriate. Any problems or discrepancies are tracked to resolution in the DCPP Corrective Action Program and, if necessary, resolved with a Prompt Operability Assessment and/or License Amendment Request to NRC.

4.5

The DCPP Stranded Plant Procedure, implemented when the plant is inaccessible because of road blockage due to weather, landslides or other causes, appeared appropriate to assure the plant has adequate staffing to continue safe operations.

4.6

In the event of a station blackout situation, i.e., loss of all AC and DC electric power, the Steam-Turbine-Driven Auxiliary Feedwater Pump can be relied on to provide the necessary cooling water to the Steam Generators to remove heat from the secondary system and ultimately decay heat from the reactor core to maintain hot shutdown conditions. The pumps are tested quarterly and are in reliable operating condition.

4.7

With the exception of a small leak in a fuel assembly (not identified in a previous cycle) DCPP's Unit 2 fuel has been performing defect-free since Cycle 14. DCPP's failed fuel procedure has been satisfactorily enhanced to better detect failed fuel. Unit 1 had been defect-free since Cycle 4. DCPP continues to study the feasibility of going to 24-month fuel cycles from the current 19-21-month cycles.

4.8

None

5.0 Recommendations:

None

6.0 References

6.1 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.1, Section 3.2 "Meet with NRC Senior Resident Inspector."

6.2 NRC Integrated Inspection Report 05000275/2011004 and 05000323/2011004, November 18, 2011.

6.3 "Diablo Canyon Independent Safety Committee Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 – June 30, 2010", Approved October 15, 2010, Volume II, Exhibit B.6, "Maintenance Services Department."

6.4 "Diablo Canyon Independent Safety Committee Fifteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2007 – June 30, 2008", Approved October 17, 2008, Volume II, Exhibit D.8, Section 3.6 "Self-Assessment Program."

6.5 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume II, Exhibit D.7, Section 3.6 "Licensing Basis Verification Project."

6.6 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012",

Approved October 10, 2012, Volume II, Exhibit D.3, Section 3.4 "Auxiliary Feedwater Pumps."

6.7 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.5, Section 3.8 "Nuclear Fuel."

22nd Annual Report, Volume 2, Exhibit D.5, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on December 13 – 14, 2011 by Per Peterson, Member, and R. Ferman Wardell, Consultant

1.0 Summary

The results of the December 13 – 14, 2011 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subject addressed and summarized in Section 3 was as follows:

1. Machine Vibration Monitoring
2. Three Losses of 230kV during Outage 2R16
3. Compressed Air System
4. Update on the DCPP Responses and Actions on the Fukushima Accident
5. Engineering Rigor Action Plan Status
6. Observation and Coaching Program
7. Trouble-Shooting Program
8. EPA Closed Cooling Update
9. DCPP Progress in Addressing INPO Evaluation Items
10. Experience with the New Reactor Vessel Head Assembly
11. Safety-Security Interface Process
12. DCISC Member Meeting with Station Director

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine ifPG&E's performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team's suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas

of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Machine Vibration Monitoring

The DCISC Fact-finding Team met with George D'Entremont, Senior Advising Engineer for Predictive Maintenance, to review the DCPP Machine Vibration Monitoring. This is the first DCISC review of this topic.

Reliability-Centered Maintenance (RCM), implemented at nuclear stations, including DCPP, includes the following elements:

- Identification of station-critical functions and condition-based inspections that protect these functions
- Use of trained vibration analysts and data collectors
- Creation of a vibration database that supports the examination of amplitude trends and spectral content, supports alarm functions for at least two levels of amplitude, and allows for the identification of early-stage degradation of rolling-element bearings and other rotating equipment components
- Access to equipment operation and maintenance histories
- Access to station equipment design information such as machine speeds, power ratings, and types of bearings used

As part of its Reliability Centered Maintenance Program DCPP has a Predictive Maintenance Program (PMP) controlled by Procedure MA1.DC52, "Predictive Maintenance Program." The stated purpose is to enhance plant safety and reliability through early detection and diagnosis of equipment degradation prior to equipment failure. The Predictive Maintenance Organization does this through use of installed and portable diagnostic tools, which monitor selected equipment parameters. The organization maintains a database of identified equipment and parameters for which they establish base lines, set alert points and coordinate predictive maintenance activities. The Engineering Director has overall responsibility for the PMP. The PMP utilizes the following techniques:

- Vibration Monitoring
- Lubrication Analysis
- Control and Monitoring of Motor Operated Valve Diagnostic Information
- Infrared Thermography

DCPP Engineering maintains a master list of equipment/components, which identifies the frequency at which each component is monitored. The list is periodically reviewed and revised as dictated by experience, cost effectiveness, maintenance history, and available technology. Selection of components for the master list is based typically on the following:

- Components affecting safe and reliable plant operation
- Components experiencing repeated corrective maintenance
- ALARA requirements
- Reliability-centered maintenance
- Preventive maintenance optimization or life cycle management studies
- System or component engineer recommendations

DCPP has permanent vibration sensors with remote Control Room readouts on its Reactor Coolant Pumps, Turbine Generators, and Main Feedwater Pumps. Another approximately 300 components are monitored mostly monthly with portable vibration detecting equipment.

Latest acquired data is compared with previous data for trends, and if significant degradation exists, a Notification is initiated, and components considered "degraded" are placed on a watch list.

DCPP has developed a set of Action Thresholds for Vibration. The thresholds, once exceeded, prompt the vibration analyst to take the following systematic steps:

1. Confirm the vibration condition
2. Review vibration and other data
3. Evaluate the vibration condition against likely causes
4. Report evaluation to the proper station organization
5. Inspect forensic results

Item 3, evaluating the vibration against likely causes, is aided at DCPP by its Machine Vibration Fault Matrix, developed at DCPP, which includes 21 potential machine faults and commonly occurring symptoms, and reflects knowledge obtained through training, research, and experience. The Matrix is not a decision tree with a beginning and end, but a free-form process allowing the analyst to follow clues.

The Action Thresholds are

- Alert – this refers to that level of overall vibration that warrants additional evaluation by the analyst. The vibration is typically presented in units of overall velocity and within a frequency range of about 10 to 1000Hertz. There exist industry standards for this Alert Threshold. It is not assumed that vibration condition will necessarily reflect degradation or warrant

corrective maintenance.

- Danger – a higher amplitude of vibration that is not just a symptom of degradation, but is of such severity that it is the actual problem itself. This vibration may damage the machine and is the last warning the vibration analyst is able to provide the station of pending machine failure. Though time-to-failure is not predictable, this level warrants prompt corrective action.

Though useful in detecting degradation, these Action Thresholds are insufficient to determine early stages of rolling element-bearing degradation. Damage to contact surfaces may occur under the influence of load or in the presence of inadequate lubrication, contamination, circulating currents, or background vibration. These early stages typically are noticed in frequencies above 1000 Hertz in units of acceleration.

The following Matrix sets out eight potential vibration symptoms against likely faults:

Vibration Symptom	Likely Faults
Amplitude/Direction	Imbalance
Frequency Domain	Misalignment
Time Domain	Looseness/Impacting
Phase	Strain/Distortion/Softfoot
Orbit	Locked/Worn Coupling
Operating Characteristics	Degraded Pedestal
Maintenance History	Resonance
Corroborating Technologies	Thermal Variability
	Rolling Element Bearing Wear
	Sleeve Bearing Wear
	Cocked Bearing
	Pump Faults
	Motor Faults
	Belt/Sheave Wear
	Gear Faults
	Rub
	Shaft Crack
	Eccentric Rotor/Sheave
	Bent Shaft
	External Force
	Oil Whirl Instability

Not only does the vibration analyst identify the fault, but is also expected to provide a corrective action recommendation. Following corrective action by Maintenance, a confirmatory vibration survey is performed to assure the correction was effective.

The DCISC Fact-finding Team reviewed a recent example of a DCPP vibration problem. Vibration in the Main Turbine Electro-Hydraulic Pump began to experience horizontal high frequency vibration. After monitoring the trend of vibration acceleration as a function of time and as a function of frequency for several months, the vibration began to increase. After analysis, the pump was replaced. Inspection of the bearings showed clear evidence of early wear.

The DCPP vibration analysis process was documented in two publications:

1. "Developing Maintenance Decisions Through Systematic Use of Machine Vibration Data," Electric Power Research Institute Report 1022284, May 2011.
2. "Using Vibration Data to Inform Maintenance Decisions," Nuclear News, October 2011.

Conclusion:

Vibration analysis is an important tool to help prevent rotating equipment failures. The DCPP Machine Vibration Program appeared comprehensive and effective. The process by which non-normal vibration is classified, analyzed, and corrected was found to be systematic and well defined.

3.2 Three Losses of 230kV during Outage 2R16

The DCISC Fact-finding Team met with Ken Pazden, Construction Maintenance Manager, to discuss three unplanned losses of 230 kV offsite power during Refueling Outage 2R16. This was the first review of these events.

The DCPP 230 kV power system is the only offsite power system designed to be immediately available to mitigate the consequences of postulated accidents involving loss of normal electric power. It is backed up by the six (three per unit, which can be cross-tied between units) air-cooled Emergency Diesel Generators and the 500 kV offsite power system.

The events, identified causes, and immediate corrective actions were as follows:

Event 1

On May 16, 2011 as part of the 230 kV Startup System Reliability Upgrade Project, a physical modification was being made to the 12 kV Startup Relay Board Panel RU. During cutting of the RU Panel, which was being performed with a reciprocating saw, the 230 kV Line Differential Relay 287 actuated and sent a trip signal to the Unit 1 Startup Transformer 2-1 output breaker to the Unit 1 Startup Bus and to the Unit 2 Startup Transformer 2-1 output breaker (cleared at the time) to the Unit 2 Startup Bus.

For immediate corrective action DCPP restored startup power and identified sensitive devices in the electrical panel that would need to be isolated or protected. Clearances were modified to add relays in the "cut out" position and maintenance ceased cutting methods involving a reciprocating saw, instead using a cutting wheel.

The RCE-stated cause was that the "Project failed to perform an adequate risk assessment during the planning stage of the modification" in that there was no risk assessment of the effects of induced vibration of the reciprocating sawing on Unit 2's panel on the energized relays affecting Unit 1. Also, DCPP did not have a process requiring performance of a risk assessment by Operations on the operating unit for refueling outage work that takes place on equipment containing components for both units.

Event 2

On May 26, 2011 while performing current circuit tests (Generic Current Circuit Loop Functional Test), 230 kV Pilot Wire Differential Relay 287 actuated and sent a trip signal to the Unit 1 Startup Transformer 1-1 output breaker, to Unit 1 Startup Bus, and Unit 2 Startup Transformer 2-1 output breaker (cleared at the time) to the Unit 2 Startup Bus.

For immediate corrective action DCPP performed troubleshooting to verify that the circuit was configured per the approved design, and no issues were identified. All shift personnel were briefed on the event and on the human performance tools that prevent such occurrences. The current circuit loop functional test was re-performed successfully with enhanced management oversight.

The presumptive root cause was an inadequate "mental model" which resulted in connecting test equipment to the incorrect terminal block in that the human error tool, independent verification, was improperly used. This was a result of inconsistent reinforcement by the extended outage leadership team and by the lack of high quality, detailed work instructions.

Event 3

On May 27, 2011 while performing function testing of Unit 2 Relay 87UT21, technicians inadvertently began testing on Unit 1 Relay 51/87UT11, initiating a trip signal for the Unit 1 Startup Transformer 1-1 hi-side circuit interrupter and output supply breaker to the Unit 1 Startup Bus.

For immediate corrective action DCPP re-performed the pre-job brief, focusing on roles and responsibilities, and installed barriers on all in-service relays that were not part of the test. Management provided direct oversight, and personnel used the appropriate independent verification for all restoration actions.

There was a double capture slip ("muscle memory," i.e., acting "automatically" based on previous repetitions) which resulted in connecting a jumper to the incorrect unit relay due to failure to adequately apply human performance error reduction tools during maintenance activities. This was a result of inconsistent reinforcement on the part of the extended outage leadership team.

Long-term corrective actions were then identified by the Root Cause Team (see below).

DCPP submitted Licensee Event Reports (LERs) to the NRC documenting the events. The LERs included event descriptions, causes, safety consequences, and corrective actions. The LERs concluded that, although these events could have caused failure of the safety function of supplying electric power to safety-related loads, the Class IE onsite Emergency Diesel Generators remained available and automatically started to provide emergency power. Additionally, normal station power remained available from the Unit 1 Main Generator. Although DCPP concluded, "the events had no adverse effect on the health and safety of the public," the DCISC notes that there was a temporary increased safety risk due to the loss of back-up emergency power.

A Root Cause Team (RCT) was assembled to investigate the causes of these events. The RCT was comprised of personnel from the following organizations:

- Maintenance
- Site Services
- Outage Management
- Work Control
- Human Performance
- Projects
- Learning Services
- Regulatory Services
- Engineering

The RCT reviewed plant response data, pertinent technical engineering documentation, orders/operations of the work performed, human performance and organizational factors, safety culture analysis, extent of condition, and selected internal and external operating experience, and interviewed personnel associated with the events. The RCT applied the following methodologies in their investigations: (1) Events and Causal Factors Chart and (2) Stream Analysis. The root causes identified by the DCPP RCT are described above under the event descriptions. Another Root Cause Team was assigned to investigate the work instruction quality elements of the events. The RCT provided an Effectiveness (of corrective actions) Evaluation Plan consisting of the following:

  - For Outage 2R17 a risk assessment is performed for any work that takes place on components/equipment that can potentially impact the opposite unit.
  - No inadvertent loss of Unit 2 Startup Power during 2R17 due to human performance errors.
  - Perform a quick hit self-assessment of corrective actions with no significant findings related to the corrective actions.

The long-term corrective action to prevent recurrence (CAPRs) were:

Event 1 – The DCPP procedure, "Assessment of Maintenance Risk," was revised to require a risk assessment for both daily and outage work being performed in panels that can potentially impact both units. The procedure controlling work involving panels that contain sensitive or positionable components/equipment that impact both units was revised to install temporary protective barriers for components and terminals. DCPP installed signage and/or "robust barriers" on/in front of panels containing components that can potentially affect both units that require a risk assessment prior to beginning work.

Event 2 – Developed robust barriers and practices/techniques for (1) maintenance Correct Component Verification (CCV) requirements to require barricading adjacent wrong components in addition to flagging correct components, (2) working on electrical/instrument components, and (3) initial and refresher training to maintenance personnel on the practice and use of robust barriers. Provided precise written direction for the performance of current circuit tests, referencing the Root Cause Evaluation (RCE). Developed individual procedures for current circuit tests similar to the relay test procedures in time for Outage 1R17.

Event 3 – Revised the applicable procedures for Orders/Operations involving panels that contain components/equipment that impact both units to install temporary protective barriers. Installed signage and "robust barriers" on/in front of panels containing components that can possibly impact both units. Strengthened maintenance CCV requirements to require barricading adjacent wrong components in addition to flagging correct components. Developed robust barriers when working on electrical/instrument components. Provided initial and refreshed training to maintenance personnel on the practice and use of robust barriers. Developed training on supervisor coaching to identify opportunities for and then coach on accomplishing work while demonstrating the appropriate behaviors, especially the correct use of human performance tools such as verification practices.

The DCISC Fact-finding Team reviewed the RCE and concluded that it was comprehensive and thorough. The root and contributing causes and the corresponding corrective actions appeared appropriate.

Conclusion:

DCPP's three losses of 230 kV offsite emergency power during Outage 1R17 were identified and handled in a responsive manner. The immediate corrective actions were appropriate. The Root Cause Evaluation (RCE) was comprehensive and thorough, providing reasonable causes and corrective actions to prevent recurrence. The RCE appeared satisfactory to evaluate the effectiveness of corrective actions during the next outage, 2R17.

3.3 Compressed Air System

The DCISC Fact-finding team met with Surenda Sabharwai, Compressed Air System Engineer, for an update on the Compressed Air System. The DCISC last reviewed this system in January 2006 (Reference 6.1), when it concluded the following:

> *The Compressed Air Systems appeared to be performing satisfactorily and in good (Green) health as measured by the System Health Card and discussions with the System Engineer. There were no significant long-standing equipment issues other than the need to enclose the outside air compressors for protection against the damp, salty environment. The System Engineer appeared knowledgeable and pro-active about the system. [Note: the enclosure has been installed, eliminating the problem.]*

The Compressed Air System (CAS) is common to both units and is divided into two Subsystems: Instrument Air System (IAS) and Service Air System (SAS). The IAS is Safety Class 2, having redundancy and high-quality components typical of Class 1, but it is not designed for seismic loads or supplied by emergency electrical power. IAS consists of three primary full-capacity air compressors, which supply clean, dry air pressure primarily to air-operated valves (AOVs) and instruments needed to run the plant and for safe shutdown. Normally one compressor is required for plant operation. There are three additional full-capacity compressors, which serve in a secondary role. They normally are used for the additional refueling outage compressed air demands but can be aligned to the IAS anytime.

Because IAS is not fully safety-related, the 17 valves required for safe shutdown are supplied with an additional source of assured air from the Backup Air/Nitrogen System (BANS), a Class 1 design. BANS is a passive pressure system with air or nitrogen accumulators or tanks located with and dedicated to each safe-shutdown valve. They are designed to resist earthquakes and require no electrical power. Each is designed with capacity adequate for valve operation to assure safe shutdown.

The IAS supplies the Service Air System with compressed air via isolation check valves. SAS provides clean, dry compressed air for components, such as tools, which are not needed for plant operation.

The Compressed Air System was reported to be Green (excellent) on its System Health Report. The following items were listed as needing attention/correction:

- A compressor cam style timer was causing nuisance alarms, resulting in operator actions. The timer will be replaced in 2012 with a vendor-supplied programmable logic card.
- An Instrument Air Compressor often trips during hot weather. Vendor troubleshooting is scheduled and possibly a partial enclosure to protect the electronics.
- A Service Air Moisture Separator drain trap has been malfunctioning frequently due to clogging of its orifice with corrosion products from upstream carbon steel piping and components. The trap will be replaced with one, which eliminates the orifice.
- A compressor will not shutdown automatically upon high discharge pressure lifting the safety

valves. The modification to correct this will be issued in 2012.

The Fact-finding Team accompanied the System Engineer on a tour of the major components of the Compressed Air System. All components appeared to be in good condition.

Conclusion:

DCPP's Compressed Air System health is rated Green (excellent), and the system appeared to be running as designed. The System Engineer appeared knowledgeable and proactive about his system.

3.4 Update on the DCPP Responses and Actions on the Fukushima Accident

The DCISC Fact finding team met with Bill Guldemond, Special Assistant to the Site Vice-President, to review the latest DCPP activities responding to the event. The DCISC previously reviewed this subject in September 2011 (Reference 6.2), when it concluded the following:

DCPP responses thus far to the insights derived from the Fukushima accident, including the identification of future short and longer-term actions, appear to be appropriate.

DCPP has been actively involved in the following post-Fukushima activities:

- Response to industry position on 24-hour station blackout
- Development of procedural steps to assure Control Room and Battery Room ventilation adequacy
- Purchase of portable diesel-driven electric generators with a protected fuel supply to augment the existing gasoline-driven portable units
- Development of a procedure to switch Auxiliary Feedwater Pump suction from the Condensate Storage Tank to Firewater
- Development of a power stripping plan to help the station batteries last 8-12 hours
- Development of a plan to reduce Reactor Coolant System (RCS) pressure to prevent/limit Reactor Coolant Pump (RCP) seal leakage
- Procurement of the new design RCP seals, which have reduced leakage following pump shut down
- Methods of providing make-up to the RCS
- Procurement of a Backup Auxiliary Feedwater Pump
- Configuration management and maintenance of beyond-design-basis mitigation equipment (e.g., portable pumps, generators, etc.)
- Augmented support from offsite agencies
- Training/drilling of personnel on Extensive Damage Management Guidelines (EDMGs) and Severe Accident Management Guidelines (SAMGs)

- Consolidation of EDMGs, SAMGs, and B.5.b procedures and equipment
- Development of regional center for inventories of portable emergency equipment and supplies
- Maintenance and testing of fire hose nozzles used for emergency cooling and water make-up
- Assurance of fuel supply for portable equipment and fire trucks, etc.

DCPP is continuing to evaluate NRC, industry, and its own needs for planning to cope with Fukushima-type beyond-design-basis events in a satisfactory way.

Conclusion:

DCPP is appropriately assessing and fulfilling its mitigation needs for responding to Fukushima-type events such as enhancements to the ability to cope with extended station blackout and loss of installed safety equipment.

3.5 Engineering Rigor Action Plan Status

The DCISC Fact-finding Team met with Pat Nugent, Manager of Engineering Services Technical Support, for an update on the Engineering Rigor Action Plan. The DCISC last reviewed this topic in September 2011 (Reference 6.3), when it concluded the following:

> *DCPP continues to make progress in the area of engineering related problem evaluations. The Engineering Work Product Review Team has had success in increasing the approval rates of both engineering products and Corrective Action documents. DCPP has also shown innovation in some aspects of its approach to the training of technical personnel through the use of benchmarking. The time-to-completion for the extensive and detailed Licensing Basis Verification Project has been extended from 2014 to 2015. Nevertheless, DCPP has been able to make considerable progress on this project as well.*

The DCISC also provided the following Recommendation from its 2010-2011 Annual Report (Reference 6.4):

> *The DCISC recommends that DCPP initiate and promptly complete its first self-assessment of the significant gap in engineering evaluation thoroughness, which was to have been completed by the end of 2010.*

This recommendation has been satisfied by DCPP's performing a new self-assessment as described below.

The issue of problem evaluation dates back to 2009 and earlier. In its 2009 End-of-Cycle Letter of March 2010, NRC identified a significant crosscutting aspect for the lack of thoroughness in engineering evaluations in the P.1.c crosscutting area. Selected excerpts of the NRC's perspective in the above-mentioned letter are as follows:

> *"The staff first identified this item in the 2008 annual assessment letter, dated March 4, 2009. This theme continued through the 2009 mid-cycle assessment as discussed in our September 1, 2009 letter."*
>
> *"While you have implemented a range of substantial corrective actions to address the crosscutting theme, these actions have yet to prove effective in mitigating the continuing trend."*
>
> *"The NRC has concluded that you should assess why past corrective actions have not been effective in mitigating the trend and make adjustments as appropriate to ensure that you achieve results in correcting the trend."*

In response to the NRC's concerns DCPP developed an extensive action plan, which the DCISC has used to tracked progress. Initially, this plan had included a section containing actions aimed at improving the Corrective Action Program (CAP), which is an important component of Problem and Identification and Resolution. During the second half of 2010, management of the CAP improvements was transferred to DCPP's Director of Site Services and tracked in the station's Performance Improvement Plan. As a result, the remaining portions of what has become the "Evaluation Thoroughness Action Plan" are focused on identifying and solving Engineering, Licensing, Technical, and Design Basis problems.

The DCISC Fact-finding Team reviewed the most recent Evaluation Thoroughness Action Plan status report, dated December 2, 2011. The Plan contains 95 separate actions. Of these, 80 have been completed, including a quick-hit self-assessment for thoroughness for high-priority programs concluding that progress was on-track.

Actions yet to be completed are the following:

- Licensing Basis Verification Project (scheduled for completion in 2015 – see the DCISC November 15 –1 6, 2011 Fact-finding Report [Reference 6.5])
- Deliver seminar or training on the improved Design Change Process to appropriate population (this is being designed as an "Engineering Excellence Seminar" intended to bring about a design culture change of excellence scheduled for completion in mid-2012.)
- Develop a pilot program to maintain the Plant Performance Indicator Report (PPIR) Top 25 Nonconformance List (scheduled for completion mid-January 2012)
- Develop a change management plan and implement new engineering process (scheduled for completion mid-January 2012)
- Implement actions from DCPP configuration management self-assessment with emphasis on process to maintain fidelity between the plant, procedures, and the Updated Final Safety Analysis Report (UFSAR) – scheduled for completion December 31, 2011.
- Review Engineering Work Product Team (EWPRT) data, incorporate lessons learned into checklist – scheduled for completion January 31, 2012.

- Develop expectation and "scope" document to clarify when use of checklist is required - scheduled for completion January 31, 2012.
- Perform Line Performance Analysis (LPA) for training evaluation for use of new checklist and scope document - scheduled for completion January 31, 2012.
- Implement change management plan - scheduled for completion January 31, 2012.
- Revise EWPRT procedure to incorporate lessons learned - scheduled for completion January 31, 2012.

Conclusion:

DCPP has made substantial progress in completing its Engineering Thoroughness Action Plan to resolve issues with engineering design and technical evaluation quality. Actions will be completed in 2012 with the exception of the long-term Licensing Basis Verification Project, which is scheduled for completion in 2015.

3.6 Observation and Coaching Program

The DCISC Fact-finding Team met with John Hart, Human Performance Supervisor, for an update on the DCPP Observation and Coaching Program. The DCISC last reviewed this topic in April 2010 (Reference 6.6), when it concluded the following:

> *DCPP's Management Observation Program as defined by Inter-Departmental Administrative Procedure OM15.ID3 and as being implemented by the station appears to be appropriate. It also appears that the demands of refueling outages may be an impediment to achieving the number of desired monthly management observations. Subsequent review of this topic by DCISC should be dictated by any future negative trends in worker performance. The review should include follow-up on the status of the station's "cascading reviews" of observations and of the involvement of craft personnel in developing standards, procedures, and guidelines.*

The DCPP Observation and Coaching Program, is controlled by DCPP Procedure OM15.ID3, "Observation and Coaching" April 4, 2011, which describes it as a "robust, effective program consist[ing] of three fundamental sub-processes…":

1. Monitor Performance
2. Analyze Trends and determine Action
3. Implement Improvement

The program is a leadership program intended to provide an opportunity to observe, learn from, and coach someone in how they go about doing their job. The program is considered a low-level reporting tool, providing real time documentation and indications used to identify and correct latent weaknesses that exist in the organization. Among others, the observations are intended to:

- Identify organizational and human performance issues and provide insight into behaviors,

tools, and resources needed to help workers accomplish their jobs

- Foster two-way communication between management and their employees and provide management interaction with personnel as they do their work
- Solve problems and remove barriers for more efficient work
- Communicate management performance standard expectations
- Provide a forum to monitor and improve human performance

The procedure provides guidance and expectations on quality and quantity of observations, feedback and coaching, analysis and trending of observations, and attributes of a good observation with "dos" and "don'ts." It is not intended to be used for "positive discipline." The DCISC Fact-finding Team believes that the procedure is comprehensive. Observations are routinely reviewed by the next-higher level of management and at periodic Management Observation Meetings.

The November 2011 Station-Level Management Observation Health (Metric) Report showed the performance level as "Yellow" (not meeting expectations) due to 32 of 34 sections meeting their observations for a station percentage of 94% (number of "Green" sections divided by total number of sections), whereas "Green" performance is > 95%. As an example of the numbers of observations, the following are data from the November report:

Item	Number Achieved
Observation Goals	478
Actual Observations	943
Percentage of Goal	197%
Coaching Hours	657
No. of Positive Recognitions	436
No. of Coaching Occasions	245
Average Submittal Time (days)	4

The November 2011 Management Observation Review Meeting report listed the following "top three rated questions" observation subject areas along with the typical comments:

- Two Minute Rule (error prevention)
  - "The two-minute rule was not performed until prompted."
- Task Preview (job walkdown) (error prevention)
  - One or more important items left out of preview.
- Procedure Place-keeping (error prevention)
  - Place-keeping not consistently used.

- Self-Checking (STAR: Stop, Think, Act and Review) (error prevention)
  - STAR occasionally not correctly used.
- Industrial Safety Standards are not compromised (station fundamentals)
  - Gloves often not used when required.
- Human error prevention is evident in every task (station fundamentals)
  - Varied observations
- Shift Managers and Shift Foremen Maintain Oversight (Operations fundamentals)
  - Varied observations

Conclusion:

The DCISC concluded that the DCPP Observation and Coaching Program is comprehensive, appropriately developed to meet station needs, and implemented satisfactorily.

3.7 Trouble-Shooting Program

The DCISC Fact-finding Team met with Ron Perry, Instrumentation and Control Manager and Trouble-Shooting Program Manager, and Ed Tahlman, Electrical Systems Engineer for Relays and Circuit Breakers, for an update on the DCPP Trouble-Shooting Program. The DCISC last reviewed Trouble-Shooting in April 2009 (Reference 6.7), when it concluded:

> *DCPP's Trouble-Shooting Program is essentially unchanged since November 2007 when the DCISC review concluded it was satisfactory. It continues much the same in April 2009. Program ownership has changed from Maintenance to Engineering, and the program coordinator has plans to improve the procedure and use with training and a plant-wide Trouble-Shooting website. The DCISC should review Trouble-Shooting in about one year.*

The DCISC Fact-finding Team received and reviewed the DCPP Trouble-Shooting Procedure MA1.DC10, "Troubleshooting," revision 12, dated December 31, 2011. This procedure has been significantly changed and improved since the last DCISC review in April 2009. The procedures describe "Troubleshooting" as follows:

> *Troubleshooting is a systematic approach to data collection and failure analysis to determine the immediate cause of a system failure. Troubleshooting is a means of collecting information to determine equipment problems and the actions required to resolve them. Actions taken to correct a specific known problem are not considered to be troubleshooting… The troubleshooting process begins with reports of observed symptoms and progresses through the identification of the problem cause(s). The troubleshooting of a problem is complete when the problem source has been positively identified or a decision is made to terminate the troubleshooting when the problem*

> *cannot be identified. Troubleshooting is not meant to take the place of root cause evaluation and the corrective action program. Any troubleshooting effort is intended to address the immediacy of a situation, i.e., figure out what to fix, return the system to reliable service (i.e., confidence in operability), and then transition the issue to the corrective action program.*

Two supporting procedures are

1. Troubleshooting Evidence Preservation and Forensic Analysis
2. Control of Equipment Required by Technical Specifications or Designated Programs

These three procedures were considered satisfactory by the Fact-finding Team.

Troubleshooting is authorized by an approved Maintenance order and requires development and approval of a troubleshooting plan. Maintenance owns troubleshooting activities with the assistance, when required, of Engineering. The procedure outlines the responsibilities, priorities (defined Troubleshooting Levels A, B, and C), and steps for troubleshooting.

A program health report is updated and issued quarterly based on the following metrics:

- Program Personnel – the correct personnel with the proper skills to manage the program
- Program Infrastructure – the quality of the infrastructure to support the program
- Program Implementation – how well the program is implemented
- Program Assessment/Oversight – the adequacy of oversight to maintain program standards/implementation current with the industry

The November 2011 Troubleshooting Health Report concluded that the program health was Green (excellent).

The Fact-finding Team received and reviewed the Troubleshooting Plan 50414813: Unit 1 Pressurized Heater Group 13. The problem was described as follows:

> *On 11/17/11 during attempt to return pressurizer heater group 13 Normal Source/Non-Vital breaker to service from the control room, the newly installed breaker 52E08 (overhauled and PM'd) in Non-Vital cubicle 52-13E-02 did not close on 2 attempts from the control room. Control Operator reported no change in any status lights during attempts and stated that he did not pick up any load even for a momentary spike. Personnel could not determine if a sound was coming from the breaker or not during attempts. Breaker or charging springs did not change state locally.*

The troubleshooting activities were documented on a copy of the plan itself. Activities consisted of the following tests of the breaker and related switches and circuitry:

- Test 1: Isolate issue to switch section or breaker section of circuit and eliminate setup-related equipment failure modes (there were 12 steps in Test 1)
- Test 2: Test switch section of circuit (there were 13 steps in Test 2)
- Test 3: Final system validation (there were 6 steps in Test 3)

The result was that the circuit for the indicating light was degraded and there was poor electrical contact at the breaker-to-cubicle secondary contact. A Notification was initiated to add the corrective action to the Corrective Action Program. The repairs were made by Maintenance, and the validation tests resulted in satisfactory operation.

The Troubleshooting Program Manager considered this troubleshooting to be a good example for the station. The Fact-finding Team concluded that this troubleshooting was thorough and effective.

Conclusion:

The DCPP Troubleshooting Program has been substantially improved since the DCISC reviewed it in April 2009. DCPP had developed a new comprehensive procedure, which appeared satisfactory. The DCISC concluded that the troubleshooting example it reviewed was thorough and successful.

3.8 EPA Closed Cooling Update

The DCISC Fact-finding Team met with Bryan Cunningham, Supervisor of Environmental Programs, for an update on the proposed EPA regulation on power plant cooling, which the State of CA is responsible for regulating. The DCISC last reviewed this topic in December 2010 (Reference 6.8), concluding:

> *Though not required until 2024, and still pending additional CA State Water Board applicability studies due in late 2013, the use of closed-cycle mechanical draft cooling towers with saltwater make-up at DCPP will have significant adverse impacts on plant operation, reliability and efficiency, as well as increased nuclear safety risk. A plant retrofit to use closed, salt-water cooling will have clearly negative impacts on plant safety. A range of adverse nuclear safety impacts is known qualitatively at this time and is of concern to the DCISC. These negative safety impacts would likely exceed those associated with the major 9/11 security system upgrades that the DCISC has also monitored. While DCPP should of course make every effort to minimize negative safety impacts, as they have with security upgrades, the benefits of the security upgrades are obvious and clearly balance the impacts on plant safety (such as reduced access for emergency response). It appears to be more questionable that cooling tower retrofits would be justified in balance with the resulting plant safety reduction, because the cooling tower retrofits are apparently required due to a prescriptive EPA "best available technology" requirement rather than a performance-based approach to minimize and mitigate direct-cooling environmental impacts. The DCISC should continue to follow the developments at DCPP on cooling towers.*

The Federal Clean Water Act Section 316(b) is implemented through National Pollutant Discharge

Elimination System (NPDES) permits, issued pursuant to Clean Water Act Section 402, which authorizes the point source discharge of pollutants to navigable waters. The California State Water Resources Control Board is designated as the state water pollution control agency for all purposes stated in the Clean Water Act. The State Water Board and Regional Water Quality Control Boards are authorized to issue NPDES permits to point source dischargers in CA.

Ongoing development of Federal Clean Water Act Section 316(b) Regulations regarding aquatic organism impingement and entrainment and a California Specific Policy for 316(b) rule implementation may require all coastal power plants, including existing plants like DCPP, to reduce marine impingement and entrainment levels utilizing the "best technology available" (BTA), meaning closed–cycle cooling systems (i.e., cooling towers) instead of the current once-through cooling system. DCPP employed a consultant, Enercon, to study the scope, site feasibility, potential plant effects, projected costs, and a conceptual implementation schedule with retrofitting a closed-cycle cooling system at DCPP. The report was published in March 2009 and was submitted to the applicable CA jurisdictions.

The State Water Board is requesting that Southern California Edison (SCE) and PG&E conduct special studies to investigate alternatives for their nuclear power plants to meet the BTA requirements. The studies are to be conducted by an independent third party selected by the State Water Board, undergo a stakeholder and public review, and be completed by October 1, 2013. The Board will then decide what requirements apply to CA's two nuclear plants.

DCPP and the San Onofre Nuclear Station (SONGS) jointly developed and submitted a proposed work scope to the CA Nuclear Review Board (CANRB), which was finalized in November 2011. The work is to be performed by an independent third party organization. The project has gone out to six bidders for proposals with the winning bidder selected by mid-March 2012. The project has three phases:

1. Phase 1: screen potential generic once-through cooling methods using 9 criteria
2. Phase 2: screen the results of Phase 1 for nuclear plants
3. Phase 3: detailed cost and schedule of the results of Phase 2

Final completion is scheduled for 2014 or 2015. Environmental mitigation is not allowed in either Federal or State regulations.

Conclusion:

The CA state review of a potential change to the current once through cooling system for DCPP (jointly with the San Onofre Generating Station) is progressing with a request for a technical review proposal submitted to six bidders and a project award date of mid-March 2012. The schedule calls for completion of the study in 2014 or 2015. Because a conversion to closed cooling would have a number of important impacts on plant safety, the DCISC should continue to follow this issue.

3.9 DCPP Progress in Addressing INPO Evaluation Items

Note: Due to the confidentiality of information associated with the Institute of Nuclear Power Operations (INPO) reviews of DCPP, this report contains only general information.

The DCISC Fact-finding Team met with Jacqui Hinds, Chief of Staff to the Site Vice-President, to review DCPP's progress in addressing the August 2011 INPO evaluation items. The DCISC last reviewed this topic in December 2009 (Reference 6.9), concluding the following:

DCPP is preparing for its August 2011 INPO evaluation visit by pursuing corrective actions on previously-identified Areas for Improvement (AFIs), providing information to INPO, and meeting with INPO personnel. DCPP actions appear appropriate.

The Fact-finding Team reviewed the INPO Evaluation Report on DCPP and discussed with Ms. Hinds the plant's strengths, good practices, and areas needing improvement. DCPP has a satisfactory formal plan for addressing and tracking areas needing improvement. The plan involves periodic management review.

Conclusion:

DCPP has developed a satisfactory plan for addressing areas needing improvements identified in the Institute for Nuclear Power Operations August 2011 evaluation.

3.10 Experience with the New Reactor Vessel Head Assembly

The DCISC Fact-finding Team met with Mike Gibbons, Mechanical Maintenance Manager (and previously Project Engineer of the RV Head Project), to review DCPP's experience with their new Reactor Vessel Head Assembly. The DCISC last reviewed this item at its Public Meeting in December 2009 (Reference 6.10).

The new head meets all DCPP expectations with the following major characteristics:

- Integrated design reduces dismantling/re-mantling activities reducing radiation exposure and outage critical path time
- Fewer Polar Crane demands
- Integrated radiation shielding reducing radiation exposure
- Fewer rigging requirements for improved personnel safety
- Eliminated the Alloy 600 weld cracking issues (replaced with Alloy 690)
- Easier inspection of J-welds and other head areas reducing radiation dose

Conclusion:

The new DCPP Reactor Vessel Head Assembly has fully met DCPP expectations and has resulted in improvements in outage time, personnel safety, and personnel radiation exposure.

3.11 Safety-Security Interface Process

The Fact-finding Team met with Shawn Kirven, DCPP Security, for a review of the DCPP Safety-Security Interface Program. The DCISC last reviewed the Safety-Security Interface Program in December 2010 (Reference 6.11), concluding the following:

> *DCPP has developed a satisfactory procedure and process for controlling the safety/security interface in accordance with recent NRC regulations. The DCISC should follow up in mid-2011 to review the plant's implementation. The recent plant Alert provided an opportunity to test the capability of the security system to screen incoming off-site fire personnel and equipment. Lessons were learned that have resulted in changes to screening procedures.*

In March 2010 the NRC published its regulation 10CFR73.58, "Safety/Security Interface Requirements for Nuclear Power Reactors," which stated:

a. Each operating nuclear power reactor licensee with a license issued under part 50 or 52 of this chapter shall comply with the requirements of this section.
b. The licensee shall assess and manage the potential for adverse effects on safety and security, including the site emergency plan, before implementing changes to plant configurations, facility conditions, or security.
c. The scope of changes to be assessed and managed must include planned and emergent activities (such as, but not limited to, physical modifications, procedural changes, changes to operator actions or security assignments, maintenance activities, system reconfiguration, access modification or restrictions, and changes to the security plan and its implementation).
d. Where potential conflicts are identified, the licensee shall communicate them to appropriate licensee personnel and take compensatory and/or mitigative actions to maintain safety and security under applicable Commission regulations, requirements, and license conditions.

To provide guidance on implementation, NRC issued Regulatory Guide (RG) 5.74, "Managing the Safety/Security Interface," dated June 2009, stating, "This guide describes a method that the staff of the U.S. Nuclear Regulatory Commission (NRC) considers acceptable for licensees to assess and manage changes to safety and security activities so as to prevent or mitigate potential adverse effects that could negatively impact either plant safety or security." DCPP performed a plant-wide review of procedures and processes to identify any gaps that existed to meet the RG requirements. There were 33 procedures changed to either remove the gaps or enhance the procedure in meeting the RG.

The DCISC Fact-finding Team received and reviewed the DCPP Procedure OM11.ID7, "Safety/Security Interface Program," dated November 1, 2010. The procedure identifies management controls and processes used to establish and maintain an effective interface between nuclear safety and site security. The procedure instructs Design Engineering, Projects, and Security to involve all others in any modifications or changes to the plant physical configuration and

procedures. The procedure includes a detailed and comprehensive checklist for each proposed modification or procedure that has potential security or safety impacts.

The procedure addresses the following:

- Plant Modifications
- Procedure Changes and Emergency Plan Changes
- Emergent Operational Conditions and Maintenance Activities
- Changes to Security Plans
- Safety/Security Programmatic Reviews

The DCISC Fact-finding Team determined that the procedure was satisfactory in controlling the safety/security interface at DCPP.

Mr. Kirven reported that the DCPP Safety-Security Interface has gone smoothly with no problems. The DCISC has noted no issues from reviewing plant or NRC documents.

Conclusion:

The DCPP Safety-Security interface appears to be functioning satisfactorily.

3.12 Per Peterson Meeting with Jim Welsch, Station Director

DCISC Member Dr. Per Peterson met with DCPP Station Director, Jim Welsch to discuss selected topics from this fact-finding meeting and other subjects of mutual interest.

Conclusion:

None

4.0 Conclusions

4.1

Vibration analysis is an important tool to help prevent rotating equipment failures. The DCPP Machine Vibration Program appeared comprehensive and effective. The process by which non-normal vibration is classified, analyzed, and corrected was found to be systematic and well defined.

4.2

DCPP's three losses of 230 kV offsite emergency power during Outage 1R17 were identified and handled in a responsive manner. The immediate corrective actions were appropriate. The Root Cause Evaluation (RCE) was comprehensive and thorough, providing reasonable causes and corrective actions to prevent recurrence. The RCE appeared satisfactory to evaluate the effectiveness of corrective actions during the next outage, 2R17.

4.3

DCPP's Compressed Air System health is rated Green (excellent), and the system appeared to be running as designed. The System Engineer appeared knowledgeable and proactive about his system.

4.4

DCPP is appropriately assessing and fulfilling its mitigation needs for responding to Fukushima-type events such as enhancements to the ability to cope with extended station blackout and loss of installed safety equipment.

4.5

DCPP has made substantial progress in completing its Engineering Thoroughness Action Plan to resolve issues with engineering design and technical evaluation quality. Actions will be completed in 2012 with the exception of the long-term Licensing Basis Verification Project, which is scheduled for completion in 2015.

4.6

The DCISC concluded that the DCPP Observation and Coaching Program is comprehensive, appropriately developed to meet station needs, and implemented satisfactorily.

4.7

The DCPP Troubleshooting Program has been substantially improved since the DCISC reviewed it in April 2009. DCPP had developed a new comprehensive procedure, which appeared satisfactory. The DCISC concluded that the troubleshooting example it reviewed was thorough and successful.

4.8

The CA state review of a potential change to the current once through cooling system for DCPP (jointly with the San Onofre Generating Station) is progressing with a request for a technical review proposal submitted to six bidders and a project award date of mid-March 2012. The schedule calls for completion of the study in 2014 or 2015. Because a conversion to closed cooling would have a number of important impacts on plant safety, the DCISC should continue to follow this issue.

4.9

DCPP has developed a satisfactory plan for addressing areas needing improvements identified in the Institute for Nuclear Power Operations August 2011 evaluation.

4.10

The new DCPP Reactor Vessel Head Assembly has fully met DCPP expectations and has resulted in improvements in outage time, personnel safety, and personnel radiation exposure.

4.11

The DCPP Safety-Security interface appears to be functioning satisfactorily.

5.0 Recommendations:

None

6.0 References

6.1 "Diablo Canyon Independent Safety Committee Thirteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2005 – June 30, 2006", Approved October 17, 2006, Volume II, Exhibit D.6, Section 3.9 "Compressed Air System Review and Walkdown with System Engineer."

6.2 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.3, Section 3.10 "Update on DCPP Fukushima Event."

6.3 Ibid., Exhibit D.3, Sect. 3.9, "Problem Evaluation Action Plan & Engineering Staffing."

6.4 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume I, Executive Summary, "Conclusions and Recommendations."

6.5 Ibid., Volume II, Exhibit D.7, Section 3.6 "Licensing Basis Verification Project."

6.6 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 – June 30, 2010", Approved October 10, 2010, Volume II, Exhibit D.8, Section 3.2 "Status of DCPP Management Observation Program (MOP) and Its Effectiveness."

6.7 "Diablo Canyon Independent Safety Committee Nineteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2008 – June 30, 2009", Approved Oct. 10, 2009, Vol. II, Exhibit D.9, Section 3.5 "Troubleshooting Program."

6.8 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved Oct. 11, 2011, Volume II, Exhibit D.7, Section 3.1, "EPA Closed Cooling."

6.9 "Diablo Canyon Independent Safety Committee Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 – June 30, 2010", Approved Oct. 10, 2010, Volume II, Exhibit B.3, "WANO/INPO Evaluation Results."

6.10 Ibid., "2R15 Reactor Vessel Head Replacement."

6.11 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume II, Exhibit D.7, Section 3.10, "DCPP Safety/Security Interface."

22nd Annual Report, Volume 2, Exhibit D.6, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on January 10 – 11, 2012 by Peter Lam, Member, and David C. Linnen, Consultant

1.0 Summary

The results of the January 10 – 11, 2012 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subject addressed and summarized in Section 3 was as follows:

1. Status of Backlogs/Trends for Revisions to Operations, Maintenance, and Engineering Procedures
2. Nuclear Safety Culture
3. Quality Verification's Assessment of Station Operation and Most Recent Quality Performance Assessment Report
4. Meeting with NRC Resident Inspector
5. Foreign Material Exclusion Issues/Trends
6. Operation of the Turbine Driven Auxiliary Feedwater Pump during Station Blackout Conditions
7. Results of Operator Licensing Examinations in 2011
8. 2012 Operating Plan and 2011 Performance
9. On-line Maintenance and Risk Management
10. DCISC Member Meeting with Director of Site Services

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine ifPG&E's performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team's suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas

of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Status of Backlogs/Trends for Revisions to Operations, Maintenance, and Engineering Procedures

The DCISC Fact-finding Team met with Lance Hopson, Procedures and Document Services Supervisor, to review the current backlogs and trends for revisions to procedures for the Operations, Maintenance, and Engineering disciplines. This is the DCISC's first review of this specific topic. On a monthly basis, DCPP tracks and reports the backlogs of requested revisions to each of these three types of procedures as well as how many of the backlogged procedures were revised during that month. The requested procedure revisions in each of the above disciplines are further broken down into the following three categories of change requests:

- High Priority, Non Outage
- High Priority, Outage
- Low Priority

(Note: These performance metrics do not address the procedure backlogs associated with modifications, license changes, or upgrade projects, which are separately tracked through the station's corrective action system.)

The percentages of procedures in each month's backlog that are updated each month in each of the above priorities in each discipline are individually documented and also rated, based on the following grading system:

- Green: ≥ 90‰ of the backlogged procedures in a discipline are revised that month
- Yellow: ≥ 80‰ and < 90‰
- Red: < 80‰

The most recent tabulation available to the Fact-finding team was for January through October 2011. All of the monthly ratings were **Green** for **High Priority, Outage** procedure changes for **all three** disciplines. Conversely, all of the monthly ratings were **Red** for **Low Priority** procedure changes for all three disciplines.

The monthly procedure change performance ratings varied among all three disciplines regarding changes to **High Priority, Non Outage** procedures. For both Operations and Maintenance, the trend moved somewhat toward Red in the latter part of the year, while Engineering started the year

Green, moved to Yellow and briefly to Red, and then returned to Green in September and October.

In addition, each month the **overall performance of each discipline** is assessed on a Green, Yellow, Red rating **based on a weighted average composite** of the three types of procedure changes for each discipline. The monthly composite scores for the most recent four or five months have been Red for both Operations and Maintenance and Yellow for Engineering.

Mr. Hopson noted that his procedures group has ten personnel: seven for Operations and Engineering, and three in Maintenance (one each for Instrumentation & Control, Electrical and Mechanical). In addition, contract personnel have been employed to address the backlogs of low priority change requests. Manpower support from these contract personnel averages between the equivalent of a half-time and a full-time contractor throughout the year. More input is also being provided by the line organization with respect to prioritizing individual change requests. Most recently the highest priority has been on Operations procedures. In Maintenance, the priority has been shifted from I&C toward Electrical.

Mr. Hopson noted that the procedure writing group is aging and that 30 to 40 percent of the group may be retiring in the reasonably near future.

Conclusion:

DCPP employs an effective system for monitoring station performance with regard to updating procedures in Operations, Maintenance, and Engineering. Increased focus is needed on the timeliness of updating High Priority, Non-Outage procedures, especially in Operations and Maintenance. The pending retirements of a significant portion of the procedure writing staff have the potential to impact the capabilities of this group.

3.2 Nuclear Safety Culture

The DCISC Fact-finding Team met with Dennis Petersen, Director, Quality Verification, for an update on the station's efforts directed at maintaining a strong Nuclear Safety Culture. This is the DCISC's first examination of this topic during a Fact-finding Visit. The DCISC last reviewed this topic at its October 2011 Public Meeting (Reference 6.1), during which Mr. Jim Becker, Site Vice President at Diablo Canyon Power Plant (DCPP), provided a summary of the nature of Nuclear Safety Culture and the station's approach to this topic:

> *Mr. Becker stated that nuclear safety culture is uniquely important to the nuclear industry and is defined as: "An organization's values and behaviors – modeled by its leaders and internalized by its members – that serve to make nuclear safety the overriding priority. Mr. Becker also identified the eight industry "Principles for a Strong Safety Culture," as follows:*

1. Everyone is personally responsible for nuclear safety.
2. Leaders demonstrate commitment to safety.
3. Trust permeates the organization.

4. Decision-making reflects safety first.
5. Nuclear technology is recognized as special and unique.
6. A questioning attitude is cultivated.
7. Organizational learning is embraced.
8. Nuclear safety undergoes constant examination.

Mr. Becker further noted that a "Safety Conscious Work Environment" is one in which individuals feel free and are openly willing to identify and raise issues, questions or concerns, and express differing professional opinions or viewpoints without fear of retaliation. He also stated that the station's management has been increasing communications with the plant staff with regard to the methods for reporting and resolving nuclear concerns and the importance of a strong nuclear safety culture.

As part of the DCISC Fact-finding Team's activities for this January 2012 visit, the Team examined periodic communications documents from DCPP management to the plant staff. The Fact- finding Team noted in particular a front page article in DCPP's November 14, 2011 Edition of "PG&E At Work," which discussed the status of DCPP's Safety Culture Improvement Plan (SCIP) and the make-up and functions of DCPP's Safety Culture Monitoring Panel (SCMP). The Fact-Finding Team then followed up by examining the SCIP and the SCMP in more detail.

The SCIP is a 19 page summary level document that identifies and summarizes the status of over 200 specific, assigned actions for improving DCPP's safety culture and maintaining it a high level. Of these actions, two were Overdue, 14 were On Track, and the remainder had been completed. One of the last sections of the SCIP is directed at implementing ongoing communications between station management and the plant staff. All actions in that section were shown as complete.

One of the action items in the SCIP noted the station's intent to "Perform a complete Safety Culture Assessment of the DCPP organization." Mr. Petersen noted in this regard that a Nuclear Safety Culture Assessment will be performed on site during February 2012 under the auspices of the Utility Services Alliance (USA). The team, as currently structured, is to consist of personnel from about five nuclear stations and a process manager from USA. The DCISC should examine the results of this assessment when it becomes available.

Mr. Petersen discussed the purpose and makeup of DCPP's Nuclear Safety Conscious Monitoring Panel (NSCMP). Its purpose, as the name implies, is to provide a periodic examination of station safety culture. It achieves this purpose by periodically examining documentation for site events from the standpoint of nuclear safety characteristics. This examination involves categorizing the items examined based on the applicable characteristics. This examination is then presented in a report that also provides the NSCMP's observations on DCPP's safety culture.

The NSCMP is headed by the station's Director, Quality Verification. Its membership consists of personnel at the supervisory level from the following station work groups: Corrective Action,

Employee Concerns, Human Performance and Industrial Safety, Human Resources, Security, and Regulatory Services. Mr. Petersen indicated that these supervisory personnel are at the appropriate level and in the appropriate station work groups to be able to collectively assess the cultural aspects of various station events and conditions.

The most recent Nuclear Safety Culture Health Monitoring Report available to the DCISC (Third Quarter 2011, dated December 14, 2011), noted weaknesses in the quality and detail of some plant procedures and documentation, weaknesses in adherence to procedure guidelines by some personnel, the need for more management observations of personnel in the field, the need for an appropriate method to address the procedure change backlog, and it contained a recommendation to sample some Human Error Investigation Techniques that have been completed outside of the Apparent Cause Evaluation Process to determine if they are sufficiently complete to address underlying causes. The report also noted that the procedure related issues are continuations of issues identified in the first and second quarter of 2011. These quarterly reports are prepared for signature by DCPP's Site Vice President and are addressed to PG&E's Senior Vice President & Chief Nuclear Officer.

The DCISC Fact-finding Team reviewed a DCPP Root Cause Evaluation Report (RCE) on the March 26, 2011 Manual Reactor Trip of Unit 2 that was necessitated by a steam leak causing an automatic trip of Main Feedwater Pump 2-1. The purpose of this review was to ascertain the degree to which the RCE examined the ties of the causal factors of this event to aspects of Nuclear Safety Culture. The Fact-finding Team notes that a six page section of the 54 page report was devoted solely to a "Safety Culture Analysis" of this event. After identifying causal factors for this event that were related to Nuclear Safety Culture, the DCPP RCE evaluators then reexamined the initial set of Corrective Actions that had been developed to determine whether these actions would address the identified Nuclear Safety Culture issues. In doing so, the DCPP Root Cause Team noted in the RCE the specific eight corrective actions that served to address the nuclear safety cultural issues in this event. At the time of this Fact-finding Visit, six of the eight corrective actions had been completed, and two were scheduled to be complete by January 30, 2012.

Conclusion:

The station is adequately implementing and monitoring a Nuclear Safety Culture Health Program. The makeup and activities of the Nuclear Safety Culture Health Monitoring Panel (NSCHMP) appear to be appropriate. Its reports are detailed and reflect considerable analysis. Also, its reports are submitted to the appropriate level in the corporate organization to effect change as needed. The Root Cause Analysis examined by the DCISC Fact-finding Team was detailed and thorough, and it identified and analyzed specific causal factors related to Nuclear Safety Culture. Weakness in station procedures is a continuing issue. The DCISC should reexamine DCPP Nuclear Safety Culture within one year after the Utility Services Alliance (USA) report is issued on its February 2012 review of DCPP Nuclear Safety Culture.

Recommendations:

None

3.3 Quality Verification's Assessment of Station Operation and Most Recent Quality Performance Assessment Report

The DCISC Fact-finding Team met with Dennis Petersen, Director, Quality Verification, QV, for an update QV's assessment of station performance. The DCISC last reviewed this topic in August 2011 (Reference 6.2) when it concluded the following:

> *DCPP Quality Verification (QV) is aggressive in identifying quality problems and adverse trends and following up on corrective actions. The Site Status Report is an effective tool for communicating the top quality issues to management in a concise manner.*

Mr. Petersen provided the Fact-finding Team with QV's most recent Site Status Report, updated December 29, 2011, summarizing its perspective on site performance, as follows:

QV Director Concerns (Concerns, insights, order of significance, status):

Maintenance

Responsiveness: Maintenance Services (MS) has performed an Apparent Cause Analysis (ACE) and completed its corrective actions for the audit finding issued for untimely and inadequately documented responses to QV-identified issues related to rework, the Seismically Induced Systems Interaction (SISI), supplemental personnel, and Foreign Material Exclusion (FME).

Worker Practices: With the exception of the Human Performance (HU) gap originally identified in the Maintenance Performance Indicator Report (PIR) and Performance Improvement Integrated Matrix (PIIM), MS completed its action plan to address weaknesses in MS worker practices. The remaining actions, when implemented, will satisfactorily address QV's concerns.

Work Instructions: A Root Cause Evaluation (RCE) for maintenance work instruction quality has been completed. The actions for the RCE will encompass resolution of the QV-identified work package quality issues. QV has concluded that increased supervisory involvement and the application of HU tools have improved work package quality.

Safety Measures: During Refueling Outage 2R16, QV identified a deficiency that insufficient job preparation measures and coaching to safety standards by peers and supervisors led to inadequate safety measures being set prior to starting work. QV requested an evaluation to determine why adequate safety measures were not being put in place prior to proceeding with work. The evaluation requested by QV remains to be completed.

Engineering

Fire Water: During final preparations to implement the Fire Water piping work associated with the FWST repairs, the station could not adequately respond to appropriate Equipment Control Guidelines (ECG) compliance questions raised during the readiness reviews supporting the project. As a result, the piping work was deferred to the second half of 2012. This demonstrated a weakness

in the project preparations on the part of Engineering, Projects, and Operations.

Parts Holds: Engineering is challenged with competing priorities to commit additional resources to work down the backlog of parts on hold. Appropriate priorities need to be established.

Human Performance: Engineering has identified an adverse trend in the area of human performance, and has completed an ACE to determine causes and appropriate corrective actions. QV continues to monitor progress on corrective action implementation.

Corrective Action Program (CAP): During QV's audit of the fuel management program, QV noted that the recent fuel leak was not re-evaluated after the Westinghouse Root Cause Evaluation (RCE) determined the cause of the fuel leak was from foreign material.

Design Specifications: During the special processes audit, QV identified a programmatic weakness in Engineering's control and use of design specifications which was documented as an audit finding.

QV Issues in Elevation / Escalation *(Issue date - Type - Status - Functional Area - Description of Issue & Status):*

08/01/11 - 1st Level Escalation – Closed - Maintenance Services – **Untimely Resolution of Internal Independent Oversight Findings** – QV concurred with the actions taken to address the untimely responses, and has closed this escalation.

QV Issues & Trends *(including indications of line sensitivity or defensiveness to issues, isolationism, arrogance or complacency)*:

Operations

Equipment Status Control: QV notes that the implementation of a multidisciplinary Component Misposition Prevention Team is a positive step towards improving performance and sustainability. However, QV has recommended that the team composition include more craft-level workers in order to maximize effectiveness and engagement.

Tech Specs: During QV's audit of DCPP management of Technical Specifications, QV issued an audit finding for untimely primary reviews.

Records: During a routine QV observation, QV identified a number of records management process weaknesses in the handling and storage of QA records generated in the Control Room.

Confined Space: QV identified a misalignment between DCPP and PG&E standards for the confined space management program.

Watch Station Ownership: QV notes that the discovery of the degraded Unit 1 Main Feed Pump oil system is an example of a positive trend in watch station ownership.

Radiation Protection

Personnel Contamination Event (PCE): Two PCE's were incurred when workers obtained a contaminated vacuum hose and erroneously used it in the FWST during repair work.

PCE Goal: QV recently recommended a reduction in the goal of Personnel Contamination Events (PCEs) for online and outage performance. The goal established for online PCE's does not appear to be aligned with industry best performance.

Radioactive Materials: During a recent walkdown, QV identified improperly packaged and stored radiological materials. QV notes that the events identified during this walkdown do not appear to be adequately addressed.

Radiation Worker Practices: Good progress is being made on the action plan to address the adverse trend in radiological work practices.

Emergency Planning

Audit Findings: Two audit findings remain open, including issues related to an ill-defined Unified Dose Assessment Center interface with DCPP and county personnel, and Public Address (PA) system inadequacies. QV is particularly concerned with the length of time the PA system inadequacies will take to fully resolve.

Nuclear Work Management

Tech Specs: During QV's audit of DCPP management of Technical Specifications, QV issued audit findings for missed and untimely completion of surveillances, for untimely primary reviews, and for not evaluating the use of surveillance grace periods. QV continues to monitor completion of corrective actions credited as a result of the common cause evaluation completed for inadvertent entries into TS 3.0.3.

Trending: The results of "rapid trend" data during 2R16 were not effectively communicated to the site. QV recommended establishing procedure guidance for this process during future outages to ensure its effectiveness, and concurs with the site's approach to manage this effort via a High Impact Team.

Problem Prevention & Resolution

Performance Improvement Review Boards (PIRBs): PIRBs are providing an effective tool for site leadership to review department performance gaps.

Department CARB: Procedure guidance for department CARB (D-CARB) review of CAP and Performance Improvement products was issued this period. Effective D-CARB reviews have improved the quality of products being provided to the various plant review boards.

In addition, the DCISC Fact-finding Team reviewed QV's Quality Performance Assessment Report (QPAR) for the period June 7, 2011 to November 6, 2011. During the period QV audited Chemistry, Fuel Management, the Independent Fuel Storage Installation, the Environmental Protection Plan, Applied Technical Services, and Technical Specifications. The Executive Summary of this 56 page document identified weaknesses that detract from overall effectiveness of performance that include Licensed Operator Training, Industrial Safety Measures, Radiological Work Practices, and Equipment Status Control. Positive behaviors observed by QV during this period included coordination of the Performance Review Board meeting and efforts to improve the Foreign Material Exclusion Program.

Conclusion:

The Quality Verification (QV) Department's reviews of station performance were detailed and thorough. QV's follow-up and communication of the status of station corrective actions appeared to be appropriate. The DCISC should continue to monitor the activities of various station review boards such as Performance Improvement Review Boards and Corrective Action Review Boards.

3.4 Meeting with NRC Resident Inspector

The DCISC Fact-finding Team met with Dr. Michael Peck, NRC Senior Resident Inspector, and Laura Micewski, Resident Inspector, for an update on NRC activities and issues with respect to DCPP and the industry. The DCISC last met with the NRC Resident Inspector in November 2011 (Reference 6.3). Discussion focused primarily on substantive cross-cutting issues, safety culture, the safety culture work environment, and licensed operator training.

Dr. Lam, DCISC Chairman, also discussed whether Dr. Peck might be available to speak at a future DCISC Public Meeting on NRC Resident and Senior Resident Inspector activities at Diablo Canyon. Dr. Peck indicated that the DCISC should request NRC's concurrence in writing, and he provided the DCISC with the names, titles, and addresses of the appropriate NRC personnel to be addressed in the DCISC's correspondence. Dr. Lam indicated that he would work with DCISC's General Counsel to prepare and transmit such correspondence. He also indicated that DCISC would ensure to follow existing protocol at its Public Meetings with respect to how questions from the attending Public are addressed and responded to by the speaker and/or by the DCISC.

3.5 Foreign Material Exclusion Issues/Trends

The DCISC Fact finding team met with Craig Stolz, Foreign Material Exclusion (FME) Coordinator and Seismically Induced Systems Interaction (SISI) Program Coordinator, for an update. The DCISC last reviewed FME at its February 28 – March 1, 2011 Fact-finding Meeting (Reference 6.4), when it concluded the following:

> *DCPP's Foreign Material Exclusion (FME) Program has shown degraded performance in the last two outages (2R15 and 1R16) but an improving trend since 1R16 in October 2010. DCPP is making improvements in the program to better address outage and non-outage FME performance. These improvements appear satisfactory, and the DCISC should continue to*

monitor DCPP's FME performance.

The purpose of the FME Program is to prevent the undesired and potentially harmful intrusion of foreign materials into closed systems or other plant environments. Situations in which this intrusion can most likely occur are during maintenance when normally closed systems and environments are open or during inspections or tests under those same types of conditions. In such situations, it is important to maintain control of tools, fasteners, repair parts, replaced parts, safety items, residue resulting from the work, items attached to clothing, and anything else that could become loose and enter a system or environment. The vast majority of FME problems occur during plant outages when many system repairs, modifications, inspections, and tests are performed. Mr. Stolz noted that 25-30 FME events can occur in a typical outage, while 1 event, or less, typically occurs during normal operation. Eighteen FME monitors work under Mr. Stolz during outages.

Station performance is reported and tracked in the monthly Plant Performance Improvement Report (PPIR). The indicator is based on the number and significance of FME events each month. Significance is reflected on a point scale agreed upon throughout the nuclear industry:

FME Significant Event (Level 1) = 21 points

FME Threat (Level 2) = 10 points

FME Condition (Level 3) = 1 point:

The overall health of the FME program is then measured by the Key Performance Indicator (KPI), given by:

KPI = 100 - n(21 x # significant events + 10 x # threats + 1 x # conditions)

In the above formula, n = 0.5 to make the KPI a "per unit" indicator for DCPP. Overall FME performance is then graded on the following scale:

Green = 95 to 100

White = < 95 to 90

Yellow = < 90 to 80

Red = Below 80

Therefore, in order for the KPI in any specific month to be Green, the station can experience no FME Significant Event; and if it experiences one FME threat, it can experience no FME conditions in that month. One FME Significant Event in a month drives that month's performance to Red.

Because such a large proportion of FME events occurs during outages, the industry reports performance for each month as well as the average performance over the most recent 6 month period. Each monthly FME report displays the 6-month rolling average for the current month and for each of the prior two months. At the time of this Fact-finding Visit, the most recent PPIR

available was for October 2011. The rolling six-month indicators for August, September, and October were all Yellow, due to a determination in August that a fuel failure in Unit 2 had been due to debris in the reactor coolant system that had become entrained in that fuel bundle during power operation.

FME performance during plant outages improved considerably between Outages 1R16 and 2R16 through a reduction of the number of Threats/Vulnerabilities. Thirty four FME events were evaluated during this 1R16 period. As reported in the October 2010 Plant Performance Improvement Report, zero of the 34 were Significant Events, nine were Threats/Vulnerabilities, and 25 were FME Conditions.

The comparable FME performance for May 2011 during 2R16 was three Threats/Vulnerabilities and 24 FME Conditions. DCPP's review of the potential causes of these FME events determined that 16 of those 24 FME conditions were not caused in 2R16.

Mr. Stolz stated that an FME Steering Committee has been formed and examines performance looking back in time each month to evaluate trends in the indicator and its reported causes. He stated that the primary source of FME events is external contract workers during outages. Efforts have been increased to educate these workers on "what good performance looks like." These contract workers receive basic FME training at an on-site training facility as part of becoming part of the outage work force. The training is similar to that provided to DCPP's own employees.

Conclusion:

Station performance appears to be improving with respect to the Foreign Material Exclusion Program. Efforts to achieve this improvement have increased noticeably. The DCISC should continue to follow progress, especially after refueling outages. This progress check may not need to be part of a Fact-finding visit, but could be included in DCPP's briefings at Public Meetings.

3.6 Operation of the Turbine Driven Auxiliary Feedwater Pump during Station Blackout Conditions

The DCISC Fact-finding Team met with Murrell Evans, Shift Manager under temporary assignment related to support of station activities in response to the Fukushima accident. The DCISC last reviewed the Auxiliary Feedwater System in November 2011 (Reference 6.5) when it concluded the following:

> *In the event of a station blackout situation, i.e. loss of all AC and DC electric power, the Steam-Driven Auxiliary Feedwater Pump can be relied upon to provide the necessary cooling water to the Steam Generators to remove heat from the secondary system and ultimately decay heat from the reactor core to maintain hot shutdown conditions. The pumps are tested quarterly and are in reliable operating condition.*

The purpose of the DCISC's review of the Turbine Driven Auxiliary Feedwater Pumps during this Fact-finding Trip was to verify that these pumps could be manually operated and perform their

design function under Station Blackout conditions. These conditions were experienced by the Fukushima Plant in Japan as the accident progressed following the earthquake and tsunami that occurred in March 2011. Under such blackout conditions (which are defined to be the loss of all onsite A/C electrical power), the Turbine Driven Auxiliary Feedwater Pumps would have to be manually operated locally. Also, the operators performing that task would need to be in communication with the licensed operators in the Control Room.

Mr. Evans stated that the DCPP station operators who would be responsible for operating those pumps are extremely familiar with the locations of those pumps and their controls, and the operators could be relied upon to access and operate the pumps while communicating with the Control Room personnel via hand held radios. He explained that the Motor Operated **Feedwater** Discharge Valves to each Turbine Driven Auxiliary Feedwater Pump (one pump for each DCPP Operating Unit) are kept in the open position during normal plant operation and that they would remain in that position during a loss of all electrical power. Additionally, he noted that the Turbine Driven Auxiliary Pump is driven by steam. The **Steam** Isolation Valve to the turbine is **shut** during normal plant operation, but it would **automatically open** upon a loss of A/C electrical power.

Mr. Evans explained further that as steam from the Steam Generators spins the Turbine Driven Auxiliary Feedwater Pump, water would be pumped from the Condensate Storage Tank back to the Steam Generators, and the water would be turned into steam that would continue to propel the Turbine Driven Pump. The process of continuing to generate steam would serve to cool the reactor coolant passing through the Steam Generator, and this reactor coolant would circulate back through the reactor through natural circulation, thereby cooling the nuclear fuel.

Mr. Evans noted that, as the water level in the Steam Generator increased, the Control Room Operator would communicate this information to the local operator at the pump. The local station operator would then manually throttle down the pump discharge valve. He further explained that turbine driven pump and the controller for the pump would automatically respond to this change. First, the design characteristics of the pump itself would cause the pump to speed up as its flow is reduced. This would then be offset, however, by the operation of its spring loaded and oil controlled governor (a speed control mechanism) that would respond to the pump's increasing speed and would lower the pump's speed to the appropriate level.

When questioned about the likelihood that the water level in the Steam Generator could decrease to the point of affecting the station's ability to cool the reactor, Mr. Evans noted that this risk is very small. He indicated that the primary caution would be to prevent overfilling the steam generator in order to keep the feedwater from entering the steam lines and overloading that piping.

Conclusion:

The designs of the Turbine Driven Auxiliary Feedwater Pump and the Auxiliary Feedwater System, as well as the training and capabilities of station operators, provide assurances that water can be pumped to a steam generator by the Turbine Driven Auxiliary Feedwater Pump in order to achieve cooling of the nuclear fuel during a Station Blackout condition.

3.7 Results of Operator Licensing Examinations in 2011

The DCISC Fact-finding Team met with Erik Werner, Operations Performance Shift Manager, to review the results of the Operator Licensing Examinations in 2011. The DCISC's last review of Operator Licensing Examinations was during its October 2008 Public Meeting (Reference 6.6) in which the following was presented:

> *Mr. Welsch stated the NRC recently administered an examination at DCPP from June 13 through June 23, 2008, to 14 license candidates. On July 2, 2008, licenses were awarded to all 14 candidates including 9 reactor operator licenses and 5 senior reactor operator licenses which included 3 new senior reactor operators and 2 upgraded senior reactor operators. Mr. Welsch reported the NRC was highly complimentary of the DCPP reactor operator training program and the candidates and issued no findings or violations as a result of this inspection activity. Of the 14 candidates, 2 candidates achieved a high score of 97.0‰, while the lowest scoring candidate achieved a score of 86.6‰, and the class average was 92.8‰.*
>
> *Mr. Welsch stated, in the future, concerning the L061 Continuation Class, 6 candidates who were removed from the previous class prior to the June 2008 examination are in additional training for licensing in February 2009 as follows: 4 senior reactor operator license candidates were diverted from the previous class by the plant's NRC License Candidate Review Board for lack of adequate progress and have been entered into an extended remediation program; 1 senior reactor operator candidate was unable to participate in the June 2008 examination due to serious illness; and 1 new senior reactor operator license candidate, was previously a senior reactor operator at another Westinghouse pressurized water reactor plant with extensive experience.*

This Fact-finding review was prompted by the number of failures on the NRC's Licensed Operator examinations in August 2011. DCPP's Root Cause Evaluation Report, DA 50424189, approved on October 26, 2011 was reviewed by the DCISC prior to the Fact-finding visit.

On August 22, 2011, contrary to station's expectations for a 100‰ pass rate, five of 21 candidates received confirmed failure results for the L091 NRC written exam. Another candidate later failed the simulator exam. The Root Cause of the failures was determined to be "insufficient oversight and execution of the NRC Exam Development process and a remediation program that did not require student mastery of the subject matter."

Initial Licensed Operator (ILO) Class L091 started in late November 2009 with 11 Senior Reactor Operator (SRO) and 10 Reactor Operator (RO) candidates. An additional SRO candidate (for upgrade from RO) joined the class in June 2010. The license program itself consisted of an orientation program for Instant SRO candidates (i.e. those pursuing SRO licenses who had not previously held an RO license), pre-fundamentals phase, fundamentals phase, systems phase, operations phase, and pre-license preparation phase.

Throughout the program, student performance monitoring was conducted using a "Student Health Card," which included results of weekly tests, quizzes, rolling averages, and other performance-based data such as simulator comments, and progress on qualification cards. A DCPP Candidate Readiness Review Board (CRRB) met at the end of each phase, during the mid-point of the Operations Phase, and following the Audit Exam for determining whether candidates would sit for the NRC written exam.

Student remediation was conducted throughout the program in accordance with a governing station procedure which required various types of remediation based on both the student's rolling test average and the recent test score. Depending on the student's performance in various areas, the student would be required to have standard, instructor, or full remediation. Standard remediation was a review of the questions on the most recent test, which was conducted with all students following the test. Instructor remediation consisted of individual coaching of any student who missed a high proportion of questions on a particular topic. Full remediation included instructor coaching plus a follow-on test.

Based on DCPP's chart for remediation requirements, a student may have scored as low as a 70‰ and not be required to retest. This was a requirement unique to the Initial License Training class and was different than the full remediation requirement of all the other Operations learning programs, which require full remediation on any evaluation if the student scores below 80‰.

The pre-license preparation phase, which is the final preparation phase, is a six-week period followed directly by the license exam. No new material or learning objectives are introduced during this phase in which final preparations are made for the candidates' readiness for the NRC written exam. A typical week includes daily practice quizzes, simulator practice, Job Performance Measures practice, and self-study. The week typically concludes with an NRC practice exam. The results of the first three NRC practice exams were available to the CRRB prior to making a decision on whether a candidate was sufficiently prepared to take the NRC exam or whether a candidate needed further remediation prior to taking the test. (It should also be noted that the CRRB could make a decision that a candidate should be removed from License Training during any phase of the license training process.)

Following the first half of the pre-licensing phase was an audit exam, which was a full practice exam (i.e. written, simulator, and Job Performance Measures) that had been written by the exam development team and administered by industry peers. For class L091, the written portion of the Audit Exam was a modified version of the NRC written exam used for the previous DCPP license class, and the results of this exam were that all members of class L091 passed.

The NRC Written License Examination, like the above Audit Exam, was developed by exam development team members. This process occurred with the support of the Operations Representative, whose responsibilities included reviewing the NRC Written Exam for operational validity and acting as the point of contact for organizing and supporting the validation of the exam by licensed operators.

The results of this written Examination for DCPP's Class L091 were that 4 of 11 Senior Reactor Operator (SRO) candidates failed and 1 of 10 Reactor Operator (RO) candidates failed. One other SRO candidate later failed the simulator portion of the Licensing Examination.

The listing below is an extraction of data from DCPP's Root Cause Analysis that focuses on the results of performance assessments of candidates and decisions made by the Candidate Readiness Review Board (CRRBB):

2/12/10	CRRB reviews status of candidates and determines that all should remain in the program.
3/8/10	NRC Generic Fundamental Exam is administered to all students - 100‰ pass rate.
3/10/10	CRRB reviews progress of all candidates after 1st week of Systems Phase. All candidates advance.
5/4/10	Midway through Systems Phase CRRB notes need for performance improvement or assigns remediation to 5 candidates (3 of these will eventually fail the NRC written exam).
6/14/10	Four SRO candidates receive< 85‰ on the Systems Comprehensive Exam. Passing Score is > 80‰, but those 4 candidates eventually fail the NRC written exam.
1/14/11	CRRB reviews candidate performance. All candidates continue in the Operations Phase.
5/18/11	CRRB reviews candidate performance during the Operations Phase. All candidates advance in the Pre-Licensing Preparation Phase.
6/2/11	Three out of four SRO candidates and one RO candidate who will fail the NRC Written Exam have less than an 80‰ average for the first three practice exams. However, a different three SRO candidates and 2 other RO candidates who average less than 80‰ on the first three practice tests will pass the NRC Exam.
6/3/11	Ten of the 21 candidates score < 85‰ on the audit exam prior to the NRC Exam. The passing grade was > 80‰. Statistics showed that candidates with those grades were potentially at risk.
6/21/11	CRRB concludes that 20 of 21 candidates should take the NRC Exam (although 8 of the 20 were advanced with reservations).
6/21/11	Final decision is made by Station Leadership to sit all 21 candidates for the NRC Exam.
8/22/11	Five candidates (4 SRO and 1 RO) receive confirmed failure results for the L091 NRC Written Exam.

DCPP performed an extensive Root Cause Analysis of the factors contributing to the NRC Written Exam failures. Station efforts in this regard included examinations of Root Cause Evaluations of other nuclear power plants in similar situations, a detailed examination of DCPP's candidate selection process (including the professional and educational backgrounds of all of the candidates), and an examination of the potential impacts of the components of nuclear industry Safety Culture on the training process. The Problem Statement that resulted from this analysis is as follows:

> *"On August 22, 2011, contrary to station's expectations for 100% NRC initial license exam pass rate, 5 candidates received confirmed failure results for the L091 NRC written exam."*

Two Root Causes (RC) were identified:

> RC.1 – "Insufficient oversight and execution of the NRC Written Exam process."
>
> RC.2 – "The Initial License Training remediation program did not require student mastery of the subject matter."

Two additional Contributing Causes (CC) were also identified:

> CC.1 – "Inaccurate mindset led the Candidate Readiness Review Board to inappropriately assess available data to correctly determine candidate readiness for the NRC Written Exam."
>
> CC.2 – "Previous license class successes resulted in insufficient rigor in the Selection and Familiarization process of instant SRO candidates."

The station developed specific corrective actions to address each of the above Root and Contributing Causes, and the corrective actions appear to be appropriate.

Conclusion:

The station's analysis of the organizational causes of 5 operator candidates out of 21 failing the NRC Written Exam for Licensed Operators was thorough and incisive. Corrective actions appear to be appropriate. The structure and extent of the training, evaluation, and remediation programs are impressive.

3.8 2012 Operating Plan and 2011 Performance

The DCISC Fact-finding Team met with Jacquie Hinds, Principal Program Manager, to review the results of DCPP's 2011 Operating Plan and to review the 2012 Plan. The DCISC last reviewed this subject in April 2011(Reference 6.7) when it concluded the following:

> *DCPP achieved mixed results meeting its goals in the 2010 Operating Plan, including those measures relating to "operational safety," which the DCISC monitors. The DCISC acknowledges PG&E's written and in-practice commitment to safety and notes a significant increase in the performance goals for 2011. The DCISC will continue to monitor DCPP performance with respect to these goals.*

Ms. Hinds noted that contents DCPP's 2012 Operating Plan represent continuity with the 2011 Plan. The 2012 Vision for DCPP is the same as in 2011, which is to be the leading nuclear power plant in the industry. She noted in particular that Public and Employee Safety had been established by PG&E as a new goal for 2012. The initiatives for 2012 are centered on the following themes:

- Employee Industrial Safety

Event-Free Operations

- Performance Improvement
- Regulatory Excellence
- Site Modernization

The following performance indicators were extracted from DCPP's Operating Plans for 2010, 2011, and 2012:

Performance Measure	Actual 2010	Goal 2011	Actual 2011	Goal 2012
1. OSHA Recordable Rate	0.23	≤0.165	0.11	≤0.14
2. Collective Radiation Exposure (person-Rem)	131.3	≤85	34.3	≤85
3. Equipment Reliability Index	92	≥92	90.5	≥88
4. Operational Focus Index	0.75	≤0.75	0.39	≤0.60
5. NRC PIs and Findings	One cross-cutting issue	All green. No cross-cutting	One cross-cutting issue	All Green. No cross cutting.
6. Corrective Action Program Index	82	≥90	97.5	≥90
7. Station Clock Reset Rate	Not used	≤0.007	?	<0.005
8. Outage Duration	41.8 days	≤33 days	35 days	<44 days
9. Environmental Index	93.8	>90	96.3	>90

Regarding the theme on Occupational Safety, Ms. Hinds noted that self-assessments were performed during 2011, and that the focus during 2012 will be to increase responsibility below the management level in order to achieve continued improvement. She noted that the 2012 theme of Event-free Operations is similar to 2011 but with an increased focus on standards pertaining to work affecting operational risk and standards pertaining to the management observation program. Likewise, Performance Improvement is a continuing theme with a focus on the Corrective Action Program, the Performance Improvement Review Board, and the trending program. Regulatory Excellence is also a continuing theme with a focus on more effectively implementing the Corrective Action Program to address the cross-cutting issue of Problem Evaluation thoroughness. Ms. Hinds noted that continued progress on the Licensing Basis Verification Program, now scheduled for completion in 2015, should also help improve DCPP's regulatory performance.

With respect to Site Modernization, DCPP has been engaged in major construction projects for a number of years, which have resulted in improved plant operation, but have also created an appearance of continual construction. The Site Master Plan is now aimed at improving the condition

of both the power block and non-power block facilities and roadways (utilizing environmentally friendly and "green" building solutions) to create and maintain a "safe, environmentally friendly, and efficient work atmosphere for employees to perform in an operationally excellent manner."

Conclusion:

DCPP's performance has typically been improving with respect to its performance measures since 2010, and the goals for 2012 in DCPP's Nuclear Generation Operating Plan are set for high levels of performance. Regulatory performance remains an important area in which the station seeks further improvement, and station plans are directed accordingly.

3.9 On-line Maintenance and Risk Management

The DCISC Fact-finding Team met with John McDonald, Work Control Manager, to review the status of DCPP's on-line maintenance and risk management activities. The DCISC last reviewed this topic in April 2011 (Reference 6.8) when it concluded:

> *The DCPP On-Line Maintenance (OLM) Program, considered satisfactory in past DCISC reviews, has been improved by adopting better risk analysis procedures and tools and by upgrading OLM to the station program level. DCPP OLM procedures appear satisfactory.*

The DCISC has been following this issue for a number of years as DCPP has been engaged in replacing its computerized ORAM (Outage Risk Analysis Maintenance) program, a qualitative on-line risk assessment program with Safety Monitor, a quantitative computer program for on-line risk assessment. Mr. McDonald reported that Safety Monitor is now fully functional and is widely used in the plant. About 20 to 25 people develop information that is input into Safety Monitor, and an even larger number are users of the output. Components planned to be taken out of service are input into the program, along with the desired time period during which the work is intended to be performed. The main benefit of Safety Monitor is that it not only provides an indication of risk (i.e. reactor core damage frequency) presented by taking specific equipment out of service, it also calculates the core damage frequency resulting from removing a number of different pieces of equipment at the same time. The computer program displays the aggregate risk presented by the postulated work plan. This calculated risk is also displayed in a color context of Green, Yellow, Orange, or Red, with Red being the greatest risk. Using this information, work planners are able to schedule equipment outages at times that will control risk to desired levels by keeping the individual and aggregate risks in the Green band.

Mr. McDonald demonstrated the capability of Safety Monitor by inputting a hypothetical situation where a component would be planned to be taken out of service, and therefore would be declared to be inoperable. When his information was input into the computer, the program determined and displayed the core damage frequency on the screen.

Mr. McDonald noted that there are still some minor programming issues to be resolved. These pertain to the printing capability of the program and not to the functioning of the program from a safety standpoint. For example, the program allows only the information on the screen to be

printed, and therefore it is a labor intensive activity to print out a day's schedule.

The DCISC Fact-finding Team examined the station's last 12 monthly assessments of On-line Risk contained in DCPP's December 2011 Plant Performance Improvement Report (PPIR). This risk is graphed on one page showing the prior six-month rolling average risk for each month. That rolling average risk was Green for every month from December 2010 through November 2011. The same PPIR page on On-Line Risk Assessment also identifies specific on-line risks that occurred during each of the prior twelve months. The only month of significance was May 2011 during which three events occurred, all resulting in loss of 230 kV start-up power for Unit 1 during Refueling Outage 2R16. The causes of these events were not due to improperly taking equipment out of service for on-line maintenance, but rather to problems created during maintenance activities that were being performed during Refueling Outage 2R16. These three specific events were examined by the DCISC and are discussed in Section 3.2 of DCISC's December 13/14, 2011 Fact-finding Report.

Conclusion:

DCPP's Safety Monitor computer program for managing on line risk is fully functional and supports station activities by being able to determine the risk, measured by core damage frequency, that would result from removing different equipment from service at the same time during plant operation. DCPP effectively used Safety Monitor to manage online risk throughout 2011. This topic should be removed from DCISC's Open Items List, and future DCISC reviews of this topic should depend upon issues that might emerge.

3.10 DCISC Member Meeting with Director of Site Services

DCISC Member Dr. Peter Lam met with Mr. Steven David, DCPP Director, Site Services, to discuss selected topics from this fact-finding meeting and other subjects of mutual interest.

4.0 Conclusions

4.1

DCPP employs an effective system for monitoring station performance with regard to updating procedures in Operations, Maintenance, and Engineering. Increased focus is needed on the timeliness of updating High Priority, Non-Outage procedures, especially in Operations and Maintenance. The pending retirements of a significant portion of the procedure writing staff have the potential to impact the capabilities of this group.

4.2

The station is adequately implementing and monitoring a Nuclear Safety Culture Health Program. The makeup and activities of the Nuclear Safety Culture Health Monitoring Panel (NSCHMP) appear to be appropriate. Its reports are detailed and reflect considerable analysis. Also, its reports are submitted to the appropriate level in the corporate organization to effect change as needed. The Root Cause Analysis examined by the DCISC Fact-finding Team was detailed and thorough, and it identified and analyzed specific causal factors related to Nuclear Safety Culture. Weakness in station procedures is a continuing issue. The DCISC should reexamine DCPP Nuclear

Safety Culture within one year after the Utility Services Alliance (USA) report is issued on its February 2012 review of DCPP Nuclear Safety Culture.

4.3

The Quality Verification (QV) Department's reviews of station performance were detailed and thorough. QV's follow-up and communication of the status of station corrective actions appeared to be appropriate. The DCISC should continue to monitor the activities of various station review boards such as Performance Improvement Review Boards and Corrective Action Review Boards.

4.4

Station performance appears to be improving with respect to the Foreign Material Exclusion Program. Efforts to achieve this improvement have increased noticeably. The DCISC should continue to follow progress, especially after refueling outages. This progress check may not need to be part of a Fact-finding visit, but could be included in DCPP's briefings at Public Meetings.

4.5

The designs of the Turbine Driven Auxiliary Feedwater Pump and the Auxiliary Feedwater System, as well as the training and capabilities of station operators, provide assurances that water can be pumped to a steam generator by the Turbine Driven Auxiliary Feedwater Pump in order to achieve cooling of the nuclear fuel during a Station Blackout condition.

4.6

The station's analysis of the organizational causes of 5 operator candidates out of 21 failing the NRC Written Exam for Licensed Operators was thorough and incisive. Corrective actions appear to be appropriate. The structure and extent of the training, evaluation, and remediation programs are impressive.

4.7

DCPP's performance has typically been improving with respect to its performance measures since 2010, and the goals for 2012 in DCPP's Nuclear Generation Operating Plan are set for high levels of performance. Regulatory performance remains an important area in which the station seeks further improvement, and station plans are directed accordingly.

4.8

DCPP's Safety Monitor computer program for managing on line risk is fully functional and supports station activities by being able to determine the risk, measured by core damage frequency, that would result from removing different equipment from service at the same time during plant operation. DCPP effectively used Safety Monitor to manage online risk throughout 2011. This topic should be removed from DCISC's Open Items List, and future DCISC reviews of this topic should depend upon issues that might emerge.

5.0 Recommendations:

None

6.0 References

6.1 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit B.3, "Components of Safety Culture in the Nuclear Industry and DCPP."

6.2 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.2, Section 3.9, "Second Quarter 2011 Quality Verification Site Status Report."

6.3 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.4, Section 3.1 "Meeting with NRC Senior Resident Inspector."

6.4 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 5, 2011, Volume II, Exhibit D.9, Section 3.7, "Foreign Material Exclusion Program."

6.5 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.4, Section 3.6 "Auxiliary Feedwater Pumps."

6.6 "Diablo Canyon Independent Safety Committee Nineteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2008 – June 30, 2009", Approved October 6, 2009, Volume II, Exhibit B.3 "Status of the NRC Licensed Reactor Operator Training."

6.7 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 5, 2011, Volume II, Exhibit D.10, Section 3.8 "2010 & 2011 DCPP Operating Plans."

6.8 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 5, 2011, Volume II, Exhibit D.10, Section 3.1 "On Line Maintenance."

22nd Annual Report, Volume 2, Exhibit D.7, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on March 13 – 14, 2012 by Peter Lam, Member, and R. Ferman Wardell, Consultant

1.0 Summary

The results of the March 13 – 14, 2012 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 are as follows:

1. Trends of NRC Non-Cited Violations and Allegations
2. Unified Dose Assessment Center Process Interface Weakness
3. Outage 1R17 Safety Plan
4. Vital DC Power Crosstie
5. DCISC Meeting with NRC Resident Inspector
6. Operational Decision-Making
7. Eagle 21 Replacement Project
8. Containment Fan Cooler Units Anti-Rotation Modification Performance
9. Control Room Ventilation System
10. Human Performance Line Ownership Action Plan
11. Emergency Response Organization Drill
12. Peter Lam Meeting with Jim Welsch, Station Director

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine ifPG&E's performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team's suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas

of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 NRC Non-cited Violation and Allegation Trends

The DCISC Fact-finding Team met with Mike McCoy, NRC Regulatory Interface, and Rick Burnside and Russ Glines of the DCPP Employee Concerns Program, to review NRC Non-Cited Violation (NCV) and NRC Allegation trends, respectively. The DCISC last reviewed NCV trends in June 2007 (Reference 6.1) when it concluded the following:

> *"DCPP is taking actions to reduce its numbers of NRC-issued Non-cited Violations (NCVs). This is appropriate; however, to a large degree, dependent on the NRC. The DCISC notes that all DCPP NCVs are of very low safety significance (Green) and has not seen any adverse trends in their content or causes."*

The DCISC has not reviewed NRC allegations recently.

NRC Non-Cited Violations (NCVs)

NCVs are violations of NRC regulations, which have very low safety significance, and, as such, are not "cited" as violations by NRC. As reported in the 2010 – 2011 DCISC Annual Report (Reference 6.2) the trend of violations for this and the last four DCISC reporting periods was as follows:

DCISC Reporting Period	Number of Inspections	Violation Severity Level			Violations Total
		III	IV	Non-Cited	
7/1/06 – 6/30/07	10	-	-	20	20
7/1/07 – 6/30/08	8	-	-	7	7
7/1/08 – 6/30/09	12	-	-	18	18
7/1/09 – 6/30/10	9	-	5	14	19
7/1/10 – 6/30/11	8	-	4	36	40

The DCISC reported the following conclusions and recommendations in that report:

Conclusions:

The DCISC received regular reports on the NRC Performance Indicators, DCPP License Event Reports (LERs) sent to NRC, and NRC Inspection Reports and Enforcement Actions (violations) at each of its Public Meetings as well as copies of these documents throughout the reporting period.

The Committee notes that, although the Nuclear Regulatory Commission (NRC) concluded that, "Overall, Diablo Canyon Power Plant, Units 1 and 2, operated in a manner that preserved public health and safety…," it identified 36 Non-cited Violations, four Severity Level IV violations, and continued a substantive crosscutting issue. The increase in number of these violations and the crosscutting issue (in problem identification and resolution) are concerns to the DCISC. The DCISC plans to augment its review of DCPP NRC regulatory performance during the next reporting period.

Recommendation R11-1:

Due to the substantial increase in the numbers of NRC Non-cited Violations and Severity Level IV Violations over the last two reporting periods and because the NRC Substantive Crosscutting Issue in Problem Identification and Resolution still exists, the DCISC recommends that DCPP re-examine its earlier Root Cause Analysis for effectiveness and consider an independent review of its corrective actions by Quality Verification, the Nuclear Safety Oversight Committee, or the Institute of Nuclear Power Operations in an assist visit.

Basis for Recommendation:

Licensee Event Reports, Violations, and the Substantive Crosscutting Issue in PI&R are related issues because they all deal with the identification and resolution of plant events. If there is a common cause or similar causes for these negative trends, DCPP should identify and resolve them. The DCISC notes that the DCPP Corrective Action Program has undergone many reviews and assessments in the last several years apparently without an effective, sustainable resolution.

The DCISC had a similar recommendation in the previous reporting period as follows:

Recommendation R10-1:

Due to the increases in the numbers of Licensee Event Reports and Severity Level IV Violations and because of the newly re-identified NRC Substantive Crosscutting Issue in Problem Identification and Resolution, the DCISC recommends that DCPP perform a comprehensive analysis to determine the cause of these negative regulatory trends.

DCPP responded as follows:

> "PG&E has performed multiple analyses, as documented in the Corrective Action Program, for these events. A common cause analysis was performed to examine the number of traditional enforcement violations (as documented on SAP Notification 50331845). This common cause analysis was approved by the Corrective Action Review Board on October 5, 2010.
>
> The substantive cross-cutting issue in problem evaluation was analyzed in the Corrective Action Program via a root cause analysis (as documented in SAP Order 60024480). This root cause analysis was approved by the Corrective Action Review Board on June 7, 2010.

> Both these Corrective Action Program documents were the subject of an inspection by Nuclear Regulatory Commission inspectors in December 2010. The NRC inspectors concluded that the corrective actions appear to be appropriate and on target, but lacked sufficient run-time to demonstrate their effectiveness at the time of the inspection."

The conclusions in the December 2010 inspection report are encouraging, but the DCISC notes that the substantive cross-cutting issue still existed.

Based on the above, the DCISC chose this March 13, 2012 fact-finding meeting to review DCPP's progress in reducing the number of NCVs. DCPP reported that the number of NCVs has been significantly reduced as follows:

Year	NCVs
2010	31
2011	9

This reduction was attributed to the following actions:

1. Augmented training on the DCPP licensing basis and the acceptance criteria for changes affecting the licensing bases.
2. Weekly senior leadership review of NRC issues.
3. Site-wide preparation with expert outside assistance for a significant NRC inspection of implementation of the licensing bases.
4. Development of Procedure XI1.ID4, "NRC Interface and Inspection Support."
5. Safety culture assessments and resulting action plans to improve safety culture.
6. Development of a Regulatory Excellence Plan to improve perceived regulatory weaknesses.
7. Performance of an Apparent Cause Evaluation (ACE) for the negative NCV trend with numerous procedure changes to enforce conservative decision-making.
8. The Licensing Basis Verification Project, reviewed by DCISC in November 2011 (Reference 6.3), helped focus DCPP staff on design and licensing bases.

These actions have resulted in significantly lower NCVs. DCPP's NCVs have dropped below the average for NRC Region IV plants in 2011. The DCISC Fact-finding Team reviewed the above NRC Interface and Inspection Support Procedure and concluded that it appeared comprehensive and effective, offering valuable guidance for a solid regulatory performance program. The DCISC learned that NRC had lifted its Substantive Cross-cutting Issue in Problem Identification and Resolution in its March 2012 annual regulatory performance letter. This was a positive step.

NRC Allegations

Allegations are concerns filed by any member of the public, including plant and non-plant persons, in confidence to the NRC. NRC investigates each one and responds to the person initiating it. Numbers of allegations by plant are shown publicly on the NRC website. DCPP's allegations for the past four years have been as follows:

Year	Number of Allegations	Number Substantiated
2008	19	8
2009	19	6
2010	12	3
2011	9	1

The median number of allegations for U.S. plants in 2011 was four.

Conclusion:

DCPP has taken effective actions to significantly reduce the number of NRC Non-cited Violations (NCVs) from 2010 and earlier to 2011. Additionally, the NRC has lifted its Substantive Cross-cutting Issue in Problem Identification and Resolution in its March 2012 annual regulatory performance letter. The numbers of NRC allegations has been dropping over the last four years, and the absolute numbers are not large. These are positive trends. The DCISC should continue to monitor DCPP regulatory performance.

3.2 Unified Dose Assessment Center Process Interface Weakness

The DCISC Fact-finding Team met with Ray Robbins, Senior Quality Auditor, to discuss the results of an April 2011 quality assurance audit which concluded that the Unified Dose Assessment Center (UDAC) process did not have clearly defined and understood responsibilities and goals with regard to interface between DCPP and San Luis Obispo (SLO) County personnel. The DCISC last reviewed UDAC in November 2008 (Reference 6.4) and in January 2009 (Reference 6.5) when it concluded, respectively:

> *DCPP responded successfully overall to the simulated event during the October 29, 2008 emergency exercise. It performed critiques of its performance which the DCISC should review when completed. The Unified Dose Assessment Center Improvement Project resulted in improvements to its processes and communication between DCPP the San Luis Obispo County. The DCISC should follow up on the effectiveness of those changes as implemented in the October 29 exercise.*
>
> *DCPP declared its performance successful in implementing its Emergency Plan in the October 29, 2008 Emergency Exercise. This included the improved Unified Dose Assessment Center (UDAC) performance, except for four-of-eleven UDAC objectives not met (timeliness and accuracy of some radiological dose assessment and protective action recommendations.) These items were entered into the DCPP Corrective Action Program for resolution. The DCISC should follow up on these issues.*

UDAC is a joint DCPP/County team established to take accident radiological release data and meteorological data from DCPP and process it to project radiation dose levels and dose plume location to determine protective action recommendations (PARs) (evacuation, sheltering, etc.) for use by the County. The County takes the recommendations and uses them as their basis for protective actions for the public. The intent of the UDAC is to present timely and accurate dose assessment and protective action recommendations.

The audit concluded that the then current UDAC process did not incorporate the county dose assessment personnel into the process for providing timely dose and PARs to the County Command Table. County personnel were providing independent dose assessment and PARs; however, they were provided after DCPP had already provided its information. This was observed in the March 2, 2011 and April 12, 2011 full-scale drills. The primary reason for this was that county personnel did not have the training and software tools to develop information as quickly as DCPP. The intent of UDAC is for both parties to provide timely, independent dose information at about the same time. The finding was a Significance Level 2, "consequential programmatic deficiencies or inadequate program implementation that DO NOT cause a program to be classified as ineffective." The causes of the problems were misinterpretation of the procedure, ineffective training, and failure to follow the procedure specifics.

QA's recommended actions were as follows:

1. Establish a unified set of goals and responsibilities for UDAC personnel utilizing input from all applicable groups, including, but not limited to, County and DCPP emergency personnel.
2. Ensure that the DCPP Radiological Manager position has clear responsibilities and goals and is able to meet those goals and responsibilities in an emergency situation.

UDAC procedures EP RB-16, "Operating Instructions for the EARS (Emergency Assessment and Response System) Computer Program," and EP EF-3, "Activation and Operation of the Emergency Operations Facility (EOF)," were revised in a timely manner. Quality Verification review verified appropriate changes had been made and closed the finding. Additionally, DCPP augmented training and added additional emergency drills for practice.

The corrective action appeared to be appropriate; however, future drill performance by UDAC will be the best measure of effectiveness. The DCISC should follow UDAC performance in upcoming drills. Note that in the observation of the March 14, 2012 drill (Section 3.11 below) the DCISC did not have the opportunity to observe UDAC per se because of time constraints.

Conclusion:

The Unified Dose Assessment Center (UDAC) process was found to not have clearly defined and understood responsibilities regarding interfaces between DCPP and County dose assessment personnel. This was corrected satisfactorily, and the DCISC should follow up in future drills to ascertain its effectiveness.

3.3 Outage 1R17 Safety Plan

The DCISC Fact-finding team met with Rick Hamilton, Primary Side Outage Window Manager, to review the safety plan for DCPP Outage 1R17. The DCISC last reviewed outage safety plans in February 2011 (Reference 6.6), when it concluded:

> *The DCPP Outage 2R16 Outage Safety Plan is a comprehensive and detailed document describing the schedule and steps in the outage, which are identified as high risks of core boiling or damage as a result of losing electric power and/or cooling to the reactor core and Spent Fuel Pool and what backup systems are available. The emphasis is on prevention of incidents, mitigation of accidents and control of radioactive material. The 2R16 Outage Safety Plan appears well designed to achieve outage safety.*

The purpose of the Outage Safety Plan is to provide information on outage safety requirements and highlight risk areas to plant staff. In order to assess outage safety impact, referral to the Outage Safety Plan and Outage Safety Schedule is to be made prior to making major schedule changes. The intent of the Outage Safety Plan is to provide a concise document to use in evaluating plant conditions during Modes 5 (Cold Shutdown) & 6 (Refueling) and Defueled to ensure the key safety functions are satisfied, while maintaining consistency with the Technical Specifications and Equipment Control Guidelines. DCPP's outage safety program is designed around three major concepts:

1. Prevention of any accident-initiating event
2. Mitigation of an accident before it potentially progresses to core damage
3. Control of radioactive material if a core damage accident should occur

The Outage Safety Plan is based on the following:

- NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management," which is the basis for the Key Safety Functions contained in the DCPP plant procedure's specific equipment requirements.
- DCPP Procedure "Containment Closure," which defines the plant conditions requiring Containment integrity, or closure capability to help control radioactive material, if core damage occurs.
- DCPP Procedure "Outage Safety Management," "Outage Safety Management Control of Off-Site Power Supplies to Vital Busses," and "Outage Safety Management Outage Planning and Management During Increased Risk Periods."

The outage safety plan provides background information for the logic contained in the outage safety checklists. The checklists provide the logic used to develop the outage safety schedule. The schedule and checklists ensure that the equipment and plant conditions assumed in the shutdown abnormal procedures are met. These procedures contain guidance for providing passive core cooling and key system restoration.

Outage safety planning is based upon the assumption of a worst-case event, which is a loss of all AC power.

The Outage Safety Plan contains the following topics:

- Infrequently Performed Tests or Evolutions
- Contingency Strategies
- Transition Periods and Testing
- Prevention of Accident Initiating Events
- Outage Safety Checklists
    - Mode 5 Loops Filled
    - Mode 5 Loops Not Filled
    - Mode 6 RCS Level at RV Nozzles
    - Mode 6 Level Below RV Nozzles
    - Core Offload
- Containment Closure
- Recent DCPP and Industry Outage Events

DCPP now uses Safety Monitor, replacing the older ORAM-Sentinel, a probabilistic risk analysis tool, to analyze the risk of reactor coolant boiling and core damage risk while fuel is in the reactor vessel based upon the outage equipment out-of-service schedule information. The analysis is controlled by Procedure AD8.DC55, "Outage Safety Scheduling." The DCISC Fact-finding Team received and reviewed this procedure and found it to be comprehensive. The resultant Outage Safety Schedule shows the Defense-in-Depth Status for various states of the following safety functions:

- Decay Heat Removal Capability
- Reactor Coolant System Inventory Control
- Reactivity Control
- Support Systems (Heat Sink)
- Containment Closure
- AC Power Available
- Spent Fuel Pool Cooling
- DC Power
- 120VAC Instrument Power
- Emergency Diesel Generator/Fuel Handling Building/Charging Power Supply

DCPP has a system (Procedure OP Q-38, "Protected Equipment Postings – Outages") to designate and protect equipment required for DID of safety systems during outages. The system includes lists, tags, signage, and physical barriers. The procedure appeared complete.

Defense-in-Depth (DID) Status is represented by the following four color definitions:

- Green – represents >N+1 DID, where N is the minimum equipment needed to maintain a key safety function with more than one backup means of support.
- Yellow – represents N+1 DID, which is considered the normal DID. Key safety functions are fully supported with at least one backup means of support.
- Orange – represents an N condition, where key safety functions are supported, but minimum DID is not met, and compensatory measures must be in place.
- Red – represents a <N condition in which key safety functions are not supported.

DCPP considers a status of Green or Yellow acceptable for planned outage activities because key safety functions are more than fully supported with DID. No planned activities should result in an Orange condition; however, in the rare case where an Orange condition is planned, a contingency plan with compensatory actions must be developed and implemented. Planned Red conditions are prohibited. The 1R17 Outage Safety Plan contains no Orange or Red conditions and few Yellow ones.

Containment closure is controlled by Procedure AD8,DC54, "Containment Closure," which is used for establishing closure if Residual Heat Removal (RHR) is lost or in the event of a severe weather warning for the site. In general, Containment closure capability shall be maintained any time fuel is in the reactor and the RCS is not intact. The required time for achieving closure is determined by Operations based on the existing plant status and any events occurring. This is based on the time-to-boil for Reactor Vessel coolant. Containment closure drills are performed prior to plant conditions occurring, which would require closure. A Containment Closure Team, as directed by the Containment Coordinator, is established when closure-requiring conditions are possible.

Conclusion:

DCPP's Outage Safety Plan for Outage 1R17 appeared satisfactory for maintaining appropriate Defense-in-Depth to assure safety during the outage.

3.4 Vital DC Power Crosstie

The DCISC Fact-finding team met with Brian Maule, Digital Systems Engineering Supervisor, to discuss the following question from DCISC Member Dr. Peter Lam at the October 2011 DCISC Public Meeting:

> *Dr. Lam stated that when he visited the battery rooms for each unit he noticed there was a penetration adjacent to the ceiling which, he was informed, had been used as part of a cross-tie between U-1 and U-2 vital DC power systems and he inquired why that cross-tie*

capability had been disabled. Mr. West promised to follow up and to provide a response concerning Dr. Lam's question.

The DCISC last reviewed the DC Power System in April 2011 (Reference 6.7) when it concluded the following:

The 125-Volt DCPP Direct Current Power Systems (DCPS) appeared to be appropriately designed and installed for their normal and emergency functions. System Health was Yellow (unacceptable but operable) for Unit 1 and White (acceptable) for Unit 2 with plans to return to Green health. The System Engineer appeared to be knowledgeable of and pro-active for his system.

DCPP answered the questions as follows:

When the plant was initially constructed, there was only a Class 1E DC system. One of the Unit 1 DC buses (SD1-1) was connected in series with a Unit 2 DC bus (SD2-2) in order to feed a Unit 1 non-Class 1E 250VDC Motor Control Center (MCC), which feeds the emergency DC pumps. The Unit 2 non-Class 1E 250VDC MCC was made up of Unit 1 DC bus (SD1-2) connected in series with a Unit 2 DC bus (SD2-1). Prior to commercial operation, this cross-connection was removed as a result of battery capacity and redundancy/isolation issues. A new non-Class 1E battery (1-5, 1-6 and 2-5, 2-6) was installed. These new non-Class 1E relieved the loading of Class 1E battery by removing some of the fire alarms and site emergency DC loads and the 250VDC motor loads.

The ability to manually cross-connect Units 1 and 2 DC Power Systems remains.

Conclusion:

In response to DCISC Member Dr. Lam's question regarding an open penetration between Units 1 and 2 DC battery rooms, DCPP explained that the cross-connection was removed prior to commercial operation of the plant, and there are currently no plans for making any future connections.

3.5 DCISC Meeting with NRC Resident Inspector

The DCISC Fact-finding Team met with Laura Micewski, NRC Resident Inspector for a general update. Michael Peck, the NRC Senior Resident Inspector, was not available. The DCISC last met with the NRC Resident Inspectors in January 2012 (Reference 6.8). Topics discussed were:

- The 230kV capability issue was still with NRC's Nuclear Reactor Regulation (NRR) for review.
- The NRC review of the DCPP seismic design basis was on-going.
- NRC was lifting its DCPP Substantive Cross-cutting Issue in the area of Problem Identification and Resolution.
- Ms. Micewski has been identifying fire barriers with questionable integrity.

3.6 Operational Decision Making

The DCISC Fact-finding Team met with Paula Gerfen, Operations Manager, and Ken Johnson, Operations Performance Manager [and Operational Decision Making (ODM) Program Owner], to review DCPP's ODM Program and review two recent ODM examples. The DCISC last reviewed ODM in May 2007 (Reference 6.9) and reported the following conclusion and recommendation:

> DCPP follows industry principles in its use of Operational Decision-Making (ODM). Completed ODM documents (ODMs) reviewed by the DCISC Fact-finding Team appeared to be rigorous, conservative, and well-thought-out.

Recommendation:

> DCPP should consider developing a system to categorize and catalog Operational Decision Making documents (ODMs) for future reference and use.

Basis for Recommendation:

> The DCPP Operational Decision Making (ODM) process is effective, but currently completed ODM documents (ODMs) are not categorized and cataloged in a way that makes it simple to identify previous ODMs that may be similar to new ODMs. Given the large changeover in plant personnel anticipated over the coming decade, a system to catalog ODMs could be valuable in the longer term because it would allow new ODMs to be screened to identify similar ODMs that had occurred in the past.

The DCPP representatives discussed the ODM process, which was controlled by Procedure OP1.ID7, "Operational Decision Making." The DCISC Fact-finding Team believed the procedure was appropriate. The stated purpose of the procedure is to "… provide a systematic method for evaluating technical and operational issues at the station and making effective decisions that affect plant operations, safety, reliability, and material condition when faced with degraded conditions." Examples of degraded conditions include:

- Increased primary system or containment leakage that remains below operational or licensed limits
- Step changes in vibrations that remain at alert levels
- Numerous or long-term valve or pump leaks
- Fuel defects or increased corrosion rates Chronic or aggregate equipment material deficiencies
- Degraded conditions requiring a Prompt Operability Assessment
- Potential challenges to Technical Specification equipment

ODM is a structured, rigorous decision-making process used primarily by Operations for intermediate-term decisions made on a time frame of hours or days, not short-term (seconds or minutes) or long-term (months or years). ODM scenarios typically involve reduction of design or

safety margins, where the regulatory or operational limit has not been reached.

The group reviewed the following ODMs

- Unit 2 Condenser DP [differential pressure] Increasing – dp was trending upward and expected to exceed the 10 psid action limit prior to the next scheduled tunnel cleaning operation. A multi-discipline ODM Team was assembled and used the ODM process to evaluate available options before deciding to move up the tunnel cleaning.
- Unit 2 Rod Control Switch – while inserting Shutdown Bank A, the rods continued to step in when the control room operator released the switch. The operator had to manually pull the handle towards him to stop the inward rod motion. An ODM Team was assembled to review available options and decide on the best one. The Team decided to proceed with switch replacement. The replacement was performed under the procedure for "Infrequently Performed Test or Evolutions" because of its infrequent nature and sensitivity to plant operation.

The DCISC Fact-finding Team concluded that these two ODMs were properly performed. Regarding the previous DCISC recommendation, DCPP advised that they have catalogued ODMs on the Operations internal website such that they can be searched by subject and other parameters. This satisfies the recommendation.

Conclusion:

The DCPP Operational Decision Making process appeared sound and effective for solving problems, which affect plant operability and safety. Two example ODMs reviewed were performed satisfactorily,

3.7 Eagle 21 Process Protection System (PPS) Replacement Project

The DCISC Fact-finding Team met with Scott Patterson, Instrumentation and Controls Obsolescence Manager, in February 2011 (Reference 6.10) to review the Eagle 21 replacement project, when it concluded the following:

> *The DCPP I&C Obsolescence Management Program, which replaces obsolescent analog process control and/or monitoring systems with digital systems is impressive in its design, implementation, and accomplishments to date. One significant part of this program is the replacement of the Eagle 21 Reactor Process Protection System, the primary system used to monitor process variables and take actions to trip the Reactor and actuate Engineered Safety Features, as needed. This project is undergoing NRC review, and DCPP expects to complete installation in 2014. The DCISC should continue to monitor this project.*

The original Westinghouse 7100 analog reactor protection sets were replaced in outages 1R6 and 2R6 with the existing Eagle 21 Process Protection System (PPS). The DCPP digital Eagle 21 PPS monitors plant parameters, compares them against setpoints, which if exceeded, provides signals to the Solid State Protection System (SSPS). The SSPS, in turn, evaluates the signals through

coincident logic and performs Reactor Trip System (RTS) and Engineered Safety Features Actuation System (ESFAS) command functions to mitigate an event that may be in progress.

The PPSRP will replace the existing digital Eagle 21 Process Protection System with a software-based Triconex TRICON platform for the primary PPS functions and incorporate a logic-based Westinghouse/CS Innovations Advanced Logic System for functions, which require built-in diversity. The PPSRP is scheduled to be implemented during outages 1R18 and 2R18 in February 2014 and September 2014, respectively.

The proposed PPS addresses current NRC regulations and guidance regarding Diversity and Defense-in-Depth (D3). It will implement automatic protective functions in a logic-based system with built-in diversity that addresses software Common Cause Failure (CCF). DCPP submitted its PPSRP License Amendment Request (LAR) to the NRC in October 2011 and received NRC acceptance of its content. DCPP had already submitted its Defense-in-Depth and Diversity Evaluation to NRC. NRC projects its approval by October 31, 2013, which would permit DCPP to install the replacement in 2014 in Refueling Outages 2R18 and 1R19. NRC held a public meeting in San Luis Obispo in January 2012 with local interveners described as "positive" because of the replacement of old, aged components.

The LAR included the following:

- Application-System Architecture
- Hardware Development Process
- Software Architecture
- Software Development Process
- System Qualifications
- Diversity and Defense-in-Depth
- Communications
- System, Hardware, Software, and Methodology Modifications
- IEEE-603 "Standard Criteria for Safety Systems for Nuclear Generating Stations" Compliance
- IEEE 7-4.3.2 "Standard Criteria for Digital Computers in Safety Systems of Nuclear Generating Stations" Compliance
- Technical Specifications
- Secure Environment

The DCISC Fact-finding Team received and reviewed DCPP's "Process Protection System (PPS) Replacement Conceptual Design Document" and found it to be comprehensive and detailed. DCPP is managing the replacement as a formal project with a project manager. They have been successful with their large managed projects.

PPSRP suppliers must develop their hardware and software with an approved 10CFR50, Appendix B Quality Assurance Program, including an acceptable Validation and Verification Program. All systems developed or modified must be adequately tested before delivery. Pre-installation testing is performed by personnel familiar with the system but independent of the developers.

Digital reactor protection systems are relatively new for nuclear plants and the NRC. One plant, Oconee Nuclear Station (a Babcock & Wilcox PWR design), has NRC approval and began installation its PPS in Spring 2011, having completed one of three units replacements.

Conclusion:

DCPP has submitted the License Amendment Request to the NRC for its Eagle 21 Process Protection System Replacement Project. NRC expects to complete its review and issue approval in October 2013. This will permit DCPP to begin installation in 2014. The DCISC should continue to monitor this project through installation and subsequent operation.

3.8 Containment Fan Cooler Units Anti-Rotation Modification Performance

The DCISC Fact-finding Team met with Lee Goyette, Project Engineer, for an update on how the Containment Fan Cooler Unit (CFCU) anti-rotation devices are performing. The DCISC last reviewed the CFCUs in March 2010 (Reference 6.11), when it concluded the following:

> *The two (one for each unit) Containment Fan Cooler Unit (CFCU) anti-rotation devices installed for evaluation have performed as expected. DCPP will install the remaining devices on Unit 1 in Outage 1R16 (October 2010) and 2R16 (May 2011). This will close the CFCU anti-rotation issue.*

Unit 1 CFCU anti-rotation devices were installed during 2010 with satisfactory performance. A Unit 2 device was installed by May 2011, and by June noisy operation was evident, resulting in replacement with a spare. Shortly afterward two more devices were found noisy (ratchet pawls dragging), causing DCPP to write a Prompt Operability Assessment (POA) for justification of operation only at low speed. Performing an Apparent Cause Evaluation (ACE), DCPP and the vendor determined the devices are rubbing due to machining tolerance issues. Through the end of 2011 all devices were refurbished. In January 2012 DCPP commissioned an independent design review of the device, which was in-progress at the time of the fact-finding meeting.

Conclusion:

DCPP's new anti-rotation devices on the Containment Fan Cooler Units (CFCUs) have experienced noisy operation due to rubbing caused by manufacturing tolerance issues. DCPP has refurbished each device and has an independent design review in-progress. The DCISC should continue to follow this issue.

3.9 Control Room Ventilation System

The DCISC Fact-finding Team met with Randy Allen, Control Room Ventilation System (CRVS)

System Engineer, to review the system and recent issues with meeting its design basis. The DCISC last reviewed the CRVS in May 2008 (Reference 6.12) when it concluded:

> *The DCPP Heating, Ventilation and Air Conditioning (HVAC) systems were in satisfactory health, and the system engineers appeared knowledgeable.*

The DCPP Control Room Ventilation System (CRVS) consists of the following three systems:

1. Control Room HVAC System (CRHVAC)
2. Control Room Pressurization System (CRPS)
3. Plant Process Computer (PPC) Room Air Conditioning System

The CRHVAC consists of two independent trains, A and B, for each unit. The CRPS is composed of one train for each unit. These two systems are interconnected mechanically and operationally and are operational during all plant operating modes. The PPC serves only to cool the Plant Process Computer room.

The CRHVAC and CRPS operate in one of the following modes:

Mode 1	CRVS "normal" mode (CRNV)
Mode 2	CRVS smoke removal mode to evacuate smoke in the Control Room
Mode 3	CRVS 100‰ air recirculation with 27‰ passing through high efficiency particulate air (HEPA) filtration, and manual zone isolation is used in the event of toxic chemical spill outside the Control Room when personnel sense a problematic odor or smell.
Mode 4	CRVS pressurization mode (CRPS) to counteract the detected presence of radiation at the Control Room air intake or a Containment Isolation A signal. The system can detect radiation at various air intake locations and select the unaffected intake.

The CRVS is designed to meet the following criteria/guides:

- 10CFR50 Appendix A, General Design Criterion 19, "Control Room" radiation protection for normal and accident conditions
- NRC Regulatory Guide, 1.78, "Evaluating the Habitability of Nuclear Power Plant Control Room during a Postulated Hazardous Chemical Release"
- NRC Standard Review Plan 6.4, "Control Room Habitability System"
- NRC Standard Review Plan 9.4.1, "Control Room Ventilation System"

Currently Units 1 and 2 CRVS are in Yellow (unsatisfactory) health as reported in their individual system health reports. Return to healthy status is estimated to be July 2013 with resolution of the following issues:

1. Control Room Habitability Prompt Operability Assessment (POA)

2. CRVS Design Vulnerability POA – a postulated single active failure of an operating booster fan can lead to the introduction of unfiltered airborne contamination in the Control Room that may exceed acceptable limits. This is an issue being followed by the NRC.
3. Containment Fan Cooler Unit (CFCU) Hi-Speed Vibration Alarms POA
4. CFCU Hi-Speed Contactor Chatter

The CRVS Health Reports contained action plans for modification/replacement of ventilation components to bring system health back to an acceptable level. These are:

Item	Reason for Condition/Description	Planned Completion
CRVS Light Boxes Design Deficiency – CRNV and CRPS need Isolation of light boxes from control circuits	June 2012	
CFCU Motors Design Deficiency – Correct motor/stator contact	June 2012	
CRVS Unfiltered Design Deficiency – Engineering study in-progress Air In-leakage	May 2012	
CFCU Coil	Aging Issue – coil casings degrading due to Degradation corrosion. Replace coils.	May 2017
AB/FHB Supply Aging Issue Fan Corrosion – supply fans and dampers need to be replaced or rebuilt	May 2017	
CRVS Reliability	Design/Aging Issue – reliability issues due to corrosion and low sizing	March 2013
CRVS Motor	Aging Issue – CRVS condenser motor failures. Failures Replace motors.	April 2012

The issues and their resolution are being worked through the DCPP Plant Health Committee process for approval, scheduling and spending. The unfiltered air in-leakage problem potentially occurs when one unit CRVS is in Mode 3 Recirculation and the other in Mode 4 Pressurization. DCPP has changed operating procedures to provide for manual operator action to avoid the problem. Additionally, DCPP is considering removing the cross-tie connection, separating the units' CRVSs.

Conclusion:

DCPP's Control Room Ventilation System (CRVS) is operable but in Yellow (unhealthy) health. There are several issues, which adversely affect Control Room Habitability due to deign deficiencies, reliability, and aging problems. These are being resolved through procedure changes,

which specify manual operator actions and through modifications via Plant Health Committee system health process. DCPP expects return to healthy status in July 2013. The DCISC should continue to monitor these issues.

3.10 Human Performance Line Ownership Action Plan

The DCISC Fact-finding Team met with John McIntyre, Maintenance Services Director, to discuss the DCPP Human Performance Line Ownership Action Plan. The DCISC last reviewed DCPP Human Performance in December 2010 (Reference 6.13) when it concluded:

> *DCPP human performance (HP) is good and improving overall with plant-wide performance better than a progressively tightening goal and over 529 days without a clock reset. Most departments are within their goals with one, Operations, slightly higher.*

During Refueling Outage 2R16, DCPP experienced a number of Maintenance Human Performance (HP) events, which were primarily due to lapses in use of error prevention tools. This Action Plan is intended to raise the level of use of HP tools to "every job, every shift" by involving first line supervisors directly, i.e., ownership by the line organization. The Action Plan includes the following objectives:

1. Communicate clearly to the Extended Leadership Team the implications of human performance errors and value of human performance tools – completed.
2. Create a Dynamic Learning Activity (DLA) and designate first line supervisors and individual contributors to facilitate – completed.
3. Implement a consistent accountability model for first line supervisors – completed.
4. Communicate expectations regarding accountability for individual contributors – completed.
5. Perform field observations referencing DCPP Site Standards Handbook to monitor personnel adherence to all site standards – completed.
6. Establish clear and unambiguous standards and reinforcing expectations to ensure high levels of performance – nearly complete.
7. Develop consistent station standards for what action should be taken for VERIFY, CHECK and ENSURE – nearly complete.
8. Perform an assessment of the effectiveness of the overall plan – completed.

Effectiveness of the plan is measured by the following measures:

- Human Performance Error Rate (90-day event rate) ≤0.1 department events per 10,000 hours worked
- Plant Misposition Component Performance six month rolling summation is ≥95
- Both programs show an improving trend

These measures were at the following levels for the last three months:

Month	HU Error Rate	Misposition Performance
December	0.27	95.5
January	0.35	97.25
February	0.14	97.25

These data indicate improving trends for both measures, although the HU Error Rate is higher than the goal.

Conclusion:

The DCPP Maintenance Line Ownership Action Plan appears to be appropriate for improving the use of human error prevention tools in Maintenance and thus lowering the human error rate. The human error rate and misposition performance measures both show improving trends, although the former is higher than its goal. The DCISC should continue to monitor these measures.

3.11 Emergency Response Organization Drill

The Fact-finding Team observed portions of the March 14, 2012 Emergency Response Organization (ERO) drill. The DCISC last observed an emergency drill in August 2010, (Reference 6.14) concluding:

> *The August 11, 2010 NRC-evaluated DCPP emergency exercise Joint Information Center performance observed by the DCISC was much improved from prior exercises/drills in that news releases, press conferences, and use of the Site Vice-President as public spokesperson combined for timely, accurate, and understandable information release. The plant operational response to the emergency was, as in previous exercises observed by the DCISC, professional and effective.*

This was a partial drill with a limited scope and duration. Participants included DCPP and San Luis Obispo County but not NRC. The scenario was as follows:

Time	Event Description	Classifications
1215	Indication of fuel leak	None
1222	Vibration and Loose Parts alarm resulting in > 15 R/hr in Containment	Alert
1255	Feedline break outside Containment upstream of feedwater isolation valve	None
1335	200 gpm Steam Generator tube rupture resulting in a radiation release through feedline break	General Emergency
1335	SG isolation valve does not close	General Emergency
1415	Drill terminates	

The DCISC Fact-finding Team initially observed the Operations crew in the Control Room Simulator at the beginning of the drill. The crew performed well, reacting properly to each event, selecting the correct procedures, making the proper notifications, and correctly determining the correct emergency classification.

The Team next went to the offsite Emergency Operations Center, which housed the DCPP Recovery Manager and technical staff, the Unified Dose Assessment Center (UDAC) [See Section 3.2 above], and the San Luis Obispo County Emergency Organization. These offices were fully staffed and operational. The EOC appeared to be operating smoothly.

The Team went to the Joint Information Center (JIC) where journalism students from Cal Poly were acting as members of the press. DCPP public spokespersons were giving a briefing regarding the plant condition, mitigating actions underway, and information on the radiation being released from the plant. As the DCISC has frequently observed in previous drills, the press wants more information than DCPP was prepared to give, especially on radiation levels. This was discussed and listed as a concern in the DCPP post-drill critique.

The JIC critique was an honest, straightforward discussion of JIC performance. The JIC appeared to meet all of its drill objectives and brought up several items for improvement.

Conclusion:

The March 14, 2012 DCPP emergency drill appeared to be designed well to challenge Operations, the Emergency Operations Center, the Unified Dose Assessment Center, and the Joint Information Center. It appeared that these organizations performed well and met drill objectives.

3.12 Peter Lam Meeting with Jim Welsch, Station Director

DCISC Member Peter Lam met with DCPP Station Director, Jim Welsch to discuss selected topics from this fact-finding meeting and other subjects of mutual interest.

Conclusion:

None

4.0 Conclusions

4.1

DCPP has taken effective actions to significantly reduce the number of NRC Non-cited Violations (NCVs) from 2010 and earlier to 2011. Additionally, the NRC has lifted its Substantive Cross-cutting Issue in Problem Identification and Resolution in its March 2012 annual regulatory performance letter. The numbers of NRC allegations has been dropping over the last four years, and the absolute numbers are not large. These are positive trends. The DCISC should continue to monitor DCPP regulatory performance.

4.2

The Unified Dose Assessment Center (UDAC) process was found to not have clearly defined and understood responsibilities regarding interfaces between DCPP and County dose assessment personnel. This was corrected satisfactorily, and the DCISC should follow up in future drills to ascertain its effectiveness.

4.3

DCPP's Outage Safety Plan for Outage 1R17 appeared satisfactory for maintaining appropriate Defense-in-Depth to assure safety during the outage.

4.4

In response to DCISC Member Dr. Lam's question regarding an open penetration between Units 1 and 2 DC battery rooms, DCPP explained that the cross-connection was removed prior to commercial operation of the plant, and there are currently no plans for making any future connections.

4.5

[No conclusion for Section 3.5.]

4.6

The DCPP Operational Decision Making process appeared sound and effective for solving problems, which affect plant operability and safety. Two example ODMs reviewed were performed satisfactorily.

4.7

DCPP has submitted the License Amendment Request to the NRC for its Eagle 21 Process Protection System Replacement Project. NRC expects to complete its review and issue approval in October 2013. This will permit DCPP to begin installation in 2014. The DCISC should continue to monitor this project through installation and subsequent operation.

4.8

DCPP's new anti-rotation devices on the Containment Fan Cooler Units (CFCUs) have experienced noisy operation due to rubbing caused by manufacturing tolerance issues. DCPP has refurbished each device and has an independent design review in-progress. The DCISC should continue to follow this issue.

4.9

DCPP's Control Room Ventilation System (CRVS) is operable but in Yellow (unhealthy) health. There are several issues, which adversely affect Control Room Habitability due to deign deficiencies, reliability, and aging problems. These are being resolved through procedure changes, which specify manual operator actions and through modifications via Plant Health Committee system health process. DCPP expects return to healthy status in July 2013. The DCISC should continue to monitor these issues.

4.10

The DCPP Maintenance Line Ownership Action Plan appears to be appropriate for improving the use of human error prevention tools in Maintenance and thus lowering the human error rate. The

human error rate and misposition performance measures both show improving trends, although the former is higher than its goal. The DCISC should continue to monitor these measures.

4.11

The March 14, 2012 DCPP emergency drill appeared to be designed well to challenge Operations, the Emergency Operations Center, the Unified Dose Assessment Center, and the Joint Information Center. It appeared that these organizations performed well and met drill objectives.

4.12

[No conclusion for Section 3.12]

5.0 Recommendations:

None

6.0 References

6.1 "Diablo Canyon Independent Safety Committee Thirteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2007 – June 30, 2008," Approved October 17, 2008, Volume II, Exhibit D.1, Section 3.3 "Review NCVs and Trend of NRC-Identified Issues."

6.2 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011," Approved October 11, 2011, Volume I, Section 3.2.1 "Discussion."

6.3 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012," Approved October 10, 2012 Volume II, Exhibit D.4, Sect. 3.4, "Licensing Basis Verification Project."

6.4 "Diablo Canyon Independent Safety Committee Fourteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2008 – June 30, 2009," Approved October 11, 2009, Volume II, Exhibit D., Section 3.2, "Emergency Preparedness October 29, 2008 Exercise Critique, UDAC Improvements & DCPP Use of MIDAS."

6.5 Ibid., Volume II, Exhibit D.7, Section 3.5 "Improved UDAC and Its Performance at the October 29, 2008 Exercise."

6.6 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 15, 2011, Volume II, Exhibit D.9, Section 3.9 "Outage Safety Plan for Outage 2R16."

6.7 Ibid., Exhibit D.10, Section 3.6 "DC Power System."

6.8 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved Oct. 10, 2012, Volume II, Exhibit D.6, Section 3.4, "Meeting with NRC Resident Inspectors."

6.9 "Diablo Canyon Independent Safety Committee Seventeenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2006 – June 30, 2007", Approved Oct. 16, 2007, Volume II, Exhibit D.9, Section 3.4, "Operational Decision Making."

6.10 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume II, Exhibit D.9, Section 3.3, "Digital Control Systems."

6.11 "Diablo Canyon Independent Safety Committee Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 – June 30, 2010", Approved October 12, 2010, Volume II, Exhibit D.7, Section 3.8, "Containment Fan Cooler Modifications."

6.12 "Diablo Canyon Independent Safety Committee Thirteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2007 – June 30, 2008," Approved October 17, 2008, Volume II, Exhibit D.10, Section 3.7 "System Review: Heating, Ventilation, and Air Conditioning (HVAC) Systems."

6.13 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 11, 2011, Volume II, Exhibit D.7, Section 3.5, "Human Performance (HP) Program."

6.14 Ibid., Exhibit D.3, Section 3.1, "NRC-Evaluated Emergency Exercise,"

22nd Annual Report, Volume 2, Exhibit D.8, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on April 3 – 4, 2012 by Robert J. Budnitz, Member, and David C. Linnen, Consultant

1.0 Summary

The results of the April 3 – 4, 2012 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 are as follows:

1. Station Interfaces with and Support for External Organizations Regarding Emergency Preparedness Activities
2. Status of the NRC Substantive Cross-Cutting Issue Pertaining to Problem Evaluation
3. Human Performance Non-Outage Error Rate
4. Update on Implementation of National Fire Protection Association (NFPA) Standard 805
5. Probabilistic Risk Assessment (PRA) Group Status
6. Loose Hold-Down Nuts on Casks in the Independent Spent Fuel Storage Installation (ISFSI)
7. Operations Block and Tackle Action Plan
8. Plant Health Committee Meeting
9. Performance Improvement Station Initiative
10. Meeting with PG&E Chief Nuclear Officer
11. Differing Professional Opinions (DPO) Program
12. DCISC Member Meeting with Site Vice President

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine ifPG&E's performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team's suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at

future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Station Interfaces With and Support for External Organizations Regarding Emergency Preparedness Activities

The DCISC Fact-finding Team met with Mike Ginn, Emergency Preparedness (EP) Manager, and Tracey Vardas, EP Coordinator. The DCISC last reviewed this topic in August 2011 (Reference 6.1), when it concluded the following:

> *The DCPP Fact-finding Team (FFT) met with the Santa Barbara Emergency Manager to provide information about DCPP in two areas: (1) plume modeling for potential radiation releases, and (2) independent review of seismic studies. The DCISC provided information that appeared to be satisfactory to the Emergency Manager.*

The Fact-finding Team was provided Diablo Canyon Power Plant's (DCPP) 2011 Report on "Radiological Emergency Preparedness Requisite Activities." This report is submitted annually to the Federal Emergency Management Agency. The report is divided into seven sections as follows:

1. Public Education and Information, which includes listings and or descriptions of distributed information and distribution mechanisms such as the following:
    - A summary of annual information disseminated to the public: this included information distributed through area phone directories.
    - Siren information stickers distributed to local businesses, parks, and recreational areas within the DCPP Emergency Planning Zone (EPZ).
    - Operation of an internet website.
    - Posters and or other educational and response oriented information hand delivered to local hotels, motels, grocery stores, parks, campgrounds, beaches, tourism information centers and the airport – to be available for use by transient personnel as well as local residents.
    - A DCPP toll-free number which could be activated to provide EP information during an emergency.
    - An operational EP telephone line for providing EP information to San Luis Obispo (SLO) Country residents.
    - A customer services general reference website, which could be activated and used during

emergency response to a DCPP event. This information is aimed not only at permanent residents but also visitors to the area.

DCPP noted that local news media have been invited to attend training and emergency planning exercises. Also, DCPP and SLO County Office of Emergency Services (OES) distribute emergency public information, reference materials, and news releases to local media.

2. Emergency Facilities and Equipment (DCPP has the responsibility for equipment inspection and calibration.)
    - Radiation monitoring instruments are maintained in the SLO General Services Logistical Supply Building and in decontamination trailers adjacent to the SLO Emergency Operations Center (EOC).
    - PG&E supplies almost 1,500 Personnel Electronic Dosimeters (PEDs) and almost 3,000 Thermoluminescent Dosimeters (TLDs) for distribution by SLO County OES.
    - SLO County has been provided with approximately 3,000 doses of Potassium Iodide (KI) for emergency workers.
3. FEMA-evaluated exercises (Several took place during 2011 in the SLO area.)
4. Drills and tests involving SLO county and other state and local agencies (Examples are as follows):
    - Monthly tests from SLO County to the NRC and the US Coast Guard
    - Monthly communications tests to local governments within the EPZ
    - Monthly communications drills with SLO County Sheriff's Department and California State Warning Center (CSWC)
    - Drills involving, at various times, DCPP, SLO County, and Santa Maria Congregate Care
5. Radiological Emergency Response Training
    - Over 5,500 hours of training were provided in 2011 to various state and local government representatives in areas such as accident assessment decision making, emergency worker roles, local support services, public information, medical services, and radiological monitoring
    - Examples of training included: Introduction to DCPP, Emergency Preparedness, Onsite Course for fire responders, National Incident Management System, and Hazardous Materials First Responder Operational Training.
    - Participants included local safety agencies and emergency workers, and individuals from fire departments, law enforcement agencies, emergency medical services, hospitals and schools in SLO and Santa Barbara Counties
6. Updates of Plans and Letters of Agreement

- This included DCPP staff reviewing all Letters of Agreement for accuracy and completeness and all SLO County/Cities Nuclear Power Plant Emergency Response Plan and standard operating procedures.
- DCPP noted that state parks personnel performed effectively and plans were appropriate during the March 2011 tsunami warning.
- The Tsunami Evacuation Plan was reviewed in August 2011.

7. Alerts and Notifications

    - All 2011 siren tests were completed in conjunction with SLO County and resulted in a 99.97‰ reliability Average.
    - The Early Warning System (EWS) was tested and was in accordance with federal guidelines.
    - The annual audible siren test was conducted on Saturday August 21, 2011. All 131 sirens were successfully sounded and tested.
    - Tone alert radios in all SLO County schools, home care facilities, hospitals, and other facilities were tested monthly.
    - Route Alerting maps, directions, and siren locations were updated in 2010 and continue to be distributed to applicable jurisdictions

The following is a partial listing of organizations/agencies to whom PG&E supplies PEDs, TLDs, and KI packets:

- Atascadero Dial-A-Ride
- Cal Poly Department of Environmental Health
- California Highway Patrol
- Cambria Health Care and School Transportation
- Cayucos Fire Department, School Transportation, and Water Treatment Plant
- City of Morro Bay Fire
- Various SLO Fire Stations
- Cuesta College Police Department
- Morrow Bay State Park
- Five Cities Fire Authority
- Lopez Water Treatment Plant
- Los Osos Dial-A-Ride
- Paso Robles City Area Transit Service
- Port San Luis Harbor

Regional Transit Authority

- Coastal Unified School District
- Santa Barbara County
- SLO Transit
- US Coast Guard Station – Morrow Bay

The Fact-finding Team was also provided with the State of California's "Joint 2011 Annual Letter of Certification Report" by the California Emergency Management Agency (CalEMA) and the California Department of Public Health (CDPH).

Regarding Public Education and Information, the report noted that CDPH's Environmental Monitoring Branch (EMB) was in the process of revising an informational brochure for farmers, ranchers, and distributors of agricultural products in and around DCPP. The brochures were to be provided to the California Department of Food and Agriculture (CDFA) and county departments located within the Ingestion Pathway Zone (IPZ).

The CDPH report also discussed the management of emergency related equipment and instruments such as survey instruments, emergency response kits, plume survey kits, and dosimetry instruments. CDPH maintains records of calibration for all measuring instruments. The report also noted that field monitoring teams would consist of personnel from the utility and the county, as well as from the San Luis Obispo city fire department.

Report documents the six DCPP drills during 2011 in which the California Emergency Management Branch (EMB), Radiological Health Branch (RHB), and the CalEMA and the Radiological Preparedness Unit were participants. For example, during the drills field monitoring teams supplied CDPH with data resulting from simulated radioactive releases, and CDPH input the data into dose monitoring programs. The CDPH Report further noted that the California State Warning Center (CSWC) represents the State in the monthly communications drills with the California utilities. Also, the Report notes the training provided by DCPP to health physicists and other individuals from CDPH, consisting of familiarization with plant systems, use of the computerized dose projection programs, Emergency Action Levels, and procedures and responsibilities pertaining to each applicable position on the team.

In addition, Ms. Vardas and Mr. Ginn noted with respect to the involvement of outside organizations in nuclear activities that can affect public health and safety that four distinct plume modeling systems are used by three separate agencies, that seismic data is reviewed by research units within the University of California at Berkeley and UCLA, and that the U.S. Department of Geological Services (USGS) has been monitoring the Hosgri Fault Zone since the original seismic study was conducted in the mid-1980s.

Conclusion:

DCPP and PG&E involvement with agencies of the State of California and with local cities and counties is extensive and detailed with respect to Emergency Preparedness Activities. A further

periodic review of this DCPP activity is warranted but not urgent.

3.2 Status of the NRC Substantive Cross-Cutting Issue Pertaining to Problem Evaluation

The DCISC Fact-finding Team met with Peter Bedesem, Technical Assistant to the Site Services Director and DCPP Liaison with the DCISC, to review the status of the Nuclear Regulatory Commission (NRC) Substantive Cross-cutting Issue on Problem Evaluation. The DCISC last reviewed this topic in December 2011 (Reference 6.2), when it concluded:

> *DCPP has made substantial progress in completing its Engineering Thoroughness Action Plan to resolve issues with engineering design and technical evaluation quality. Actions will be completed in 2012 with the exception of the long-term Licensing Basis Verification Project, which is scheduled for completion in 2015.*

The issue of problem evaluation dates back to 2009 and earlier. In its 2009 End-of-Cycle Letter of March 2010, NRC identified a substantive crosscutting aspect for the lack of thoroughness in engineering evaluations in the P.1.c cross-cutting area. Selected excerpts of the NRC's perspective in the above-mentioned letter are as follows:

> *"The staff first identified this item in the 2008 annual assessment letter, dated March 4, 2009. This theme continued through the 2009 mid-cycle assessment as discussed in our September 1, 2009 letter."*
>
> *"While you have implemented a range of substantial corrective actions to address the crosscutting theme, these actions have yet to prove effective in mitigating the continuing trend."*
>
> *"The NRC has concluded that you should assess why past corrective actions have not been effective in mitigating the trend and make adjustments as appropriate to ensure that you achieve results in correcting the trend."*

In response to the NRC's concerns DCPP developed an extensive action plan, through which the DCISC has tracked progress, and which has included periodic reviews of the NRC's examination of this issue. In the NRC's Annual Assessment Letter to Pacific Gas and Electric Company (PG&E) for 2011, dated March 5, 2012, the NRC closed the P.1.c substantive cross-cutting issue as discussed in their assessment below:

> *In its assessment letter dated March 3, 2010, the NRC opened a substantive cross-cutting issue (SCCI) in the problem identification and resolution area associated with the aspect of thoroughness of problem evaluation (P.1.c). In July and December 2011, the NRC performed inspections of your root cause analysis and corrective actions for this SCCI. The inspectors determined that you had made significant changes to programs, processes, and procedures which, if continued, will likely result in improvement in the quality of evaluation products. The inspectors noted an overall positive performance trend in your implementation of the revised processes such that evaluations were more complete,*

> *thorough, and accurate. Inspections indicated that your staff had identified appropriate root causes and took appropriate corrective action. Since the performance has shown sustained improvement over the last year and only two findings with P.1.c cross-cutting aspects were identified in the last half of 2011, and you have demonstrated appropriate corrective actions, the NRC will close this SCCI.*

This is a positive step. The DCISC has also noted an improvement in the thoroughness and completeness in DCPP's evaluation of station problems. In particular, during 2011 the DCISC examined two DCPP Root Cause Evaluations (RCE) of significant station issues that occurred in 2011: the March 26, 2011 manual reactor trip necessitated by a Unit 2 steam leak causing the automatic trip of one of the Main Feed Pumps (DCISC July 2011 Fact-finding Report) and the failure of a significant number of DCPP candidates on the August 22, 2011 NRC licensed operator written examination (DCISC January 2012 Fact-finding Report). The DCISC Fact-finding Teams found both the 54 page RCE on the March 2011 reactor trip and the 51 page RCE on the August 2011 exam failures to be extremely thorough, and DCISC concluded that the corrective actions were determined to be appropriate. Although the RCE on the operator exam failures pertained to an organizational issue, rather than a technical issue, the evaluation nevertheless reflected a highly meticulous, thorough, and deliberate process that would be expected to be followed in any root cause evaluation.

Continuation and completion of DCPP's Licensing Basis Verification Project (LBVP) is aimed at improving the information available to DCPP personnel in the examination of station issues. The purpose of the LBVP is to perform an objective evaluation to determine if the DCPP licensing basis has been adequately maintained and to correct any identified deficiencies. The term "licensing basis" refers to any commitments made to the NRC on which their approval of the license to operate is based. Expected completion of this project is in 2015. Many upgrades have been completed thus far. Mr. Bedesem noted that these LBVP upgrades have contributed to clarifying various elements of the plant's licensing basis and have provided a more complete basis for examining the contributors to station problems that emerge and need to be addressed.

Mr. Bedesem also noted that training has been upgraded with respect to the identification and examinations involving the determination of whether a problem constitutes an unreviewed safety question under the Code of Federal Regulations (CFR) 10CFR50.59. He noted that DCPP "challenge boards" have been formed to examine such reviews. He also noted that the qualification process for Root Cause Analysts has been upgraded, as has the functioning of the Corrective Action Review Board. This has led to a more complete institutionalization of the standards under which various processes are implemented to minimize the occurrence and recurrence of station problems.

The Fact-finding Team examined the most current station Performance Data available at the time of the visit, which was the January 2012 Plant Performance Indicator Report (PPIR) containing year-end data for 2011. Ratings were Green, White, Yellow, and Red, with Green being strong performance and Red being unsatisfactory. The P.1.c. aspect of Problem Identification was still rated as Red, due to the fact that NRC Cross-cutting issue had not yet been dropped, as was the performance indicator for Evaluation Work Product Quality. Other indicators related to the station's

ability to evaluate problems were as follows:

- Reportability Program Health – Yellow (Current Month) due to failure to review reportability of potential loss of Reactor Coolant Pump seal cooling
- Licensing Basis Impact Evaluation – Green (6 month rolling average)
- License Amendment Request Program Health – Green (6 month rolling average)
- Cause Analysis Program Health Implementation Cornerstone – Green (Current Month)

Conclusion:

DCPP has made substantial progress in the area of Problem Evaluation, as reflected in the NRC's dropping of its substantive cross-cutting issue in the area of Problem Evaluation/Extent (P.1.c). Station Performance Indicators related to technical evaluations are generally healthy. The DCISC should continue to review station progress in the Licensing Basis Verification Project and to review the area of Problem Evaluation based on future station performance.

3.3 Human Performance Non-Outage Error Rate

The DCISC Fact-finding Team met with John Hart, Human Performance Supervisor, for a discussion on Human Performance at DCPP with a specific focus on a negative trend in the Non-Outage Human Performance Error rate. The DCISC last reviewed the topic of Human Performance in December 2010 (Reference 6.3), when it concluded the following:

> *DCPP human performance (HP) is good and improving overall with plant-wide performance better than a progressively tightening goal and over 529 days without a clock reset. Most departments are within their goals with one, Operations, slightly higher.*

The basis of this discussion was the DCISC Fact-finding Team's review of the station's Performance Indicator Report for January 2012. The report tabulates and graphs monthly values for a station-wide roll-up of Human Performance error rates as well as separate similar tabulations and graphs for the various departments. The Human Performance Error Rate is expressed as the number of Human Performance Events per 10,000 hours worked. This error rate typically increases somewhat during outages due to higher workloads.

The 12-month error rate for the period February 2011 through January 2012 was 0.171 which was healthy and below (i.e. better than) the station's 2011 goal of 0.194. Nevertheless, a noticeable upward trend had been occurring in the non-outage error rate during the last half of 2011compared with prior six-month periods dating back to the beginning of 2009.

Mr. Hart noted that DCPP was aware of, and had evaluated, this increasing trend. Specifically, Corrective Action Program (CAP) Notification 50450717 was issued to evaluate the increased rate of Department Level Events in the second half of 2011 that contributed to the increasing trend in the station-wide rate. Mr. Hart provided the Fact-finding Team with a listing of the numbers of these department human performance events during the second half of 2011. The listing is shown below:

Security	8
Maintenance	7
Operations	6
Engineering	4
Site Services	3
Strategic Proj	2
Radiation Pro	1
Chemistry	1
Total	32

The station's review noted that this was the highest number of non-outage department level events since the last half of 2008. Also noted was that this increase was not due to an increase in working hours since the hours worked in the second halves of 2008 and 2011 were comparable. Mr. Hart commented that the station's review determined the increase was primarily due to an increase in the number of events reported by Security and, to a lesser extent, to minor increases in Operations and Maintenance.

Mr. Hart noted that each department has a Performance Improvement Coordinator (PICO), who serves as a stimulus for the reporting and evaluation of human performance events. Until the Security Department was separated from Site Services in May 2011, Security did not have its own PICO. Rather the Site Services PICO also served Security. With Security having its own PICO, the department began to function in an environment in which more human performance issues were being reported.

Therefore, DCPP determined that the rate change of non-outage human performance events during the last half of 2011 was due to an increased focus on reporting and evaluation of performance events within the Security organization and did not represent an adverse trend. Rather, the rate change indicates that the increased focus is leading to more awareness of human performance issues and to the development of corrective actions that may not have been put in place if the noted organizational change had not occurred.

Mr. Hart provided the Fact-finding Team with a recently updated graph of monthly Station Human Performance Error Rate through March 2012 with monthly station wide figures as follows:

Month	Rate
January 2012	0.293
February 2012	0.179
March 2012	0.089

Clearly, the early 2012 trend is downward and back into the performance ranges experienced during 2009 through the first half of 2011 in which station performance was frequently in the range of 0.050 to 0.150 events per 10,000 hours worked. The station's human performance goal for 2012 has

been set for 0.150 events per 10,000 hours compared to 0.194 for 2011.

Mr. Hart noted that DCPP is continuing to increase its emphasis on providing its workers with the Human Performance "tools" that promote error free work. He indicated that managers are expected to conduct infield observations of their workers and to pinpoint specific aspects of worker behaviors that lead to or detract from error free work. Supervisors are also trained in these aspects of human performance and participate in paired reviews with their supervisors.

Mr. Hart also noted that outages tend to be periods in which human errors increase due to the volume of work and the increased involvement of temporary workers under contract. He noted that DCPP has a facility for practical, physical training in Human Performance techniques and that contract workers are provided the same training as provided to station personnel. Two hours are devoted to taking each individual through various static displays and dynamic learning activities which educate workers and reinforce behaviors that promote error free work. Mr. Hart led the Fact-finding Team through various stations in the training facility that focused on aspects such as recognizing unsafe or inappropriate working conditions, adhering to procedures and employing them properly, using proper communications techniques, using tools properly, and working safely and effectively in a radiological environment.

Conclusion:

DCPP's Human Performance Group clearly noted and effectively evaluated the negative trend in the station's non-outage human performance error rate experienced during the last half of 2011. DCPP's human performance error rate during the first quarter of 2012 shows an improving trend compared to the last half of 2011, and the 2012 goal is set to a higher standard than for 2011. DCPP's human performance training facility appears to be an effective environment for training individuals in proper human performance techniques and reinforcing the importance of error free work in a nuclear station. The DCISC should continue periodic reviews of human performance as dictated by station events and overall performance.

3.4 Update on Implementation of National Fire Protection Association (NFPA) Standard 805

The Fact-finding Team met with Paul Bemis, Strategic Projects Director's Assistant, whose responsibilities include overseeing the DCPP transition from NRC regulation under the NRC's long-standing standards and codes governing fire protection to a new NRC regulatory regime whose technical basis is substantially drawn from the National Fire Protection Association's code NFPA 805, "Performance-based Standard for Fire Protection for Light Water Reactor Electric Generating Plants" (2010). After the NRC changed its regulations to allow such a voluntary conversion to NFPA 805, more than half of the US nuclear plants undertook to make the conversion of their fire-protection programs. DCPP committed to the transition in December 2005, and must submit its request to amend its NRC license by June 2013. Many plants nationwide are undertaking this transition, and DCPP is one of the leading plants in this conversion work in terms of both its schedule and its technical work.

The DCISC last reviewed this topic during its Fact Finding meetings on August 10, 2011 (Reference

6.4), when it concluded:

> *Conversion to an NRC fire-regulation regime under National Fire Protection Association Standard NFPA 805 is a very extensive and complex activity. Based on this review, DCPP appears to be adequately implementing this program. The DCISC should undertake a further review of this area when the plant has identified the important plant modifications (configuration, procedures, training, etc.) required for the conversion, and they are therefore ready for DCISC review. In the future, the DCISC should focus its fire protection reviews on any future plant vulnerabilities that may be identified by the implementation of this program and its methodologies.*

The main difference between the older and the new NRC regulatory approaches is that the NFPA 805 approach is performance-based, allowing the fire protection program to modify its scope and depth of coverage to emphasize those aspects of the program whose contribution to safety is more critical, with less emphasis on certain other aspects. The NRC's decision to allow a plant to comply with the changed regulations is based on the conviction that the new approach will achieve comparable safety, or in many areas improved safety, with a more transparent and reviewable program that is also more efficient.

The transition activity itself is complicated and extensive. It involves performing engineering analyses that include engineering evaluations, a fire PRA, and calculations that model fire growth and spread. Each plant must also evaluate changes to determine whether defense-in-depth and safety margins are maintained. For the resulting fire protection program, each plant must document the results of analyses, ensure the quality of the analyses, and maintain configuration control of the resulting plant design and operation.

A major aspect of the DCPP work to convert to NFPA 805 has been to develop a modern fire probabilistic risk assessment (PRA) that must to be used as an integral part of the plant's demonstration that it will meet the NFPA 805 requirements. That fire PRA, which has been undertaken by the DCPP staff in accordance with the ASME-ANS Combined PRA Methodology Standard (ASME-ANS Ra-Sa, 2009), has been largely completed and is ready for use in this activity. It has also been the subject of an industry peer review of an earlier version of the fire PRA that found it satisfactory.

One requirement for the conversion is that the core-damage frequency from internal fires, as analyzed in the fire PRA, is at or below 5×10^{-5} per year. Some of the modifications being evaluated (see below) are needed to meet this goal.

The current stage of DCPP's work is that the fire PRA is almost complete and will be complete by June 2012. A few technical elements are still not complete, the most important being the understanding and documentation of how operator manual actions ("OMAs") and multiple spurious actuations ("MSOs") contribute to the fire PRA risk profile. The latter are postulated events in which a cable-tray fire causes multiple spurious actuations of equipment due to hot shorts or other electrical problems. There is an industry-wide methodology for addressing OMAs and

MSOs that is being implemented for the specific DCPP layout and fire-initiator data base.

The plant is also identifying those postulated fire-initiated accident sequences that contribute most to the fire PRA bottom line risk numbers (core damage frequency), and examining ways to reduce the frequencies where feasible. (The DCISC FF team believes that this is using the fire PRA in the best way, as a means of identifying issues for further evaluation.) Several candidate changes to the plant are being analyzed, the most important of which are possible upgrades to elements of the fire protection system and to the hot shutdown panel, and changes to the ERFBS (electrical raceway fire barrier system.). Some of the possible changes could be quite expensive, and engineering work is under way to develop the most effective approaches.

Other related work involves helping the plant's LBVP (Licensing Basis Verification Program) in reconstituting the fire part of the plant's licensing basis, and supporting the overall upgrading of the station's PRA. On this latter point, important work is now under way to produce a new seismic PRA, and some of the PRA staff resources devoted to this seismic-PRA task are also working in the fire PRA area, so a competition for these resources is a difficult managerial task, because both programs are of very high priority.

Conclusion:

Conversion to an NRC fire-regulation regime under National Fire Protection Association Standard NFPA 805 is a very extensive and complex activity. Based on this review, DCPP appears to be adequately implementing this program. In fact, DCPP is one of the leading plants nationwide in this conversion work. The DCISC should undertake a further review of this area when the plant has identified the important proposed plant modifications.

3.5 Probabilistic Risk Assessment (PRA) Group Status

The Fact-finding Team met with Rasool Baradaran, Supervisor, PRA/Appendix R, to discuss the current status of the DCPP group, under his supervision, that is responsible for maintaining the station's PRA (probabilistic risk assessment) and applying it to address safety and reliability issues affecting the plant. The principal topics discussed were the status of the several major PRA-development and PRA-enhancement projects now underway, and the status of the PRA group itself, which is now growing.

The DCISC last reviewed this topic during its Public Meeting on February 15, 2011 (Reference 6.5), when the DCISC was briefed by Loren Sharp. At that time, the PRA group was under the temporary leadership of Ken Bych and was searching nationwide for the permanent leadership that is now represented by Mr. Baradaran. Also, at that time the PRA group's size had decreased to about two engineers (full time equivalent, FTE) due to staff departures and retirements. It was reported that the objective then was to double the group's FTE size within a year.

Mr. Baradaran reported that his group is now up to about four FTE and has a goal of about doubling that over the next few years. PRA groups at other nuclear plants around the country differ in size, but DCPP's is now on the "small side" compared to broad industry practice, relying instead today

on outside contractor support. The long-term goal, supported strongly by plant senior management according to Mr. Baradaran, is to remedy that through some growth.

A major project that has consumed a large fraction of the PRA group's time and effort during the last year or more has been the transition to the use of the analysis tool "Safety Monitor" for risk-informed planning and analysis of outages. The "Safety Monitor" tool, which replaces the earlier "ORAM Sentinel" analysis tool, is now fully operational and is, in fact, being used for the outage safety plan for the 1R17 Outage, which commences in April 2012. Mr. Baradaran reported that the experience so far with "Safety Monitor" has been entirely successful. The advantage of "Safety Monitor" is that it is capable of a much more faithful model of the entire system configuration of the plant using advanced software and hardware, whereas the earlier analysis method had several compromises in fidelity to the plant configuration, having been developed many years ago when computer technology was more limited. Mr. Baradaran reported that the operating staff has now been trained in using "Safety Monitor" and finds it much more useful. Its main use is in analyzing the numerous different safety-system configurations encountered by the plant during an outage, so as to assure that none of them represents an unusual risk to the plant's safety.

A major aspect of the PRA group's work in the last couple of years has been developing a Fire PRA that meets the requirements of the ASME-ANS Standard RA-Sa-2009, as endorsed by the NRC in Regulatory Guide 1.200. The principal early application to the Fire PRA is supporting DCPP's transition of its fire-regulatory program from the earlier NRC regulations to new regulations linked to NFPA 805 --- see the discussion of the separate meeting during this FF trip with Paul Bemis (Section 3.4) for a full explanation of this topic. This Fire PRA work continues, and will do so for the next year or more.

However, the major new PRA work that Mr. Baradaran reported on is in two other important areas: The enhancements of the main Internal-Events PRA model and of the Seismic PRA model.

The Internal-Events PRA model: The station embarked over a year ago on bringing its long-standing Internal-Events PRA up to date, with the objective of fully meeting the ASME-ANS Standard (as endorsed by NRC Regulatory Guide 1.200). This work continues, and is expected to be complete by the end of calendar 2012. Outside contractors with strong expertise in the PRA field have been working on this effort for over a year, and Mr. Baradaran reported that the relationship between the outside team and his internal PRA group is excellent. The scope includes both the internal-events model and the internal-flooding PRA model. The main work is to assure that the plant's current configuration is represented properly in the PRA, to assure that the PRA meets the ASME-ANS Standard and RG 1.200, and to bring into use certain advanced analysis methods now current in the industry. Mr. Baradaran reported that this work is going well.

The Seismic PRA model: The DCPP seismic PRA model was, when developed in the late 1980s, the finest that had ever been developed worldwide, and for many years was used by the entire seismic-PRA community as its model for excellence. Its level of detail, scope, realism, and use of extensive site-specific data remain exemplary – almost no other seismic PRAs worldwide even today approach its quality. However, it is out of date in a few areas, both in terms of a realistic modeling

of the plant and when compared to the most modern practice. There is new information about the seismic hazard at the DCPP site, and new approaches to analyzing seismic fragilities of equipment, that have not been integrated into the PRA model. Work began within the last year to remedy these issues and to bring the DCPP model back into the forefront. Reliance on expert outside contractors for this work is essential, because the narrow expertise required is available in only a few places worldwide. Fortunately, DCPP has engaged a team of contractors judged by the DCISC FF team to be among the strongest available, and some parts of that team actually worked on the earlier DCPP seismic PRA in the 1980s, so they have the long view and the relevant experience.

The seismic fragilities work has begun, including training of the DCPP internal staff on the technology of fragilities analysis. This work consists of analyzing the seismic capacity of the major DCPP structures and components, so as to understand how strong they are and at what point a very large earthquake might compromise their ability to perform their safety function. A new seismic hazard to be used in the PRA has been under development for a more than couple of years, motivated by the discovery of the new Shoreline Fault systems offshore. This work will also result in a seismic PRA hazard model that will meet the ASME-ANS Standard and RG 1.200.

A new major driving force for this seismic PRA upgrade work is the recent NRC 50.54(f) letter (12 March 2012) that implements Recommendations 2.1 and 2.3 of the post-Fukushima NRC Near Term Task Force. This letter, containing requirements for re-evaluations in the seismic area for every operating US nuclear plant, will require DCPP to have an up to date seismic PRA by 2016. The current seismic PRA work, which was launched even before last year's Fukushima accident in Japan, will achieve that goal at DCPP well ahead of the 50.54(f) schedule. Mr. Baradaran reported that his goal is to have completed the entire model except for the new seismic-hazard information by early 2013, and then to integrate the new hazard information into the model as it is finalized about year after that.

Conclusion:

The PRA group's work today is focusing principally on developing new PRA models in the internal-events, fire, and seismic areas. The work is proceeding well, and the new leadership has taken hold. The group is also growing, which is necessary to support several major DCPP needs. The seismic PRA effort in particular will restore the DCPP seismic PRA to its long-held place as one of the US industry's models for excellence. The DCISC should undertake a further review of this PRA area about a year hence, when the plant will have achieved additional major milestones in its PRA development effort.

3.6 Loose Hold-Down Nuts on Casks in the Independent Spent Fuel Storage Installation (ISFSI)

The DCISC Fact-finding Team (FFT) met with Sean Flickinger, Project Manager, ISFSI. This is the DCISC's first review of this specific topic. The DCISC last reviewed the ISFSI at the June 2010 Public Meeting (Reference 6.6) during which DCPP provided a report on the status of transferring used fuel from Units 1 and 2 to the ISFSI storage area, a description of plans for future transfers, and a video of spent fuel being loaded into transfer casks, transported to and placed into the ISFSI.

Prior to the FFT's discussion with Mr. Flickinger, the FFT reviewed DCPP's Apparent Cause Analysis of this event, discussed in DCPP Notification 50451401. The event description is as follows. On January 9, 2012 a loose anchor stud nut was identified on used fuel storage cask number 229-317. The deficiency was identified during the implementation of the High Integrity Storage Module, HI-STORM, Monthly Inspection. Discovery of this condition was coincidental to the inspection rather than being identified through the performance of a particular step in the inspection.

Each cask storage pad accommodates up to 20 HI-STORM storage casks and is designed with an embedded steel structure having a steel plate ring at the surface of the concrete that mates with the bottom of each cask. During installation on the pad, each cask is compressed against the embedment plate using 16 studs. Each stud is preloaded to approximately 157,000 pounds force (lbf). The preload is achieved by threading the studs into a coupling steel block located on the underside of the embedment plate buried in concrete. Either field-installed shims or a permanently installed circumferential shim plate weldment is used to ensure that the proper pre-load is obtained in each anchor stud. DCPP's ISFSI differs from all other ISFSIs in the United States in that the storage casks used by other nuclear plants are not bolted to their pads but rather simply stand on the pads under their own weight. The process for installing the storage casks is governed by procedures, and personnel responsible for implementing the procedure are trained to do so.

Each of the casks is inspected by procedure on an annual basis, and tightness of the anchor stud nuts is one of the criteria specified by the procedure. The prior annual inspection of cask number 229-317 was completed on September 29, 2011. There were no deficiencies noted with regard to the tightness of the anchor stud nuts at that time.

After the loose nut was identified, actions were initiated to re-tension the loose nut and to verify the tension of the fifteen remaining anchor stud nuts of cask 229-317. Also, based on the discovery of the discrepant condition, an Extent of Condition evaluation was conducted of all other storage casks. This evaluation identified two additional cases of a loose anchor stud nut. All three anchor stud nuts that were loose could be turned by hand. Mr. Flickinger noted that the three loose nuts were in three different locations on three different casks. These studs were retensioned, and actions were implemented to verify the tension on the remaining anchor stud nuts.

The physical properties of the studs, nuts, and plates made it difficult to conclusively determine a root cause, as discussed in the remainder of this paragraph. Calculations indicated that elongation of the stud by 0.023 inches would produce a tension of 157,000 lbf, the tension stipulated in the procedure. Consequently, the introduction of very small amounts of foreign material (having dimensions as small as from 0.010 inches to 0.020 inches) could lead to a relaxation in the tension if the dimensions of that material could degrade under compression. To address this issue, it was determined that the addition of a final tensioning verification would help to assure that any degradation of foreign material during initial tensioning would be identified and corrected. An analysis was also conducted of the procedure for installing the casks on the pads, and it was concluded that the procedure may not have included sufficient controls with respect to cleanliness of the area, which could have caused the preload to be reduced. That is, cleanliness conditions were directed to be verified during the preparation phase, but not immediately prior to the final

positioning of the cask. Also, there was no required additional verification of stud tensions after completion of the tensioning process for all studs, nor were visible alignment marks installed that could support subsequent inspections. Further, the procedure for the annual inspection did not specify a requirement that the anchor studs be tight.

In addition, further evaluation of the design and installation of the cask storage arrangement was conducted, including an evaluation of the effect of not pre-tensioning the anchor studs. This evaluation provided assurance that if preload is lost in any or all anchor studs the cask will maintain its stability in the event of a design basis earthquake.

Immediate corrective actions, in addition to examining the other casks for loose nuts, were completed as follows:

- Retension of the studs with the loose nuts
- Verification of tension on all anchorage studs
- Application of torque paint to each of the anchorage stud and nut assemblies

Other corrective actions involve:

- Revising the procedure to include a final cleaning swipe of the embedment ring and cask underside just prior to the final positioning of the cask. (Complete)
- Adding a procedure requirement to include verification of stud tension after the cask transporter has been moved away from the cask. (Complete)
- Revising the annual inspection procedure to specify that "anchor stud nuts are not loose utilizing full effort of a hand." (Due by June 2012)
- Developing a License Amendment to remove the requirement for pre-tensioning the anchor stud and nut assemblies from the ISFSI Final Safety Analysis Report. (Expected completion January 2013)

Conclusion:

The specific circumstances leading to the three loose nuts on ISFSI storage casks are difficult to diagnose. Nevertheless, the corrective actions to prevent recurrence address a broad range of contingencies and appear to be adequate and appropriate. DCPP's analysis has determined that the ISFSI casks will maintain their stability in the event of a design basis earthquake without having their studs pre-tensioned.

3.7 Operations Block and Tackle Action Plan

The DCISC Fact-finding Team met with Paula Gerfen, Manager, Operations, to review the status of the Operations Block and Tackle Action Plan. This is the DCISC's first review of this Plan. The stated purpose and desired results of the Plan are that *"Diablo Canyon's Operations Department ownership, operation, monitoring of plant systems is recognized as an Industry Leader as evidence in improved plant program performance."* This will involve Operations personnel being committed to

the use and reinforcement of error prevention tools in all work and instructional settings. Also, managers are to clearly define and reinforce industry leading behaviors, standards, and tools at DCPP. The effectiveness of the improvement plan is monitored and assessed by the monthly metrics provided in the Plant Performance Improvement Report.

An extensive Action Plan is being used to direct and track actions aimed at achieving the desired improvements. The Plan is composed of six sections, as follows, and is essentially complete:

1. Power Plant Leak Management
2. Emergency Plan Drill and Exercise Performance Failures
3. Plant Status Control
4. Inconsistencies in Crew Performance
5. Reactivity Management
6. Missed Surveillances

Performance is now being tracked primarily through the Plant Performance Improvement Report, the most current of which was provided to the Fact-finding Team (i.e., the February document transmittal containing the Plant Performance Indicator Report (PPIR) for January 2012).

Plant Leak Management:

Performance Indicator data showed the performance for addressing process fluid leaks for the current month and also the prior two months as Green (on a scale of Green, Yellow, and Red, where Green is strong performance and Red is unsatisfactory). The report showed an increase in the number of identified leaks in August through October 2011, which was attributed to an increased effort to identify leaks, followed by a step reduction in the period November 2011 through January 2012 as the leaks were repaired.

Performance with Respect to the Emergency Plan:

The station has acted to address performance weaknesses that occurred during the period November 2010 through March 2011. Operation crews were provided additional training, and performance in the latter part of 2011 had shown improvement. Annual training was also provided to Emergency Teams during the first quarter of 2012, and full-scope drills will be held in July and August of 2012. The January 2012 PPIR reported overall Emergency Planning Program Health to be White (satisfactory) in January 2012 and Green in November and December 2011 (on a scale of Green, White, Yellow, Red) where Green is strong performance and Red is Unsatisfactory.

Plant Status Control:

The focus of this section of the Action Plan has become broader than just focusing on the number of mispositioned plant components. The focus has become more site-wide to examine the various

contributors to problems involving plant status control. Nevertheless, there has also been a continued focus on component mispositionings, which is a performance area that has been monitored for many years and has fluctuated in its level of performance. Since performance in this area can vary from month to month, a rolling average of the most recent six months is used as the most representative value of this indicator. During the first half of 2010 the number of mispositionings was reduced so that performance went into the Green band. Then, in the third quarter of 2010, prior to refueling outage 1R16, mispositioning performance dipped into the Yellow band, and then further into the Red band after 1R16 where it remained through the second quarter of 2011, including the refueling outage 2R16 in May 2011. In the third quarter 2011, after outage 2R16, performance again began improving steadily, up through the most recent PPIR, where performance reached the Green band in January 2012. This recent positive trend was believed by Ms. Gerfen to be influenced by having a more site-wide examination of the contributors, as mentioned above. This has led to more frequent meetings and assessments by the Plant Status Control Leadership Team (PSCLT), to including the station's Human Performance Supervisor as a core voting member of the PSCLT, and to holding Misposition Review Board meetings at the discretion of the Operations Director. With respect to minimizing events in general, the Event Investigations procedure was upgraded, including clarification of responsibilities and examinations of weaknesses in supervisory involvement that may have contributed to problems in status control.

Inconsistencies in Crew Performance:

This issue was noted during observations of operations crews in the simulator, but also applies to normal operations. A primary area has been in the use of human performance techniques (e.g. employing self-checking behaviors such as Stop, Think, Act, and Review). The approach to minimizing these inconsistencies has been to increase the rigor and number of management observations and to reinforce operator behaviors with respect to important tasks such as making transitions through procedures and responding to annunciators. Although all of the actions in this section of the Plan are reported as complete, observations of worker performance are of a continuing nature.

Reactivity Management:

This section pertains primarily to avoiding unplanned changes in reactor power, both upward and downward. The Performance Indicator Ratings shown below are based on a rolling twelve month average for each unit (because performance in this area can vary from month to month). For each of the most recent three months, the respective twelve month rolling averages are as follows:

Unit	Nov 2011	Dec 2011	Jan 2012
1	Green	White	White
2	Green	Green	White

The DCISC Fact-finding Team also examined some specific performance indicators in the Operational Focus Index that could have the potential to affect the ability of operators to manage reactivity. The indicators are: Operational Workarounds, Operator Burdens, Control Room

Deficiencies, Main Annunciators Defeated, and Clearances (i.e. components out of service) With Tags Hanging for Greater than 90 Days. The values of these indicators are recorded and rated weekly as Green, Yellow, or Red, and the Fact-finding Team reviewed their ratings for the weeks from the beginning of December 2011 to the end of January 2012. All of the ratings except one were Green. The one week not rated Green was the week of December 8, 2011 for which the Operator Burden performance indicator was rated Red.

Missed Surveillances:

In order to prevent missed surveillances, the focus in this area has been on increasing the care exercised when verifying the completion of surveillance tests, and when documenting the status of Surveillance Test Procedures (STP) prior to making mode transitions in the plant. The Fact-finding Team was provided with the Apparent Cause Evaluation of a missed surveillance during Unit 2's start-up and return to power in March 2011 after recovery from a Manual Reactor Trip that was performed in response to a steam leak that caused an automatic trip of Main Feedwater Pump 2-1. The apparent cause of this missed surveillance was essentially a lack of rigor in tracking the status of STPs. Corrective Actions, which are now complete, involved strengthening appropriate procedures and manuals in ways that make the STP tracking process more robust. The Operations Services group, which tracks performance in this area reported that currently there is not an adverse trend in this area and performance currently meets expectations

Conclusion:

Activities associated with improving the six performance areas of the Operations Block and Tackle Action Plan appear to be appropriate and to be achieving or approaching the desired results. Future DCISC Fact-finding reviews of this Plan should focus on one or at most two performance areas of the Plan as dictated by station performance.

3.8 Plant Health Committee Meeting

The DCISC Fact-finding Team observed the April 5, 2012 DCPP Plant Health Committee (PHC) Meeting. The DCISC last observed the PHC in August 2011 (Reference 6.7) when it concluded the following:

> *The Plant Health Committee continues to show improvement by focusing its resources on system and component health. The August 2011 meeting was successfully carried out with system health improvement as its top priority.*

The PHC is governed by DCPP Procedure OM4.ID16, "Plant Health Committee" and is a management team responsible for:

- Continual review of system and program health issues
- Routinely monitoring the status of plant health issues on the plant health issues list for action status and completion
- Routinely monitoring the status of the system health tactical list

- Review and approval of action plans to address plant health issues that originated from system health reports, maintenance rule, operator workarounds, program health reports, emergent issues, and others deemed important to monitor
- Review and monitoring of plant health issue plans that are presented to the PHC

Membership and expected attendance is:

- Plant Health Committee Chairman and Facilitator (currently the Station Director)
- Project Engineering Manager
- Operations Director
- Engineering Director or Senior Director
- Maintenance Director
- Outage Management Director
- Reliability Engineering Supervisor
- Administrative Support Person

Others are invited to the meetings as appropriate.

Plant health issues that require PHC review include:

- Issues that result in a red or yellow (unacceptable health) system health color (reviewed at least every 6 months)
- Programs that are rated red or yellow health color (reviewed at least every 6 months)
- Equipment performance issues that result in a red or yellow component health color
- Issues that result in a Maintenance Rule (a)(1) system
- Chronic system, program, or component health problems
- Issues that require special management attention or extensive resources to address
- High Critical (1A) Preventive Maintenance deferral requests and appeals

The April 5, 2012 meeting was chaired by Tim King, Director of Nuclear Work Management, in the absence of the Station Director. A quorum was present. The meeting schedule was set for 50 minutes duration, and great emphasis was placed on keeping the meeting on schedule and on keeping the discussions focused on the key aspects of the specific topics. The agenda was as follows:

- Safety Discussion – 5 min
- Tactical List Review – 10 min
- System Presentations

  - System 39A/B – Radiation Monitors – 15 min
  - System 43A – Plant Process Computer – 15 min

- Emergent/New Items – 2 min
- Action Item Review – 2 min
- PHC Member Discussion, if required – 2 min

The following discussion summarizes and focuses on the keys aspects of topics discussed during the meeting.

DCPP's Tactical List consisted of brief summaries of issues pertaining to 13 plant systems, key actions pending, and whether the actions were required to restore system health and the expected completion time frames. Issues for about half of the listed systems were needed to restore system health. It was not clear to the DCISC Fact-finding Team whether the topics were listed in order of priority because some items not required to restore health were listed ahead of those required for system health. Rather the listing appeared to be ordered primarily by the System Number. Although discussion on these items was very brief it focused on the status of actions being taken, and the short time allotted for this segment of the meeting (10 minutes) seemed to be adequate.

The majority of the meeting focused on the status of the two plant systems listed above, as follows:

Radiation Monitoring System

Composed of 101 channels having multiple components from four equally populated manufacture groups. About half the system consists of early 1990s vintage digital monitors, while the other half is 1970s and 1980s vintage analog monitors. It is a Non Risk Significant NRC Maintenance Rule system divided between Safety Related Monitors and Non-Safety Related Monitors. Equipment reliability is the biggest challenge, and this is an industry-wide issue. Although the age of equipment is a potential concern, in general, obsolescence is not a significant issue because sufficient quantities of spare parts still exist, and in the case of the analog channels there remains the ability to repair components using commercially available parts. Overall for both units, performance of the system continues to improve as various components are upgraded.

Nevertheless, the systems for Units 1 and 2 are classified as Unhealthy (Yellow) due to reliability issues with the RM-11 and RM-13 filter paper drive motors that fall under the NRC Maintenance Rule. These motors are obsolete, and a professional motor shop has been contacted to provide assistance. The supply voltage has been nominally higher than the design and the corrective action is either to decrease the voltage or to increase the impedance of the motors. This effort is expected to be completed prior to October 2012, at which time the Unit 1 and 2 systems would return to Healthy status.

Plant Process Computers

Unit 1 system is rated Green (Healthy), as are all individual measures of system Reliability, Material and Equipment Conditions and Corrective Actions, Operations Concerns, Performance Monitoring, and Design. Nevertheless, an emerging issue that is not Risk Significant, and that occurs infrequently, pertains to slowdowns on system execution engines that can have a negative effect on system responsiveness. It can take two to three days from the time of initial slowdown before the effects can be observed and responded to by operators. Also, the issue happens only about once every three months, which impedes diagnosing the cause of the problem.

Unit 2 System is rated White (Near Healthy). The system has the same issue as Unit 1, namely the slowdown of system execution engines. The reason for the White rating is that, although all of the major categories of system health are rated as Green, one of the subcategories of Design, i.e. Design Deficiencies Impacting System Performance, or Affecting Reliability is rated Yellow. The reason is that the Unit 2 Plant Process Computer will not operate reliably in redundant mode. Therefore, systems are currently running in non-redundant mode. This affects system reliability, but is not a safety issue, and the issue is planned to be corrected prior to June 2012.

Finally, the handout at the meeting provided a listing of the other systems rated Yellow, as follows (no systems were rated as Red, i.e. unhealthy with no approved action plan):

Unit 1		
System	Months Unhealthy	Expected Return to Healthy
Reactor Coolant	8	Outage 1R17
Lube Oil	5	July 2012
Emergency Diesel Generators	14	June 2012
Heating, Ventilating, and Air Conditioning	3	July 2013
Rod Control	6	Outage 1R17
4KV Electrical	23	Outage 1R18 (Oct 2013)
Unit 2		
System	Months Unhealthy	Expected Return to Healthy
Emergency Diesel Generators	14	June 2012
Heating,Ventilation, and Air Conditioning	3	July 2013
Rod Control	6	Outage 2R17
4KV Electrical	23	Outage 2R17

Conclusion:

The Plant Health Committee meeting was well conducted and efficiently managed, with its members focusing on topics and participating actively and effectively. The DCISC should consider reviewing the station's 4KV Electrical System in a future Fact-finding Meeting.

3.9 Performance Improvement Station Initiative

The DCISC Fact-finding Team met with Gary Close, Manager, Problem Prevention and

Resolution, to review the status of DCPP's station initiative on performance improvement. The DCISC last reviewed this topic in September 2011 (Reference 6.8) when it concluded:

> *The Performance Improvement Focus Area Action Plan has been restructured into a logical organizational framework during the past nine months, and the number of specific actions has been expanded considerably. The vast majority of actions are completed, with the remainder on track for completion this calendar year. The station's Plant Performance Improvement Report (PPIR) is serving as an effective vehicle for gauging the degree to which implementation of the Action Plan is achieving the desired results. Recognizing that performance for any given area can, and does, change from month to month, it appears to the DCISC Fact-finding Team that, at this time, the primary areas in need of attention are the Corrective Action Program, due to the need to expand the number of qualified Cause Analysts, and Human Performance in Operations and Engineering.*

The Fact-finding Team was provided with the following:

- DCPP Performance Improvement Program Procedure, OM15.ID5, Rev. 4, dated 12/28/11
- 2012 Performance Improvement Action Plan, dated 3/8/12 (This plan now contains actions focused primarily on the Corrective Action Program)
- DCPP Performance Improvement Report, for the period 10/13/11 – 2/6/12
- Changes to Performance Improvement Report and Performance Improvement Review Board (PIRB), Effective 1/9/12

The structure and content of the above documents clearly explain how the station's approach to performance improvement has broadened from a set of action plans addressing key station issues to a permanent way of doing business throughout the site. The Performance Improvement Program Procedure discusses the approach. In summary, its first sentence states: "Excellence in performance improvement is embodied by the organization that views improving performance as a never-ending pursuit rather than final destination." The model for this approach is embodied in the practices of Identifying and Monitoring performance to reveal performance **GAPS**, Analyzing and Planning Solutions that will lead to **ACTIONS** that are directed at Implementing Solutions and achieving **RESULTS**, after which the cycle repeats.

The current Action Plan itself is also a reflection of the station's current approach. This Action Plan focuses on processes by which the station can identify and analyze areas in which performance can potentially be improved. These processes that are identified in the Action Plan are:

- Observing station activities
- Trending performance
- Self-assessing and benchmarking
- Examining information from the industry
- Analyzing the information and implementing the identified corrective actions as determined

to be appropriate

The majority of the Action Plan is now focused on the Corrective Action Program (CAP), and the vast majority of the assigned actions in this area have been completed. On a related note, Topic 2 in this Fact-finding report discusses the fact that the NRC has recently closed its long-standing substantive cross-cutting issue regarding Problem Evaluation (P.1.c). It is noteworthy that, in spite of having received regulatory relief from the NRC, the station has continued to focus on the remaining elements of its CAP Action Plan rather than considering its actions thus far to be sufficient.

Finally, the station's Site Services Department has developed a Performance Improvement Report that identifies and discusses specific issues that need to be addressed by various areas of the station, as follows:

Problem Prevention and Resolution

- Gap #1: Timely Resolution of Problems
- Gap #2: Self-Assessment Program Elements Not Met
- Gap #3: Observation Program
- Gap #4: DN Signif Level 3 (non-EQPR) Notifications not Tracked in CAP Index

Procedure and Document Services

- Gap #5: Records Management
- Gap #6: Procedure Backlog

Emergency Planning

- Gap #7: Equipment Important to Emergency Response
- Gap #8: Drill and Exercise Performance

Regulatory Services

- Gap #9: Reg Services Employee Engagement
- Gap #10: Reportability
- Gap #11: Safety System Functional Failures

Evaluation of the scope of these issues and the associated corrective actions is beyond the scope of this Fact-finding Trip, but the Performance Improvement Report can serve as a source of possible topics for future DCISC reviews

Conclusion:

DCPP has transformed its original Performance Improvement Action Plan into a workable system for tracking and addressing issues in which the station has determined that performance improvement is warranted. The vast majority of the assigned actions in the prior Plan have been completed. The DCISC need not continue to examine the status of DCPP's entire Performance Improvement Action Plan. Rather the DCISC should consider the various performance gaps being addressed by DCPP's Performance Improvement Program as sources of potential review topics.

3.10 Meeting with New Chief Nuclear Officer

The Fact-finding Team met with Mr. Ed Halpin, PG&E's new Senior Vice President and Chief Nuclear Officer. This was Mr. Halpin's first week on site. Dr. Budnitz explained the genesis, purpose, and uniqueness of the DCISC, the nomination and selection processes for Committee members, their interfaces with the offices of the Governor, the Attorney General, and the California Energy Commission, and the DCISC's advisory role. He also discussed the frequency and nature of DCISC Fact-finding trips and the process followed with respect to a DCISC recommendation and the utility's response. In addition, Dr. Budnitz discussed the purpose, nature, structure, frequency, and location of DCISC public meetings, the inclusion of public tours, and the streaming broadcasts of the sessions. He further explained the nature of interactions with the public during DCISC's public meetings and the process that is procedurally followed with regard to those interactions.

3.11 Differing Professional Opinion (DPO) Program

The DCISC Fact-finding Team met with Rick Burnside, Employee Concerns Program Supervisor, and Russ Glines, Employee Concerns Investigator, to discuss the Differing Professional Opinion (DPO) Program, for which Mr. Burnside is responsible along with his major responsibility regarding the Employee Concerns Program. The DCISC last reviewed the DPO Program (in conjunction with its review of Employee Concerns) in February 2008, Reference 6.10, where it concluded:

> *Mr. Burnside feels that the Employee Concerns Program continues to operate effectively. DCPP thinks that the reason they are not receiving many employee concerns is that the employees feel that they can go to their Supervisor to resolve safety concerns and issues. (Also, during the February 2008 Fact-finding Meeting Mr. Burnside indicated that the station had received one Differing Professional Opinion (DPO) in 2007 and that they have typically received one DPO every two to three years.)*

Mr. Burnside stated that the last DPO submitted within DCPP was in 2007, as mentioned above. The conclusion drawn by both Mr. Burnside and the Fact-finding Team was that the need for employee use of the DPO program has significantly diminished as a result of the nuclear industry's in-depth reviews of technical and operational issues.

Conclusion:

The absence of employee submittals of Differing Professional Opinions in recent years is most likely due to the extent and depth of technical and operational analyses that are performed in the nuclear industry and by the inputs that can be provided into those analyses through channels other than DPOs. The DCISC should no longer review this topic as a separate issue.

3.12 Meeting with Site Vice President

DCISC Member Dr. Robert J. Budnitz met with Mr. James Becker, Site Vice President, to discuss selected topics from this Fact-finding meeting and other subjects of mutual interest.

4.0 Conclusions

4.1

DCPP and PG&E involvement with agencies of the State of California and with local cities and counties is extensive and detailed with respect to Emergency Preparedness Activities. A further periodic review of this DCPP activity is warranted but not urgent.

4.2

DCPP has made substantial progress in the area of Problem Evaluation, as reflected in the NRC's dropping of its substantive cross-cutting issue in the area of Problem Evaluation/Extent (P.1.c). Station Performance Indicators related to technical evaluations are generally healthy. The DCISC should continue to review station progress in the Licensing Basis Verification Project and to review the area of Problem Evaluation based on future station performance.

4.3

DCPP's Human Performance Group clearly noted and effectively evaluated the negative trend in the station's non-outage human performance error rate experienced during the last half of 2011. DCPP's human performance error rate during the first quarter of 2012 shows an improving trend compared to the last half of 2011, and the 2012 goal is set to a higher standard than for 2011. DCPP's human performance training facility appears to be an effective environment for training individuals in proper human performance techniques and reinforcing the importance of error free work in a nuclear station. The DCISC should continue periodic reviews of human performance as dictated by station events and overall performance.

4.4

Conversion to an NRC fire-regulation regime under National Fire Protection Association Standard NFPA 805 is a very extensive and complex activity. Based on this review, DCPP appears to be adequately implementing this program. In fact, DCPP is one of the leading plants nationwide in this conversion work. The DCISC should undertake a further review of this area when the plant has identified the important proposed plant modifications.

4.5

The PRA group's work today is focusing principally on developing new PRA models in the internal-events, fire, and seismic areas. The work is proceeding well, and the new leadership has taken hold. The group is also growing, which is necessary to support several major DCPP needs. The seismic PRA effort in particular will restore the DCPP seismic PRA to its long-held place as one of the US industry's models for excellence. The DCISC should undertake a further review of this PRA area about a year hence, when the plant will have achieved additional major milestones in its PRA development effort.

4.6

The specific circumstances leading to the three loose nuts on ISFSI storage casks are difficult to diagnose. Nevertheless, the corrective actions to prevent recurrence address a broad range of contingencies and appear to be adequate and appropriate. DCPP's analysis has determined that the ISFSI casks will maintain their stability in the event of a design basis earthquake without having their studs pre-tensioned.

4.7

Activities associated with improving the six performance areas of the Operations Block and Tackle Action Plan appear to be appropriate and to be achieving or approaching the desired results. Future DCISC Fact-finding reviews of this Plan should focus on one or at most two performance areas of the Plan as dictated by station performance.

4.8

The Plant Health Committee meeting was well conducted and efficiently managed, with its members focusing on topics and participating actively and effectively. The DCISC should consider reviewing the station's 4KV Electrical System in a future Fact-finding Meeting.

4.9

DCPP has transformed its original Performance Improvement Action Plan into a workable system for tracking and addressing issues in which the station has determined that performance improvement is warranted. The vast majority of the assigned actions in the prior Plan have been completed. The DCISC need not continue to examine the status of DCPP's entire Performance Improvement Action Plan. Rather the DCISC should consider the various performance gaps being addressed by DCPP's Performance Improvement Program as sources of potential review topics.

4.10

The absence of employee submittals of Differing Professional Opinions in recent years is most likely due to the extent and depth of technical and operational analyses that are performed in the nuclear industry and by the inputs that can be provided into those analyses through channels other than DPOs. The DCISC should no longer review this topic as a separate issue.

5.0 Recommendations:

None

6.0 References

6.1 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.2, Section 3.3, "Santa Barbara County Emergency Planning."

6.2 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.5, Section 3.5, "Engineering Rigor Action Plan

Status."

6.3 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 5, 2011, Volume II, Exhibit D.7, Section 3.5, "Human Performance (HP) Program."

6.4 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.2, Section 3.4, "NFPA 805 Implementation Progress."

6.5 "Diablo Canyon Independent Safety Committee Twenty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 – June 30, 2011", Approved October 5, 2011, Volume II, Exhibit B.6, "Status and Plans for the Probabilistic Risk Assessment Group."

6.6 "Diablo Canyon Independent Safety Committee Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 – June 30, 2010", Approved November 17, 2010, Volume II, Exhibit B.9, "Report on Status of Moving Unit 1 and 2 Fuel to ISFSI Storage Area, Plans for Future Transfers, and Video of Spent Fuel Being Loaded into Transfer Casks, Transported to, and Placed into the ISFSI."

6.7 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.2, Section 3.2, "Plant Health Committee."

6.8 "Diablo Canyon Independent Safety Committee Twenty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2011 – June 30, 2012", Approved October 10, 2012, Volume II, Exhibit D.3, Section 3.12, "Status of the Performance Improvement Action Plan."

6.9 "Diablo Canyon Independent Safety Committee Eighteenth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2007 – June 30, 2008", Approved October 7, 2008, Volume II, Exhibit D.7, Section 3.5, "Employee Concerns and Differing Professional Opinions Programs."

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

TELEPHONE - CORRESPONDENCE LOG

The log is intended to provide a memorandum of contacts initiated by individual members of the public, citizen or public-interest groups, or similar organizations with the Committee members, consultants or staff.

DATE INITIATED	FROM	STATUS	COMMENTS/INFORMATION
6/29/2011	Bob McInerney	Complete	Email comment regarding presentation on Fukushima at June 2011 PM; 6/29/11 Email acknowledgment sent.
6/30/2011	Sherry Lewis	Complete	Email request for materials on safe storage of nuclear fuel; 7/5/11 Email acknowledgment sent msg. fwd to Dr. Budnitz, materials provided.
7/15/2011	June Cochran	Complete	Email request for power point presentation on Fukushima; 7/15/11 Power point slides provided by email; 7/15/11 email re narration; 7/15/11 information re narration provided by email.
7/31/2011	June Cochran	Complete	Email request for use of power point slides; 8/1/11 power point slides provided by email; 8/1/11 email request for addtl. information; 8/1/11 response provided by email.

8/11/2011	Jay C. McAmis, Emergency Mgr. Santa Barbara County Executive Offices	Complete	Email msg. thanking Dr. Budnitz for a meeting and continued assistance and invitation to meet with the Board of Supervisors; 8/11/2011 Email response provided 8/16-17/2011 FF visit by Dr. Budnitz & Mr. Wardell to meet with Board of Supervisors.
8/31/2011	June Cochran	Complete	Email inquiry re next public meeting date; 8/31/2011 email reply provided.
9/18/2011	Jane Swanson	Complete	Email inquiry re public tour; 9/19 Email response provided.
9/19/2011	June Cochran	Complete	Email inquiry re public tour; 9/19 Email response provided.
9/19/2011	Justin & Nancy Edwards ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Leslie Bolin ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Mikaela Raphael ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Noah Bolin ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Coyle & Meredith Boyd ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Edward Veek ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Richard & Carol Ziegler ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Devin Decater ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.

9/19/2011	Pamla Sines ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Leo Pedersen ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Steward & Constance Edwards ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Glenn Griffith ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Kathleen Gisler ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Mary Norris ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Jorge Aguilar ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Steven Singer ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Jayma Newland ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Marilyn Kimball ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Erik, Alison & Erika Layman ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Stanley Yucikas ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Humberto De Santos ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Jose Vallejos ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Ronald Pearson ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.

9/19/2011	Sandra Stockler ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Sharon Byars ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Stan Broadfoot ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Joseph Herbison ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	John Zanussi ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	James Oates ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Otto Schmidt ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Richard Dunn ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Darion Curry ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Eddie Santana ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	George Dubois ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Kaoru Hisasue ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	David & Ann Bernhardt ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	John Duffy ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Delvis, NoOrine & Dan Fernandez ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.

9/19/2011	Petra Quinn ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed.
9/19/2011	Stephanie Finucane ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; confirmed
9/19/2011	Annette Nyberg ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; wait listed.
9/19/2011	Darin Ward ☎	Complete	Re DCISC October 5, 2011 public tour of DCPP; wait listed.
9/20/2011	Joanna Jensen – CA State Water Resources Control Board ☎	Complete	Regarding information provided to the SWRCB Nuclear Review Committee; 9/21/11 Email recd. With roster for SWRCB Nuclear Review Committee & scope of work for special studies; 9/23/11 Acknowledgment sent, information provided to members & consultants.
9/22/2011	Jane Swanson	Complete	Email notice re several meetings including DCISC in local area on 10/6/2011; 9/23/11 Email acknowledgment sent
10/6/2011	William Gloege	Complete	Email request for tour information; 10/12/11 Email sent with information; 10/12/11 Acknowledgment received.

10/10/2011	Timothy S. Cleath, Geologist	Complete	Email request for analysis of Fukushima events from 21st Annual Report; 10/10/11 Email acknowledgment sent; 10/11/11 Email acknowledgment received; 10/14/11 Email with pages from June 2011 Minutes sent; 10/15/11 Email with request for further information; 10/20/11 Email with pages from June 2011 Minutes sent; 10/21/11 Email acknowledgment received.
10/20/2011	John Holman	Complete	Email request for tour information; 10/20/11 Email sent with information.
11/10/2011	June Cochran	Complete	Email request for PG&E information binders; 11/21/11 Email response sent, information requested provided.
11/28/2011	Paul A. Willis	Complete	Email request for information on public tour; 12/05/11 Email response provided with information.

1/19/2012	John A. McEntire, Areva, Inc.	Complete	Email request for information on emergency preparedness equipment reliability; 1/1912 Email response with information requested; 1/19/12 Email acknowledgment sent.
1/23/2012	William Gloege ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Frank Chauce ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Sheila Blake ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Marilyn Blake ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Samuel Keller ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Garrett & Lina Haner ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed/Cancelled (Garrett).
1/23/2012	Bruce & Claudia Cheek ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Brian & Lynn Parscal ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Doug & Margaret Kupsik ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Clarence Buetow ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Jeff & Jerri Hall ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Ruth Haas ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.

1/23/2012	James & Jeanette Furman ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Marie Dadisman ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Joshua Bingham ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Jack Bingham ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Roxanne Rodoway ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Robert Diniel ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Stephen & Deronda Burdette ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Alan Gray ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed/Cancelled.
1/23/2012	John & Carolyn Claudy ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed/Cancelled.
1/23/2012	Gary Burton ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Helen Keezer ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Michael & Patricia Rice ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Ray & Jody Walters ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Patrick Conroy ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	James & Kay Stapleton ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.

1/23/2012	Robert Windhorst ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Craig & Leola Macmillan ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed/Cancelled.
1/23/2012	Larry Stevens ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed.
1/23/2012	Masako Pedersen ☎	Complete	Re DCISC February 8, 2012 public tour of DCPP; confirmed/Cancelled.
1/31/2012	Masako Petersen ☎ Nippon TV news producer	Complete	Inquiry by news producer for Nippon Television inquiring re the role of the DCISC and possible news special re nuclear power and request for use spent fuel video from website and to tour site. 1/31/12 ☎ response provided; 1/31 Email acknowledgment recd.
2/6/2012	Sherry Lewis	Complete	Email requesting information re Fukushima; 2/7/12 Email response provided from Dr. Budnitz; 2/7/12 Email acknowledgment.
2/9/2012	Michael Chediak ☎	Complete	Inquiry re role and responsibilities of the DCISC; 2/9/12 Email sent with copy of Executive Summary from 21st A/Rpt.

2/19/2012	Sherry Lewis	Complete	Email request (of Consultant Linnen) for information re Allegations leading to Notices of Violation; 2/24/12 Email response provided; 2/25/12 Email acknowledgment received; 3/4/12 Email sent to close contact.
5/14/12	Gabriela Quiros – KQED news producer	Complete	Email inquiry re animation posted on DCISC website; 5/14/12 response sent by Dr. Peterson; 5/15/12 Email response provided; 5/15/12 Email inquiry requesting further information; 5/15/12 Email response sent with information.
6/4/2012	Carol Roberts ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Michael Dilallo ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Robert Macias ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Leisa McMillan ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Gary & Jane Peterson ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Darwin Curry ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Linda Erwin ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.

6/4/2012	David Weisman ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Darin Ward ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Gary Robinson ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Ray & Carol Stoner ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Judith Hayes ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed/Cancelled.
6/4/2012	Kenneth & Zorina Schultz ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Stan Shaner ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Carl Moody ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Robert & Flavia Kelly ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Richard Nelson ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Bruce Nash ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Grace Vanderheyden ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed/Cancelled.
6/4/2012	Leo & Dara Alford ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed/Cancelled.
6/4/2012	James F. Hall ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Dwight & Margaret Ensor ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.

6/4/2012	Larry & Dolores Catalina ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Lucas Edwards ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Wyatt & Jeanne Banker-Hix ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/4/2012	Fran Graham ☎	Complete	Re DCISC June 20, 2012 public tour of DCPP; confirmed.
6/15/2012	Elizabeth Douglass ☎ InsideClimateNews reporter		Inquiry and email re: question and answer session with Dr. Lam re role and responsibilities of DCISC; 6/23/12 acknowledgment sent, msg. forwarded to Dr Lam;

	Elizabeth Douglass InsideClimateNews reporter (Continued contact)	Complete	6/26/12 Interview with Dr. Lam conducted; 6/27/12 Email request to interview Dr. Budnitz; 6/28/12 Email Acknowledgment sent, msg. provided to Dr. Budnitz; 6/28/12 Email follow up received; 6/28/12 Email request for power point presentations from June 2012 public meeting; 6/28/12 Email with power point presentations provided; 6/29/12 Email acknowledgment received and information about distribution provided; 6/29/12 Email confirmation sent re documents in the public domain; 07/09/12 Email with link to story by Ms. Douglass

6/18/2012	Sherry Lewis	Complete	Email with copy of draft Minutes of DCISC February public meeting provided per request made at public meeting; 6/30/12 Email request for information re Yucca Mountain Project, msg. provided to Dr. Budnitz; 7/5/12 Email acknowledgment sent; 7/7/12 Email response received, with request for draft of June 2012 PM Minutes; 7/12/12 Email response provided to Ms. Lewis by Dr. Budnitz; 7/12/12 Email acknowledgment received
6/18/2012	Claire Scholl, KEYT Television ☎	Complete	Inquiry re June PM; Email recd. regarding reporter to cover June 2012 PM and to tour DCPP; ☎ response provided; Email response provided, reporter attended June 19 public meeting.

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Wednesday, June 29, 2011 4:39 PM
To: 'Bob Mc Inerney'
Cc: 'DCISC'
Subject: RE: Accident presentation by Dr. Budnitz

Mr. Mc Inerney:

This will acknowledge and thank you for your message to the DCISC concerning Dr. Budnitz' presentation on the accident at the Fukushima nuclear plant during the public meeting of the Committee on Tuesday evening, June 21.

Your message has been provided to Dr. Budnitz and the other members of the Committee. Thank you for your interest and support of the Committee and its activities. If time allows, the members and consultants would welcome your attendance in person at any of the sessions of the next public meeting of the DCISC to be held on October 5-6, 2011, at the Embassy Suites in San Luis Obispo. We expect to give another public tour of DCPP on the morning of Wednesday, October 5 commencing at 8:00 AM. Please let me know if you are interested.

Regards,

Bob Rathie
DCISC
1-800-439-4688

From: Bob Mc Inerney
Sent: Wednesday, June 29, 2011 1:02 AM
To: dcsafety@dcisc.org
Subject: Accident presentation by Dr. Budnitz

I watched your June meetings and was impressed by Dr. Budnitz presentation regarding the nuclear accident in Japan and its comparison to DCPP. The explanation was on a level where anyone could understand it. In my opinion it is very difficult for an expert to present such technical information so that the masses can understand the issues. On the other hand the PG&E rep made no sense at all with his presentation and could have slowed down to be understood. This is why the DCPP Safety Committee is very important and is an asset as a overseer to the Nuclear Industry in California.

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Tuesday, July 05, 2011 5:26 PM
To: 'Sherry Lewis'
Cc: 'DCISC'
Subject: RE: original idea for Yucca Mt.

Ms. Lewis:

This will acknowledge and thank you for your message to Committee Chair Dr. Budnitz.

While your request for information on the proposed spent nuclear fuel depository at Yucca Mountain NV falls outside of the DCISC's role and responsibility to review operational safety at Diablo Canyon, your message has been provided to Dr. Budnitz for his review and a possible response. (As Dr. Budnitz is currently on vacation and away from his office, any response to your inquiry may be delayed.)

Thank you for your interest in the Committee and its activities and for your attendance and participation at the recent public meetings of the DCISC in Avila Beach.

Regards,

Bob Rathie
DCISC Asst. Legal Counsel
1-800-439-4688 (in CA)

-----Original Message-----
From: Sherry Lewis
Sent: Thursday, June 30, 2011 12:15 PM
To: dcsafety@dcisc.org
Subject: original idea for Yucca Mt.

Dear Dr. Budnitz:

I attended all the meetings in Avila Beach on June 15 & 16th and asked you about the safe permanent storage of nuclear waste. You told me that Yucca Mt. would have been the perfect solution if it had been allowed to proceed.

Because I want to learn more about your ideas (and I am skeptical of your conclusion at present), I would like to read more of the material that has convinced you. Would you please send me links to information?

Thank you for your time.

Sincerely,
Sherry Lewis
sherry.lewis66@att.net

DCISC

From: DCISC [info@dcisc.org]
Sent: Thursday, July 14, 2011 11:12 AM
To: 'jsbishop@waterboards.ca.gov'
Cc: 'jjensen@waterboards.ca.gov'; 'Dcsafety@Dcisc. Org'
Subject: Letter to OTC Nuclear Review Committee
Attachments: LT Nuclear Review Committee.071211.pdf

Mr. Bishop:

Please find attached a copy of a letter to you as the Chair of the SWRCB Once-Through Cooling Nuclear Review Committee from Dr. Peter Lam, Chair of the Diablo Canyon Independent Safety Committee, concerning the DCISC's responsibility to review operations at PG&E's Diablo Canyon nuclear power plant including the Committee's role in reviewing the impacts on nuclear safety from the elimination of once-through cooling at Diablo Canyon.

The letter, together with a CD of the DCISC's latest 20th Annual Report on the Safety of Diablo Canyon Operations, was sent today by priority mail.

Please feel free to contact me or Robert Rathie of this office should you have any questions or wish to discuss this matter.

Robert Wellington
Legal Counsel
Diablo Canyon Independent Safety Committee
(800-439-4688)
dcsafety@dcisc.org

WELLINGTON LAW OFFICES • 857 CASS STREET • SUITE D • MONTEREY • CA • 93940 • 831-373-8733 • FAX 831-373-7106

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DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

By email to:
jsbishop@waterboards.ca.gov

July 12, 2011

Mr. Jonathan Bishop
State Water Resources Control Board
Chief Deputy Director and Chair
Once-Through Cooling Nuclear Review Committee
Cal EPA Headquarters Building
Room 24-66, 24th Floor
1001 I Street
Sacramento, CA 95812

Re: The Role, Responsibilities & Expertise of the Diablo Canyon Independent Safety Committee.

Dear Mr. Bishop:

The purpose of this letter is to acquaint you with the nature and charge of the Diablo Canyon Independent Safety Committee and to inquire if the DCISC might possibly be of assistance to the Nuclear Review Committee in its important work.

The DCISC was originally established in 1988 by a settlement agreement approved by the California Public Utilities Commission to review operations at PG&E's Diablo Canyon power plant for the purpose of assessing the safety of operations and suggesting any recommendations for its safe operation. The DCISC consists of three members, one each appointed by the Governor, the Attorney General and the Chairperson of the California Energy Commission. The DCISC publishes an extensive annual report each year. In addition to summarizing the DCISC's activities and its review of Diablo Canyon operations, the annual reports document the members' conclusions and recommendations regarding Diablo Canyon operational safety. A compact disk with the Committee's latest Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations for the period July 1, 2009 - June 30, 2010 is enclosed. It provides information on the operation, role and responsibilities of the Committee and the expertise of its current members.

We understand the Nuclear Review Committee is charged by the State Water Resources Control Board with overseeing the special studies, to be conducted by an independent third party, investigating the scientific, technical and environmental issues related to a closed-cycle cooling retrofit and the ability, alternatives and costs for California's two nuclear power plants to meet policy requirements. It may be that our two committees will be reviewing some of the same important issues relative to Diablo Canyon.

OFFICE OF LEGAL COUNSEL • ROBERT R. WELLINGTON • 857 CASS STREET • SUITE D • MONTEREY • CA • 93940
TELEPHONE [800] 439-4688/[831] 647-1044 • FACSIMILE [831] 373 -7106 • dcsafety@dcisc.org

During its public meeting in February 2011the DCISC received an informational presentation from PG&E concerning the Statewide Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling, including the possible elimination of once-through cooling at Diablo Canyon. A DCISC fact-finding team conducted an initial review of this issue with PG&E in December 2010 and the preliminary conclusions and concerns identified during the fact-finding are available to the Nuclear Review Committee upon request. The DCISC will be continuing its review of this issue and the impacts on safety at Diablo Canyon from the elimination of once-through cooling and its replacement by closed-cycle cooling. One of the issues the DCISC will be considering in that context will be that of nuclear safety. If our review of that or other issues related to the elimination of once-through cooling at Diablo Canyon would be of interest to your Committee, we would be willing to discuss with you what we might be able to do for, or provide to, the Nuclear Review Committee.

Additional information about the DCISC, including information on the background and qualification of its members and technical consultants and its current activities, is available by visiting www.dcisc.org. I look forward to hearing from you.

Very truly yours,

Peter Lam
DCISC Chair

Encl.

RJB/rwr

cc w/encl.: SWRCB Statewide Advisory Committee on Cooling Water Intake Structures
" " SWRCB Executive Director
cc w/o encl. Pacific Gas & Electric Company
Emc: w/o encl. jjensen@waterboards.ca.gov

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Friday, July 15, 2011 2:21 PM
To: 'June Cochran'
Cc: 'info@dcisc.org'
Subject: RE: Fukushima Power Point
Attachments: Budnitz Fukushima talk DCISC.ppt

Ms. Cochran –

Attached are the power point slides Dr. Budnitz used during his presentation on June 21.

Have a good weekend,

Regards,

Bob Rathie
DCISC

From: June Cochran
Sent: Friday, July 15, 2011 11:32 AM
To: attys mail
Subject: Fukushima Power Point

Mr. Rathie -
Is the power point on the Japanese disaster DCISC Chairman Budnitz presented at the June meeting available on your web page or some other site? I thought it would be under the page on "The Events at the Fukushima Nuclear Plant in Japan" or its update, but it was not.
Thank you,
June Cochran

From: June Cochran
Sent: Friday, July 15, 2011 11:32 AM
To: attys mail
Subject: Fukushima Power Point

Mr. Rathie -

Is the power point on the Japanese disaster DCISC Chairman Budnitz presented at the June meeting available on your web page or some other site? I thought it would be under the page on "The Events at the Fukushima Nuclear Plant in Japan" or its update, but it was not.

Thank you,

June Cochran

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Friday, July 15, 2011 5:01 PM
To: 'June Cochran'
Cc: 'info@dcisc.org'
Subject: RE: Fukushima Power Point

The narration may be heard by accessing the streaming video (or the audio portion) of the June 21 meeting through the link on the Committee's website or through www.slo-span.org.

At this point in time there is no written transcript of Dr. Budnitz' remarks.

Bob Rathie
DCISC

From: June Cochran
Sent: Friday, July 15, 2011 2:57 PM
To: attys mail
Subject: RE: Fukushima Power Point

Thank you for the slides but I do not see the narration under the slides. Is it on a separate document?

--- On **Fri, 7/15/11, attys mail** <*attys@wellingtonlaw.com*> wrote:

From: attys mail <attys@wellingtonlaw.com>
Subject: RE: Fukushima Power Point
To: "'June Cochran'"
Cc: info@dcisc.org
Date: Friday, July 15, 2011, 2:20 PM

Ms. Cochran –

Attached are the power point slides Dr. Budnitz used during his presentation on June 21.

Have a good weekend,

Regards,

Bob Rathie

DCISC

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Monday, August 01, 2011 10:46 AM
To: 'June Cochran'
Cc: 'DCISC'
Subject: RE: Power Point
Attachments: CEC IEPR Conference 2011 Revision 2.ppt

June –

Dr. Lam's participation at the CEC's IEPR Workshop was a the CEC's invitation and his presentation on July 26 reflects his personal views of reactor safety after Fukushima and not those of the DCISC.

Dr. Lam was contacted concerning your request and he has no objection to your use of the slides from his presentation provided they are presented in context and unaltered. I've attached a copy of the slides for your convenience.

Thank you for your interest in Dr. Lam's presentation.

Bob Rathie
DCISC
800-439-4688

From: June Cochran
Sent: Sunday, July 31, 2011 5:15 PM
To: attys mail
Subject: Power Point

I found Dr. Lam's ppt on the CEC web site so all I need is an email giving his permission.
Thanks, June

Bob Rathie

DCISC

800-439-4688

From: June Cochran
Sent: Sunday, July 31, 2011 5:15 PM
To: attys mail
Subject: Power Point

I found Dr. Lam's ppt on the CEC web site so all I need is an email giving his permission.

Thanks, June

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Monday, August 01, 2011 2:28 PM
To: 'June Cochran'
Cc: 'DCISC'
Subject: RE: Power Point

Unfortunately, Committee policy precludes me from providing personal email addresses for any of our members or consultants.

Please be assured, however, that any communication you wish passed on to Dr. Lam for his consideration and reply may be directed to me here at the Committee office and will be promptly forwarded to Dr. Lam (and likewise Dr. Lam's reply will be promptly provided to you).

Thanks for your understanding,

Bob

From: June Cochran
Sent: Monday, August 01, 2011 10:59 AM
To: attys mail
Subject: RE: Power Point

May I get his email so I can ask him about the use of two of his slides? I cannot use his entire presentation.
Thank you, June

--- On **Mon, 8/1/11, attys mail** <attys@wellingtonlaw.com> wrote:

From: attys mail <attys@wellingtonlaw.com>
Subject: RE: Power Point
To: "'June Cochran'"
Cc: "'DCISC'" <info@dcisc.org>
Date: Monday, August 1, 2011, 10:46 AM

June –

Dr. Lam's participation at the CEC's IEPR Workshop was a the CEC's invitation and his presentation on July 26 reflects his personal views of reactor safety after Fukushima and not those of the DCISC.

Dr. Lam was contacted concerning your request and he has no objection to your use of the slides from his presentation provided they are presented in context and unaltered. I've attached a copy of the slides for your convenience.

Thank you for your interest in Dr. Lam's presentation.

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Wednesday, August 31, 2011 3:36 PM
To: 'June Cochran'
Cc: 'info@dcisc.org'
Subject: RE: Next Tour

Yes - the next tour is presently scheduled to take place on the morning of Wednesday, October 5 (beginning at 8:00 AM).

Regards,

Bob Rathie

From: June Cochran
Sent: Wednesday, August 31, 2011 2:34 PM
To: attys mail
Subject: Next Tour

Is the next tour Oct. 5?
Thank you

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA EMAIL
jchilders@thetribunenews.com

September 13, 2011

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Ms. JoEllen Childers
Advertising Department

Re: Diablo Canyon Independent Safety Committee; Public Tour Display Ad

Dear Ms. Childers:

Attached herewith is a copy of a public tour display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the enclosed as a two column wide ad in your edition on Sunday, September 18, 2011. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert W. Rathie
DCISC Asst. Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA · 93940 -
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

DIABLO CANYON POWER PLANT PUBLIC TOUR WITH THE MEMBERS OF THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

At 8:00 A.M. on the morning of Wednesday, October 5, 2011, the Diablo Canyon Independent Safety Committee will conduct an inspection tour of certain accessible areas at the Diablo Canyon Nuclear Power Plant. This tour, which will take approximately three and a half hours, will be open to members of the public on a limited basis.

Because the plant is an operating nuclear facility, the number of participants must be limited and space will be reserved on a first-come, first-served basis. Reservations, which have usually been in high demand, will be accepted for a maximum of four immediate family members, each of whom must be at least twelve years of age, per call. Priority will be given to those persons who have not attended previous public tours conducted by the Committee. The Committee makes every effort to make its public tour wheelchair accessible and to accommodate specialized equipment and other services useful to persons with disabilities. If you plan to attend and need specialized accommodations, please so indicate when making your reservation. Prior security clearance of all attendees is required in compliance with the rules of the U.S. Nuclear Regulatory Commission.

Reservations may only be made by telephoning the Committee's toll-free number

1-800-439-4688

on Monday, September 19, 2011

Between the hours of 9:00 A.M. - Noon and 2:00 P.M. - 5:00 P.M.

Please place your call no earlier than 9:00 A.M. & prior to 5:00 P.M.

Please be patient as call volume is expected to be very heavy

Email reservations cannot be accepted nor will requests for reservations left with anyone other than Committee staff answering the telephone at the number provided above.

In the event that security considerations preclude a public tour of Diablo Canyon on October 5th, in the alternative the DCISC may convene an informal question and answer session at the PG&E Community Center, 6588 Ontario Road, San Luis Obispo at 8:00 A.M. Information concerning the agenda for DCISC public meetings on October 5-6, 2011, will be available on the Committee's homepage at www.dcisc.org or by contacting the office of the Committee's Legal Counsel at the Committee's toll-free telephone number.

Dated: September 18, 2011.

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Monday, September 19, 2011 6:47 AM
To: 'Swanson Jane'
Cc: 'info@dcisc.org'
Subject: RE: lack of information on DCISC website

Ms Swanson -

Information concerning the October 5 tour signups should appear on our website today. We have found that posting it earlier leads to confusion and to some persons believing they have signed up by email. Although it's pretty clear that telephoning the office during the hours listed is the only method by which a person can sign up some people apparently still get confused.

The agenda for the October 5-6 public meeting is not yet finalized and will be posted later.

Thanks for your interest in the Committee.

Regards,

Bob Rathie
DCISC

-----Original Message-----
From: Swanson Jane
Sent: Sunday, September 18, 2011 2:16 PM
To: dcsafety@dcisc.org
Subject: lack of information on DCISC website

I just checked the website, and there is no information about how to sign up for the coming tour opportunity, nor an agenda for the October 5-6 meetings. I see an announcement in the Tribune newspaper that tomorrow is the day to make the phone call. Why is not the same information available on the website?

Jane Swanson

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Monday, September 19, 2011 12:46 PM
To: 'June Cochran'
Cc: 'info@dcisc.org'
Subject: RE: Tour not on web site

Ms. Cochran -

Information concerning the October 5 tour signups appears on our website today. We have found that posting it earlier leads to confusion and to some persons believing they have signed up by email or through their contacts or conversations with other parties.

Thanks for your interest in the Committee.

Regards,

Bob Rathie
DCISC

From: June Cochran [
Sent: Monday, September 19, 2011 10:05 AM
To: dcsafety@dcisc.org
Subject: Tour not on web site

Dear DCISC Members,
I have been searching your web site every few days for the announcement of your next tour but it has never appeared and is still not there. However, I was out of town this weekend and when I came back and read the Sunday paper this morning, I saw the announcement to sign up for the tour at 9 a.m. today, Monday, Sept. 19, in the Tribune. How sad that your web site does not have the current information as soon as the press release goes out to media sources.
June Cochran

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

E-MAIL:ttlegals@thetribunenews.com

September 20, 2011

The Tribune
3825 South Higuera
Post Office Box 112
San Luis Obispo, California 93406-0112

Attention: Legal Advertising.

Re: Diablo Canyon Independent Safety Committee - Legal Notice of Meeting.

Dear Sir of Madam:

Enclosed herewith is a copy of a legal Notice of Meeting for the Diablo Canyon Independent Safety Committee. Would you please publish this Notice with your edition on Sunday, September 25, 2011. Upon completion of publication, please provide us with your Affidavit of Publication.

As we have done in the past, upon receipt of this Notice, would you please provide us with your invoice for the cost of publication, and we will send our check to cover same.

If you require anything additional in order to comply with this request, please advise.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
NOTICE OF PLANT TOUR AND PUBLIC MEETING

NOTICE IS HEREBY GIVEN that on October 5, 2011, at 8:00 A.M., the members of the Diablo Canyon Independent Safety Committee ("DCISC") will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant ("DCPP"). This tour, which will take approximately three and one-half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission ("NRC").

In the alternative if security considerations preclude the public tour on October 5th, the DCISC may convene an informal power point presentation and question and answer session at the Pacific Gas & Electric Company ("PG&E") Energy Education Center, 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY FURTHER GIVEN that on October 5-6, 2011, at the Embassy Suites, located at 333 Madonna Road, San Luis Obispo, California, a public meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Afternoon Session - (10/05/2011) - 1:30 P.M.** Opening comments and remarks; receive public comments and communications to the Committee; approve minutes of June 21-22, 2011, public meeting; discussion of administrative matters, including review and approval of the DCISC 21st Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations for the period July 1, 2010 - June 30, 2011; an update on financial matters and activities during 2011 and 2012; review of the Open Items List; reports by Committee members, consultants and legal counsel; receive, approve and authorize transmittal of fact-finding reports to PG&E; and review of Committee correspondence and documents received.

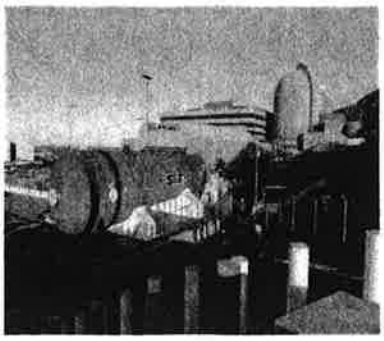
2. **Evening Session - (10/05/2011) - 5:15 P.M.** Committee member comments; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including review of plant events, operational status and station performance indicators; recent NRC Reportable Events, Notices of Violation, and NRC Performance Indicators; and a report on the status of the Independent Spent Fuel Storage Installation and the future of spent fuel at DCPP.

3. **Morning Session - (10/06/2011) - 8:00 A.M.** Comments by Committee members; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including an update on the lessons learned by DCPP and the industry from the events following the March 11, 2011, earthquake and tsunami at the Fukushima Daiichi Nuclear Plant in Japan and resulting actions; an update on seismic issues; and an overview of the DCPP electrical systems.

4. **Afternoon Session - (11/18/2010) - 12:45 P.M.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including an overview of Containment sump issues; and an overview of Nuclear Safety Culture at DCPP and in the nuclear industry; wrap-up discussion by Committee members, and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Monday, October 3, 2011, at the Reference Department of the Cal Poly Library in San Luis Obispo. **For further information regarding the public meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda on line by visiting the Committee's website at www.dcisc.org.**

Dated: September 25, 2011.



PRESS RELEASE:

PUBLIC MEETING OF THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

WHO: The Members of the Independent Safety Committee:

Robert J. Budnitz
Peter Lam
Per F. Peterson

WHAT: An opportunity for the public to observe and receive information concerning the activities of the Independent Safety Committee including recent fact-finding visits and informational presentations concerning safety-related issues at Diablo Canyon:

- *Committee Business Session - Wednesday afternoon*
  Approval of DCISC's 21st Annual Report
- *Plant Performance, Events and Operational Status*
- *Status of the Independent Spent Fuel Storage Installation and the future of spent fuel at Diablo Canyon*
- *Update on Lessons Learned by Diablo Canyon and the Nuclear Industry from the Events at the Fukushima Daiichi Nuclear Power Plant in Japan*
- *Update on Seismic Issues*
- *Overview of Diablo Canyon's Electrical Systems*
- *Overview of Containment Sump Issues*
- *Overview of Nuclear Safety Culture*

WHERE: Embassy Suites Conference Facility
333 Madonna Road, San Luis Obispo, CA

WHEN: Wednesday and Thursday
October 5th & 6th

TIMES: 1:30 p.m. - 5:00 p.m. (Wednesday, October 5th)
5:15 p.m. to approx. 7:30 p.m. (Wednesday, October 5th)
8:00 a.m. to 11:30 a.m. (Thursday, October 6th)
12:45 p.m. to approx. 3:00 p.m. (Thursday, October 6th)

FOR FURTHER INFORMATION:

Including more information on these and other topics
to be reviewed by the Independent Safety Committee
or the specific days and times for particular presentations
Contact 1-800-439-4688
or review the meeting agenda online at
www.dcisc.org

The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Point San Luis Conference Facility is a wheelchair accessible facility and devices for attendees who may be hearing impaired are available.

FINAL AGENDA

MEETING TO INFORM STAKEHOLDER ABOUT

EXTENDED STORAGE AND WASTE CONFIDENCE ACTIVITIES

FOR SPENT FUEL STORAGE AND TRANSPORTATION

OCTOBER 6, 2011, 9:30 A.M. – 3:15 P.M. (PDT)

9:30 a.m. – 10:00 a.m.	Check-in *(Security)*
10:00 a.m. – 10:10 a.m.	Ground Rules *[Facilitators]*
10:10 a.m. – 10:30 a.m.	Introduction and opening remarks *[NRC]*
10:30 a.m. – 10:50 a.m.	Overview of regulatory program activities *[NRC]*
10:50 a.m. – 11:30 a.m.	Stakeholder questions and feedback
11:30 a.m. – 12:30 p.m.	Lunch
12:30 p.m. – 1:00 p.m.	Current Waste Confidence Decision (2010) and Staff plans and activities supporting the Waste Confidence Update to reflect long-term storage *[NRC]*
1:00 p.m. – 1:30 p.m.	Stakeholder questions and feedback
1:30 p.m. – 1:50 p.m.	Staff plans and activities related to extended storage regulatory program research *[NRC]*
1:50 p.m. – 2:30 p.m.	Stakeholder questions and feedback
2:30 p.m. – 2:45 p.m.	Break
2:45 p.m. – 3:00 p.m.	Summary Discussions *[Facilitators]*
3:00 p.m. – 3:15 p.m.	Closing Remarks *[NRC]*
3:15 PM	Adjourn

Enclosure

CATEGORY 3 *: This is a **Category 3 Meeting**. The public is invited to participate in the meeting by providing comments and asking questions throughout the meeting. The NRC's Policy Statement, "Enhancing Public Participation on NRC Meetings," effective May 28, 2002, applies to this meeting. The policy statement may be found on the NRC website, www.nrc.gov, and contains information regarding visitors and security.

PARTICIPANTS*: Participants from the NRC include members of the Office of Nuclear Material Safety and Safeguards (NMSS).

NRC/NMSS

J. Davis	J. Rubenstone	T. Campbell
L. London	K. Compton	C. Pineda
V. Sreenivas	R.Einziger	

MEETING CONTACT: V Sreenivas, NMSS
301-415-2597
v.sreenivas@nrc.gov

The NRC provides reasonable accommodation to individuals with disabilities where appropriate. If you need a reasonable accommodation to participate in this meeting or need a meeting notice, a transcript, or other information from this meeting in another format (e.g., Braille, large print), please notify the meeting contact. Determinations on requests for reasonable accommodation will be made on a case-by-case basis.

Enclosure:
Meeting Agenda
cc w/encl: See next page

DISTRIBUTION:
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CLipa, RIII
Resource RidsOgcMailCenter Resource
KStablein, HLWRS
JRubenstone, HLWRS
TMatula, HLWRS
Elva BowdenBerry, OGC
Tison Campbell, OGC
JDavis, HLWRS
EEaston, SFST
THoeg, RII
BSpitzberg, RIV

ADAMS ACCESSION No. ML

OFFICE	NMSS/HLWRS/PM	NMSS/RSB/BC	NMSS/PMBB/BC
NAME	VSreenivas	JRubenstone	KStablein
DATE	09/19/11	09/ 20 /11	09/ 20 /11

OFICIAL RECORD COPY

September 20, 2011

MEMORANDUM TO:	King Stablein, Chief Project Management Branch B Division of High-Level Waste Repository Safety
FROM:	V. Sreenivas, Project Manager Project Management Branch B Division of High-Level Waste Repository Safety
SUBJECT:	NOTICE OF FORTHCOMING MEETING ON EXTENDED STORAGE AND WASTE CONFIDENCE DECISION AND RULE
DATE & TIME:	Thursday, October 6, 2011 9:30 am – 3:15 pm (PDT)
LOCATION:	U.S. Nuclear Regulatory Commission (NRC) Embassy Suites San Luis Obispo 333 Madonna Road San Luis Obispo, California 93405 Tel: 1-805-549-0800
PURPOSE:	The NRC staff is seeking to inform and engage stakeholders on the Agency's planned activities on technical and regulatory issues related to extended storage and transportation of spent nuclear fuel, and on plans to develop the draft environmental impact statement for an update of the NRC's Waste Confidence decision and rule (10 CFR §51.23). At this meeting, the NRC staff will provide updates on its plans for research on extended storage and transportation, described in COMSECY-10-0007, "Project Plan for the Regulatory Program Review to Support Extended Storage and Transportation of Spent Nuclear Fuel," [Agencywide Documents Access and Management System (ADAMS) Accession No. ML101390216], and plans for aligning work on an update to NRC's Waste Confidence decision and rule with the extended storage and transportation activities, as described in SECY-11-0029, "Plan for Long-Term Update to Waste Confidence Rule and Integration with the Extended Storage and Transportation Initiative," (ADAMS Accession No. ML110330445). The NRC staff will inform stakeholders of upcoming opportunities for public comment, and will solicit input on how the NRC can best interact with stakeholders as these two activities move forward. The NRC staff is specifically seeking information on ways of engaging stakeholders on technical and regulatory issues related to extended storage and transportation, and on planning public meetings to discuss the scope of the future draft environmental impact statement for updating the Waste Confidence decision and rule.

* Commission's Policy Statement on "Enhancing Public Participation in NRC Meetings" (67 FR 36920), May 28, 2002.

CATEGORY 3 *: This is a **Category 3 Meeting**. The public is invited to participate in the meeting by providing comments and asking questions throughout the meeting. The NRC's Policy Statement, "Enhancing Public Participation on NRC Meetings," effective May 28, 2002, applies to this meeting. The policy statement may be found on the NRC website, www.nrc.gov, and contains information regarding visitors and security.

PARTICIPANTS*: Participants from the NRC include members of the Office of Nuclear Material Safety and Safeguards (NMSS).

NRC/NMSS

J. Davis	J. Rubenstone	T. Campbell
L. London	K. Compton	C. Pineda
V. Sreenivas	R. Einziger	

MEETING CONTACT: V Sreenivas, NMSS
301-415-2597
v.sreenivas@nrc.gov

The NRC provides reasonable accommodation to individuals with disabilities where appropriate. If you need a reasonable accommodation to participate in this meeting or need a meeting notice, a transcript, or other information from this meeting in another format (e.g., Braille, large print), please notify the meeting contact. Determinations on requests for reasonable accommodation will be made on a case-by-case basis.

Enclosure:
Meeting Agenda
cc w/encl: See next page

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Friday, September 23, 2011 12:27 PM
To: 'Swanson Jane'
Cc: 'info@dcisc.org'
Subject: RE: Three conflicting events October 6

This will acknowledge receipt of your email to the Diablo Canyon Independent Safety Committee which was received at our office yesterday, Thursday, September 22.

Thank you for contacting the DCISC.

Bob Rathie
DCISC
Office of its Legal Counsel

From: Swanson Jane [...
Sent: Thursday, September 22, 2011 9:13 AM
To: Eliot Brenner; V. Sreenivas; Jane Swanson; office DCISC
Subject: Three conflicting events October 6

FROM: Jane Swanson, spokesperson
San Luis Obispo Mothers for Peace

TO: Members and allies of San Luis Obispo Mothers for Peace

NRC staff, addresses above

DCISC, address above

Other interested partied

RE: Conflicting events Oct. 6, 2011

I wish to point out that there are three important meetings related to Diablo Canyon and other nuclear plants scheduled on exactly the same date. San Luis Obispo Mothers for Peace has a vested interest in participating in all three, but as a small, local group of volunteers, it is not possible to do quality preparation, to attend, and to follow through on all three. In an ideal world NRC Departments might communicate on scheduling, and DCISC and NRC might also have a means of announcing to each other scheduling plans.

The DCISC meeting has been on its public calendar for months. Mothers for Peace was notified of the webinar conference on Sept 9. The meeting in San Luis Obispo was announced Sept. 20.
At this point I do not think it is realistic to ask that any of these complex events be rescheduled. However, I need to point out to the agencies scheduling public meetings and asking for public input that it is very difficult for a volunteer group like SLOMFP to cover so many bases at a time, while simultaneously fighting for the right to participate in the NRC decision-making process regarding license renewal for the Diablo Canyon plant.

It is somewhat ironic that the webinar with Jaczko is designed for responding to critics of the NRC. There is all too much evidence that the oft-stated quest of the NRC for public participation is questionable, to put it mildly.

Below are portions of meeting announcements, with an attachment for one.

Most addressees here are BCC. Only those that are public record and my own are in the TO: line

1. From Eliot Brenner, Eliot Brenner <Eliot.Brenner@nrc.gov>

Good afternoon:

Chairman Jaczko would like to spend an hour during the first week of October talking via the web with bloggers who consider themselves critics of nuclear power and/or watchdogs of the Nuclear Regulatory Commission. He also plans a similar meeting with bloggers who have other perspectives.

Please mark your calendar for Oct. 6, from 2:30-3:30 p.m. EDT, for this session. It will be a webinar where you can submit questions online and listen to the Chairman's responses. The webinar will be listen-only. We will be soliciting questions both through a dedicated email account at the NRC in advance and taking emailed questions online via the webinar while the discussion is in progress. It will be archived for later listening as a podcast available for download or listening on the NRC website. For those who would like to prime the pump with questions now to give us a base of material with which to start the program, the email address is: blogmtg2.resource@nrc.gov

2. Contact: v.sreenivas@nrc.gov

SUBJECT: NOTICE OF FORTHCOMING MEETING ON EXTENDED STORAGE AND WASTE CONFIDENCE DECISION AND RULE

DATE & TIME: Thursday, October 6, 2011
9:30 am – 3:15 pm (PDT)

LOCATION: U.S. Nuclear Regulatory Commission (NRC)

Embassy Suites San Luis Obispo

333 Madonna Road

San Luis Obispo, California 93405

Tel: 1-805-549-0800

APPENDIX A

Note: Nuclear Review Committee Chair provided preference for newer (last decade) study information & documents.

San Onofre Nuclear Generating Station (SONGS)

Reference Documents Provided in Chronological Order:

1) *Final Report of the Marine Review Committee to the California Coastal Commission*, MRC Document 89-02, August 1989. (http://marinemitigation.msi.ucsb.edu/documents/MRC_reports/final_report/mrc-final-rpt_to_ccc.pdf)

2) Southern California Edison Company's (SCE) coastal development permit for the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 (permit no. 6-81-330A, formerly 183-73).

3) *Comprehensive Demonstration Study for Southern California Edison's San Onofre Nuclear Generating Station* Final Report, January 2008.

4) *California's Coastal Power Plants: Alternative Cooling System Analysis*. Tetra Tech Inc., February 2008. Chapter-7 Facility Profiles, Section N. San Onofre Nuclear Generating Station [Pages N-1 through N-42]. (*Report Independently Prepared for the California Ocean Protection Council*)

5) *Feasibility Study for Installation of Cooling Towers at San Onofre Nuclear Generating Station*. Enercon Services Inc., September 2009.

Additional Relevant Documents for Consideration:

Assessment of Marine Review Committee Recommendations for SONGS Units 2 and 3, prepared by PLG, Inc. (formerly Pickard, Lowe, and Garrick) as part of a multi-year study by the independent Marine Review Committee (MRC), February 1990.

Issues Analysis of Retrofitting Once-Through Cooled Plants with Closed-Cycle Cooling California Coastal Plants, Electric Power Research Institute [EPRI], 2007
Substantial for San Onofre Section B.15 & General Technologies Info; DCPP Only Brief w/References Section 6.3.2.

Preliminary Costs and Benefits of California Draft Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling, prepared by NERA Economic Consulting, September 2009

APPENDIX B

Note: Nuclear Review Committee Chair provided preference for newer (last decade) study information & documents.

Diablo Canyon Power Plant (DCPP)

Reference Documents Provided in Chronological Order:

1) Diablo Canyon Power Plant Cooling 316(b) Demonstration Report. Tenera Environmental Services, 2000. Section 6.0 Evaluation of Alternative Intake Technologies [Pages 6-1 through 6-36].

2) Evaluation of Cooling Systems Alternatives, Diablo Canyon Power Plant. Tetra Tech Inc., 2002. (*Report Independently Prepared for the Central Coast Regional Water Quality Control Board*)

3) Feasibility of Retrofitting Cooling Towers at Diablo Canyon Power Plant Units 1 & 2. Burns Engineering Services Inc., 2003.

4) Staff Testimony for Regular Meeting of July 10, 2003 Pacific Gas and Electric Company's (PG&E's) Diablo Canyon Power Plant Renewal of NPDES Permit. Central Coast Regional Water Quality Control Board (CCRWQCB), 2003. [Pages 1-18].

5) California's Coastal Power Plants: Alternative Cooling System Analysis. Tetra Tech Inc., 2008. Chapter-7 Facility Profiles, Section C. Diablo Canyon Power Plant [Pages C-1 through C-40]. (*Report Independently Prepared for the California Ocean Protection Council*)

6) Feasibility of Installation of Closed-Cycle Cooling Towers at the Diablo Canyon Power Plant. Enercon Services Inc., 2009.

Additional Relevant Documents for Consideration:

Assessment of Alternative Intake Technologies for the Diablo Canyon Power Plant, Tera Corp., 1982.
Older Comprehensive Study Used as Reference in All Primary Listed Documents

Issues Analysis of Retrofitting Once-Through Cooled Plants with Closed-Cycle Cooling California Coastal Plants, Electric Power Research Institute [EPRI], 2007
Substantial for San Onofre Section B.15 & General Technologies Info; DCPP Only Brief w/References Section 6.3.2.

regarding the available technologies which are not-feasible for either facility shall not be considered for further evaluation by the RCNFPP or the SWRCB.

Deliverables

There are two distinct types of deliverables for this effort; progress reports and a final work product.

Progress reports are required bi-monthly and/or after any single technology evaluation has been fully completed. Progress reports necessitate detailed status, schedule updates, and identification of barriers to completing evaluations as expected.

The final work product is to be provided in both written and electronic report format, with supporting references that sufficiently and succinctly address the feasibility of each of the technologies evaluated for each facility. Due to the plausible dissimilarities between each unit's operating designs and sitings, opportunities for possible misperceptions will be avoided by producing an individual detailed report addressing each facility. An executive summary will be produced describing the overall conclusion of the special study for each site. This will include a tabular listing of all the technologies evaluated with a corresponding determination of feasible or not-feasible for implementation.

Individual summary evaluations of each technology feasibility assessment and associated conclusions will also be provided. This will include a tabular listing of the entire criteria check list items evaluated with a corresponding determination of feasible, not-feasible, or not evaluated for each. Include or reference relevant supporting information from existing technology feasibility assessments, and any additional application specific assessments conducted in support of the determinations. A 'not evaluated' determination is appropriate/applicable to criteria after a not-feasible determination is assessed for any one of the criteria on the check list.

Technologies to be Evaluated

Evaluation will be limited to the following industrial technologies as addressed in the reports and evaluations listed for each nuclear site:

1) Closed-Cycle Cooling Systems (Cooling System Retrofit)
   a) Passive Draft Dry / Air Cooling System
   b) Mechanical (Forced) Draft Dry / Air Cooling System
   c) Hybrid Wet (*) / Dry Cooling System (Evaporation Enhanced Dry Cooling Radiator System)
   d) Wet (*) Natural Draft Cooling Tower System
   e) Wet (*) Mechanical (Forced) Draft Cooling Tower System
      i) Surface freshwater or groundwater resources
      ii) Reclaimed freshwater resources

(*) For wet closed-cycle cooling systems, evaluate site-specific makeup water restrictions for evaporative or blow-down loss replenishment. Determine any primary dependency on a specific makeup water source, i.e. seawater or freshwater. Evaluate the general availability of

freshwater resources in proximity to each plant. The assessment shall include availability of any infrastructure that would be necessary to deliver sufficient freshwater (if such sources exist).

2) Inshore mechanical (active) intake fine mesh screening systems. Include site specific screen sizing requirements. Assess probable operational efficacy of an installed fine mesh screening system:
   - Structural survivability and reliable operability in site-specific environmental conditions.
   - Probable/Potential screened marine organism impingement survivability and subsequent viability.
   - Probable operational issues associated with screen loading (debris accumulation and/or differential pressures).

3) Offshore modular wedgewire or similar exclusion screening systems. Include site specific screen sizing requirements. Assess probable operational efficacy of installed wedgewire screening arrays or similar system:
   - Evaluate site specific current regimes (reliable currents necessary for successful screen back-flushing operations).
   - Structural survivability and reliable operability in site-specific ocean and environmental conditions.
   - Probable/Potential screened marine organism impingement survivability and subsequent viability.
   - Potential operational issues associated with offshore screening array reliability (fouling control and thru flow).

4) Initial intake relocation; offshore intake (DCPP), shoreline intake (SONGS).
5) Deep water offshore intake (point of initial intake to piping/conveyance systems).
6) Variable speed cooling water pumping systems.
7) Source water substrate filtering/collection systems
   a) Shoreline (beach) sand well collection system
   b) Benthic substrate filtration collection system

OTC Special Studies Draft Scope

Objective

The objective of this document is to satisfy the requirement established by the State Water Resources Control Board (SWRCB) for Southern California Edison (SCE) and Pacific Gas and Electric (PG&E) to jointly create a scope document containing criteria to be used by an independent third-party engineering consultant to conduct evaluations to assess compliance alternatives to once-through cooling for the San Onofre Nuclear Generation Station (SONGS) and the Diablo Canyon Nuclear Power Plant (DCPP).

Background

The SWRCB's "Statewide Water Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling" (herein referred to as "the Policy") contains unique provisions for the state's two existing nuclear-fueled power plants that use once-through cooling water technology, SONGS and DCPP.

The Policy provisions require the owner or operator of a nuclear facility to undertake "special studies" to investigate alternatives for the facility to meet the Policy requirements. The Policy requires the establishment of a Review Committee (Review Committee for Nuclear-fueled Power Plants—RCNFPP) to oversee the special studies. The eight-member Review Committee includes representatives from affected state agencies, the nuclear plant owners, the environmental community, and staffs of the State Water Board, appropriate Regional Water Boards, and an IPP lobbying organization.

The Review Committee was convened by the Executive Director of the State Water Board (as required by the Policy) to oversee the special studies, which will investigate ability, alternatives, and cost for SONGS and DCPP to meet the Policy requirements.

The special studies review will be conducted by an independent third party with sufficient experience and expertise within the state of California directly related to nuclear power plant design, engineering, construction, licensing, environmental permitting; scope, cost and scheduling, and other requisite qualifications that ensure all significant areas related to the special studies technologies are rigorously addressed.

Consultant Criteria

In order to ensure that an independent third party has the appropriate qualifications to be considered for completing this scope of work, a consultant criteria list was developed by representatives from PG&E and SCE. The list included the following:

- Do We Have A Current Contract With Them?
- Are They a USA/STARS Supplier? (cooperative of nuclear plant operators)
- Do They Have a California Presence?
- Could There Be a Conflict of Interest?
- Do They Have Relevant Design Experience?
- Do They Have Relevant Build Experience?
- Specifically, Do They Have Relevant Cooling Tower Experience?
- Specifically, Do They Have Relevant Cooling Tower Alternatives Experience?
- Do They Have Relevant Environmental Experience?
- Specifically, Do They Have Relevant §316(b) Experience?
- Do They Have Relevant Project Management Experience?
- Do They Have Relevant Nuclear Experience?
- Do They Have Contemporary DCPP or SONGS Experience?

Criteria Checklist Guidance for Feasibility Determination

The decision-making process is a systematic approach to ensure that all impacts of each conceptual technology are identified and assessed for feasibility. Every criterion for each conceptual technology must be determined to be clearly feasible for the technology to be considered feasible as a whole. To reach a conclusion of feasibility, the independent third party performing this assessment must clearly and comprehensively demonstrate and document the basis for such a conclusion, and not rely on a perception or suggestion that it is possibly feasible. "Not feasible," for purposes of this work product, will be defined as it is in the Policy; that is, "Cannot be convincingly demonstrated to be accomplishable due to any of the following: space constraints or the inability to obtain necessary permits due to public safety considerations, unacceptable environmental impacts, local ordinances, regulations, and other criteria in the Criterion Checklist included herein."

CRITERION

GENERAL TECHNOLOGY ASSESSMENT CRITERION:

1. FIRST OF A KIND TO SCALE Ensure that the proposed technology is commercially obtainable and has been demonstrated in a commercial nuclear power plant-scale proven application considering the unique nature of the site settings and physical characteristics; particularly from the perspective of cooling tower retrofit or alternative cooling retrofit. Concept-only or laboratory-scale technologies that cannot be directly evaluated through existing industrial operational experience cannot be determined to be feasible.

2. EXTERNAL APPROVAL AND PERMITTING (NON-NUCLEAR LICENSING) All external organizations other than the Nuclear Regulatory Commission (such as the California Coastal Commission, local Air Pollution Control District/AQMD with jurisdiction, etc.) that must approve the technology installation project have been identified. The process for obtaining the approval has been identified. There is reasonable assurance, either by correspondence (preferred) or verbal agreement, that formal approval of the potential project will be successful. Consider site specific topographical constraints, including plant site and adjacent land ownership, use, and control issues.

3. OPERABILITY GENERAL SITE CONDITIONS Assess operability and operational issues to determine if it can be comprehensively and convincingly demonstrated that the proposed technology change is acceptable/feasible to operate in site specific environmental conditions. Assessment should consider such issues as existing cooling source water conditions including currents, temperature ranges, occurrence of detrimental ocean storm/high-swell conditions, range of water column debris loading conditions, and marine biofouling concerns.

4. IMPINGEMENT/ENTRAINMENT DESIGN Determine the feasibility in the effectiveness of the technology to reduce cooling water impingement and entrainment losses, either alone or in combination with another technology, to the levels required for compliance with Track 2 of the Policy (i.e. 83.7% reduction of impingement and entrainment of marine life for the facility). Evaluate the potential or probability that reduction in one detrimental cooling water use impact would likely be offset by an increase in another impact with known or unknown consequences (i.e. plant entrainment reduction through screening technology application could result in significantly increased impingement losses).

5. OFFSETTING ENVIRONMENTAL IMPACTS Evaluate the potential the technology installation would create additional and/or offsetting detrimental environmental impacts. Specifically, the assessment should consider impacts beyond water quality issues (i.e., significant increases in facility air emissions would result in order to achieve reductions in source cooling water withdrawals, etc.)

6. SEISMIC ISSUES Assess if the proposed technology could reasonably be constructed and operated in a seismically active zone, and/or what specific seismic upgrades or requirements must be considered. (i.e. could natural draft cooling towers effectively be installed when considering the seismic characteristics of the plant site)

7. STRUCTURAL Identify the critical loading conditions and determine that there is reasonable assurance that new structures and impacts to existing structures can be accommodated during a detailed design phase of the technology.

8. CONSTRUCTION Ensure that a conceptual technology installation design is sufficiently detailed to determine that fabrication, required access and availability of space for installation and staging activities, installation, and associated physical modifications to the plant can be accomplished.

9. MAINTENANCE Identify maintenance activities to ensure that the design will not create a personnel hazard, and/or an unrealistic (non-commercially viable) operational maintainability burden.

NUCLEAR SPECIFIC ASSESSMENT CRITERION:

10. LICENSING NUCLEAR SPECIFIC Perform a 10CFR50.59 feasibility assessment to determine whether approval by the Nuclear Regulatory Commission (NRC) would be required. Scope the Nuclear Design Change Criteria that must be considered and addressed to develop a comprehensive and complete Operating License Amendment Request (LAR). Assess the potential, and consider what reasonable assurances may exist, that the proposed change will be approved by the NRC.

11. SEISMIC NUCLEAR SPECIFIC Identify all seismic issues and determine if there is reasonable assurance that all aspects of seismic design and potential seismic interaction with Seismic Category I structure systems and components (SSC's) can be addressed in the detailed design phase. Potential impact on plant reliability for a seismic event that is less than the design basis earthquake must be considered.

12. OPERABILITY NUCLEAR SPECIFIC Assess if operation of the technology at the plant site would potentially increase nuclear unit trip risks, and/or design or operational issue that must be addressed to ensure additional risks are not realized. Assessment should consider, but not be limited to, issues such as reliability of main and auxiliary electrically transmission systems, reliability of emergency diesel generator systems, potential for increased corrosion and degradation of plant equipment and control systems, and potential for plant flooding (i.e. resulting from elevated cooling system configurations).

13. TRANSIENT ANALYSES Perform a transient analysis to assess plant impacts considered in the design to determine if all impacts have been explicitly identified and are appropriately conservative to determine plant impact and response to the transients.

14. NUCLEAR FUEL (ACCIDENT ANALYSES) Perform a feasibility assessment of the UFSAR Accident Analyses and determine that the impact due to the proposed design change is acceptable.

15. SINGLE FAILURE Identify Updated Final Safety Analysis Report (UFSAR) Single Failure Analyses issues and determine that there is reasonable assurance that these are acceptable.

16. HYDRAULIC DESIGN Identify impacts to hydraulic designs and ensure that sufficient analysis has been performed to determine that the systems will function within sufficiently conservative design parameters.

17. PROBABILISTIC RISK ASSESSMENT Identify Probabilistic Risk Assessment issues and determine their acceptability.

18. INSTRUMENTATION, CONTROLS, AND ALARMS Ensure that conceptual design is sufficiently detailed to determine what instrumentation, controls and alarms are required. Ensure that the proposed instrumentation, controls and alarms can be installed, provide adequate monitoring and are acceptable to support safe, correct and efficient operation of the units.

19. DETAILED COST AND SCHEDULE Produce a detailed cost and schedule, required as part of any major project, to be used as additional criteria to provide reasonable assurance of project feasibility.

Scope of Work

The selected independent third party will conduct a detailed evaluation to determine feasibility based on detailed criteria of each technology, on a site specific basis, based on their independent assessment. Prior studies are provided for reference and made available for review by the independent third party. The independent third party must clearly document the basis on which any portion of these prior studies are used in any way as part of their independent and comprehensive assessment of feasibility.

Evaluation Process

The criteria checklist will be used in such a manner as to afford the special study independent party an opportunity to conduct an efficient assessment process. The technology assessment should progress in two distinct phases. The general assessment criterion list provided should be considered first. Those technologies that are determined not feasible due to failure to meet the entire general criterion should not be considered for further, more detailed assessment. The nuclear specific assessment criterion should only be evaluated in the event a technology clearly and comprehensively has been demonstrated feasible in the initial phase.

The criteria checklist for each technology therefore may not need to have every item evaluated. Additionally, for certain technologies, all criteria in the initial assessment (general criteria) may also not need to be evaluated to reach a conclusion the technology is not feasible for a specific site.

The check list will be previewed for each technology, and an agreement established with the independent party as to an organized, efficient and systematic approach conducive to an optimized cost and schedule approach. A single point of contact from each utility will assist in this preview.

Reports, Evaluations and Documents

For each facility, review and assess the following documents, reports and regulatory agency evaluations:

- San Onofre Nuclear Generating Station (SONGS) Appendix A
- Diablo Canyon Power Plant (DCPP) Appendix B

Conclusions

Each technology's conceptual design must be determined to be completely feasible for installation and operation at either DCPP or SONGS per the complete Feasibility Determination Criteria Checklist, if not, then it is by default determined to be not-feasible. Determination

NOTICE and AGENDA
Nuclear Review Committee
for Implementation of the State Water Resources Control Board's Power Plant Cooling Water Policy

The *Statewide Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (Policy) contains special provisions for the two existing nuclear-fueled power plants that use once-through cooling (OTC) water technology; namely, the *San Onofre Nuclear Generating Station* (operated by Southern California Edison) and the *Diablo Canyon Power Plant* (operated by Pacific Gas and Electric Company).

These Policy provisions require the owner or operator of a nuclear facility to undertake special studies to investigate the feasibility and alternatives for the facility to meet Policy requirements. The Policy requires the establishment of a ***Review Committee*** to oversee the special studies, which must be conducted by an independent third party contractor.

The Review Committee is tasked with providing a report detailing the scope of the special studies by October 1, 2011, and another report, detailing the results of the special studies, by October 1, 2013. The State Water Board will consider the results of the special studies, including costs and feasibility, in evaluating the need to modify the Policy with respect to the nuclear-fueled power plants.

All meetings of the Review Committee are open to the public and will be noticed at least 10 days in advance. Notices, agendas, meeting minutes, and other documents pertaining to the Review Committee will be posted on the State Water Boards web site at
http://www.waterboards.ca.gov/water_issues/programs/npdes/nuclear_committee.shtml. The Policy and supporting documents are available at
http://www.waterboards.ca.gov/water_issues/programs/npdes/cwa316.shtml .

NOTICE

The next meeting of the Review Committee will be held on:
Friday, September 23, 2011 - 1:00 p.m. to 4:00 p.m.
Room 2540
Joe Serna Jr./Cal/EPA Building
1001 I Street, Sacramento

Directions to the Cal EPA Building may be found at
http://www.calepa.ca.gov/EPAbldg/default.htm . Please note that all visitors to the Cal/EPA Building are required to sign in and obtain a badge at the Visitor Services Center located inside the main entrance. The Cal/EPA Building is accessible to persons with disabilities. Individuals requiring special
accommodations are requested to contact Joanna Jensen at (916) 341-5582
(jjensen@waterboards.ca.gov) at least 5 working days prior to the meeting.

DRAFT AGENDA

1. Welcome, Introductions and Updates from individual Review Committee Members (10 min)
2. Overview of the agenda (5 min)
3. Review and approve Meeting Notes (5 min)
4. Review and Discuss Special Study Draft Scope of Work
5. Discuss and Prepare draft report to the Board
6. Public comments* (30 min)
7. Next meeting (group) (5 min)
8. Adjourn

*Public comments are also solicited prior to any decisions by the Review Committee

Nuclear Review Committee Members

Position	Title	First Name	Last Name	Job Title	Organization	Telephone	Email	Address	City	State	Postal Code
Member	Mr.	Dominic	Gregorio	Chief, Ocean Unit	California Water Resources Control Board	(916) 341-5488	dgregorio@waterboards.ca.gov	1001 I Street, 15th floor	Sacramento	CA	95814
Member	Mr.	Tom	Luster	Staff Environmental Scientist	California Coastal Commission	(415) 904-5248	tluster@coastal.ca.gov	45 Fremont Street, #2000	San Francisco	CA	94105
Member	Ms.	Melissa	Jones	Executive Director	California Energy Commission	(916) 654-4996	mjones@energy.state.ca.us	1516 Ninth Street, MS-39	Sacramento	CA	95814-5512
Member	Mr.	Eric	Greene	Senior Analyst, Energy Division	California Public Utilities Commission	(415) 703-5560	eg1@cpuc.ca.gov	505 Van Ness Avenue	San Francisco	CA	94102
Member	Dr.	Peter	Von Langen	Environmental Scientist	Central Coast Regional Water Quality Control Board	(805) 549-3688	pvonlangen@waterboards.ca.gov	895 Aerovista Place, Suite 101	San Luis Obispo	CA	93401-7906
Member	Mr.	David	Barker	Supervising WRC Engineer	San Diego Regional Water Quality Control Board	(858) 467-2989	dbarker@waterboards.ca.gov	9174 Sky Park Court, Suite 100	San Diego	CA	92123-4340
Member	Mr.	Mark	Krausse	Director, State Agency Relations	Pacific Gas and Electric Company	(916) 386-5709	mckd@pge.com	1415 L Street, Suite 280	Sacramento	CA	95814
Member	Mr.	David	Asti	Manager, Corporate Environmental Policy	Southern California Edison	(626) 302-9732	david.asti@sce.com	2244 Walnut Grove Avenue	Rosemead	CA	91770
Member	Ms.	Rochelle	Becker	Executive Director	Alliance for Nuclear Responsibility	(858) 337-2703	Rochelle@a4nr.org	P.O. Box 1328	San Luis Obispo	CA	93406-1328
Member	Mr.	Jim	Caldwell		Center for Energy Efficiency and Renewable Technologies	(415) 418-4088	jhcaldwellir@gmail.com	1650 E. Napa Street	Sonoma	CA	95476
Alternate	Mr.	Rich	Ferguson		Center for Energy Efficiency and Renewable Technologies	(707) 895-3328	rich@ceert.org	P.O. Box 1045	Boonville	CA	95415

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Friday, September 23, 2011 12:21 PM
To: 'Joanna Jensen'; 'dcsafety@dcisc.org'
Cc: 'Dominic Gregorio'; 'Jonathan Bishop'; 'Laurel Warddrip'; 'info@dcisc.org'
Subject: RE: Water Board's Nuclear Review Committee
Attachments: Agenda.doc

Joanna –

Thank you for your message which I will forward to our members for their information. I enjoyed speaking with you and please do not hesitate to contact me if the DCISC can be of assistance to the Water Board's Nuclear Review Committee in its important work. The next meeting of our Committee is scheduled to be held in San Luis Obispo on October 5-6. I have attached the agenda for your review.

Regards,

Bob Rathie

Diablo Canyon Independent Safety Committee, Office of its Legal Counsel

From: Joanna Jensen [mailto:JJensen@waterboards.ca.gov]
Sent: Wednesday, September 21, 2011 6:23 PM
To: dcsafety@dcisc.org
Cc: Dominic Gregorio; Jonathan Bishop; Laurel Warddrip
Subject: Water Board's Nuclear Review Committee

Hi Robert,

It was a pleasure to talk with you this afternoon. I very much appreciate you sharing your wealth of information with me, especially the fact that SONGS and Diablo Canyon each have two NRC Senior Resident Inspectors that will be able to provide information about NRC requirements for that facility. We plan to meet with them at some point.

As a follow up to our conversation, I am sending you the membership roster for the Water Board's Nuclear Review Committee. it is slightly outdated as it does not reflect that Jonathan Bishop is the committee chair. I am also sending you the agenda for this Friday's meeting, which will be held at the CalEPA Building in Sacramento. You are most welcome to attend. Unfortunately, we will not be able to webcast the meeting. The scope of work for the special studies, which we will be discussing at the meeting, is also attached. For further information about the committee, please visit our web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/rcnfpp/.

Again, we sincerely thank the Diablo Canyon Independent Safety Committee for contacting the Nuclear Review Committee and offering us your assistance and resources. For your information, the letter from Dr. Lam to Jonathan Bishop, dated July 12, 2011, has been distributed to all the committee members. Rochelle Becker, one of the committee members, distributed testimony given by Dr Lam at an Energy Commission meeting on July 26th. The Committee is planning on having the consultant selected for the special studies review the material collected by the Diablo Canyon Independent Safety Committee. At the upcoming meeting, I'll be sure to let them know that you have been in contact with us. I will also let them know about the upcoming tour of Diablo Canyon on February 8th next year.

My best regards!

-Joanna

Joanna Jensen
Division of Water Quality
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814
(916) 341-5582

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FACSIMILE
1-805-781-7871

September 26, 2011

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Advertising Manager/Advertising Department
& County Round-Up Section Editor

Re: Diablo Canyon Independent Safety Committee; Display Ad.

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. As you have done in the past, would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Sunday, October 2, and Tuesday, October 4, 2011. Upon completion of publication, please provide us with a copy of the display ad.

We would also appreciate consideration of the inclusion of information concerning the October 5-6, 2011, meetings of the DCISC in the County Round-Up section of the Tribune on a date prior to the meeting. Please feel free to contact out office if further information is required.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA · 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FACSIMILE
1-805-928-5657

September 26, 2011

TIMES-PRESS-RECORDER
Post Office Box 460
Arroyo Grande, California 93421-0460

Attention: Advertising Department

Re: Diablo Canyon Independent Safety Committee; Display Ad

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Friday, September 30 and Wednesday, October 5, 2011. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL • ROBERT R. WELLINGTON
• 857 CASS STREET • SUITE D • MONTEREY • CA • 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 • FACSIMILE [831] 373 7106 • INFO@DCISC.ORG

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
- PUBLIC MEETING -

When:

Wednesday Afternoon, October 5th
1:30 P.M.

Introductions, public comments and communications to the Committee, Committee business session.

Wednesday Evening, October 5th
5:15 P.M.

Public comments and communications to the Committee members and informational presentations by PG&E officials on Plant events and operational status and specific safety and Plant operational topics requested by the Committee.

Thursday Morning, October 6th
8:00 A.M.

Introductions, public comments and communications to the Committee, and informational presentations by PG&E concerning Plant operations requested by the Committee.

Thursday Afternoon, October 6th
12:45 P.M.

Introductions, public comments and communications to Committee members, further informational presentations by PG&E officials on Plant operational topics requested by the Committee and concluding remarks by the members.

Where:

Embassy Suites
San Luis Obispo Ballroom-North
333 Madonna Road
San Luis Obispo California

Please plan to attend! For further information call 1-800-439-4688 or visit the Committee's website at www.dcisc.org.

A copy of the meeting Agenda packet may be reviewed at the Cal Poly Library's Reference Department and the Agenda is available on the DCISC's website.

The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Embassy Suites' conference facility is a wheelchair accessible facility and devices for attendees who may be hearing impaired are available.

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA EMAIL:
bob@newtimesslo.com

September 16, 2011

New Times
1010 Marsh Street
San Luis Obispo, California 93401

Attention: Advertising Department- Ms. Katy Gray.

Re: Diablo Canyon Independent Safety Committee; Display Ad

Dear Ms. Gray:

Attached herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the attached in your edition to be published on Thursday, September 29, 2011, which we understand will be available in the local area through Wednesday, October 5. If possible, the same format and style as used for our past advertising publications in the New Times should be used for the September 2011 publication. Please provide a proof copy of the display ad for review prior to publication.

Please confirm receipt of this request.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA · 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

Diablo Canyon

INDEPENDENT SAFETY COMMITTEE (DCISC)

Public Meeting:

WEDNESDAY AFTERNOON, OCTOBER 5TH 1:30 P.M.

Introductions, public comments and communications to the Committee, Committee business session including approval of the Committee's 21st Annual Report on the Safety of Diablo Canyon Operations, discussion of Committee activities and plans during 2011 and 2012, and reports on fact finding visits by members and consultants.

WEDNESDAY EVENING, OCTOBER 5TH 5:15 P.M.

Public comments and communications to the Committee members; informational presentations by PG&E officials on topics requested by the Committee including Plant events, operational status and performance indicators, review of licensee event reports and NRC cited or non-cited violations and NRC Performance Indicators; and status report on the Independent Spent Fuel Storage Installation and the future of spent fuel at Diablo Canyon.

THURSDAY MORNING, OCTOBER 6TH 8:00 A.M.

Introductions, public comments and communications to the Committee, and further informational presentations by PG&E including an update on lessons learned from the events at the Fukushima Daiichi Nuclear Plant in Japan, an update on seismic issues, and an overview of Diablo Canyon's electrical systems.

THURSDAY AFTERNOON, OCTOBER 6TH 12:45 P.M.

Introductions, public comments and communications to Committee members, further informational presentations by PG&E officials including an overview of the Containment sump, and an overview of nuclear safety culture; and wrap-up discussion by Committee members.

Please plan to attend!

For further information call 1-800-439-4688 or visit the Committee's website at www.dcisc.org.

A copy of the meeting Agenda packet may be reviewed at the Cal Poly Library's Documents and Maps Department and the Agenda is available on the DCISC's website. Each session of a public meeting of the DCISC is available live and online during the meeting by visiting www.slo-span.org and after a meeting in archived format, indexed to the meeting's agenda, or by following links on the Committee's website.

Embassy Suites

San Luis Obispo Ballroom - North

333 Madonna Road
San Luis Obispo, California

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FEDERAL EXPRESS

September 30, 2011

R.E. Kennedy Library
Documents & Maps Dept.
California Polytechnic
State University Library
San Luis Obispo, California 93407

Attention: Ms. Janice Klien
Re: Diablo Canyon Independent Safety Committee; Agenda Packet.

Dear Ms. Klien:

Enclosed please find a copy of the Agenda Packet for the next meeting of the Diablo Canyon Independent Safety Committee which will be held in San Luis Obispo on October 5-6, 2011. Would you please file this packet in the Reference Department and make it available to the public. Thank you for your cooperation and assistance in this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc: w/encl to:

Dr. Robert J. Budnitz
Dr. Peter Lam
Dr. Per F. Peterson
Mr. R. Ferman Wardell, P.E.
Mr. David C. Linnen
California Energy Commission
(c/o Ms. Barbara Byron)
The Attorney General
(c/o Susan Durbin, Esq.)
Governor's Office

Mr. John T. Conway - PG&E/DCPP
Mr. James R. Becker - PG&E/DCPP
Mr. Peter Bedesem - PG&E/DCPP
Jennifer K. Post, Esq. - PG&E/SF
Mrs. Adriana Hartwig- PG&E/DCPP
Mr. Truman Burns - CPUC/DRA
Mr. Robert Kinosian - CPUC /EXEC
Ms. Maria Salinas - -CPUC/ENERGY

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA · 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

By Federal Express

October 27, 2011

Mr. John T. Conway
Senior Vice President, Energy Supply
and Chief Nuclear Officer
Pacific Gas & Electric Company
P.O. Box 3
Mail Code 104/6/601
Avila Beach, California 93424

Re: DCISC's Twenty-first Annual Report on
Safety of Diablo Canyon Operations
July 1, 2010 - June 30, 2011.

Dear Mr. Conway:

At its October 5, 2011, meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. Pursuant to the Restated Charter for the Committee approved by CPUC Decision 07-00-028, the report is hereby submitted to PG&E for its review and written response within forty-five days.

Upon receipt of the PG&E response, that response shall become a part of the DCISC report and we then submit the complete report to the CPUC, the Governor, the Attorney General and the CEC, as provided by the Restated Charter.

If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rwr
Enclosure

cc (w/o encl.)	DCISC Members & Consultants
" "	Mr. James R. Becker - Site Vice President & Station Director
" "	Jennifer K. Post, Esq. - PG&E Law Department
(w/encl.)	Mr. Peter Bedesem - Technical Asst. to the Site Services Director

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Thursday, October 20, 2011 4:44 PM
To: 'John M. Holman'
Cc: 'info@dcisc.org'
Subject: RE: Request for Future Meeting and Tour Information-J Holman

Mr. Holman -

Thank you for contacting the Committee. The Committee generally offers a tour of Diablo Canyon to members of the public with each of its three public meetings every year. The next public meeting of the Committee is scheduled for February 8-9, 2012 in Avila Beach. It is anticipated that the tour will be held the morning of February 8. The tour assembles at the PG&E Energy Education Center in San Luis Obispo and is accessible to persons needing accommodation for a wheelchair.

If you send me a follow-up email with your continuing interest and availability on or about January 15, 2012, I should be able to advise you as to the date we will begin accepting tour reservations. Reservations are accepted by telephone only, on a first-come, first-served basis and space on the tour is always in high demand. Information about the February 2012 tour will also be posted on the Committee's website at www.dcisc.org.

I will retain your email in my file for the February 2012 public meeting.

Regards,

Robert Rathie
DCISC

From: John M. Holman [redacted]
Sent: Thursday, October 20, 2011 3:20 AM
To: dcsafety@dcisc.org
Subject: Request for Future Meeting and Tour Information-J Holman

October 20, 2011

Dear Diablo Canyon I.S.C.:

My name is John Holman, residing since 1994 in Auburn, CA, 20 miles NE of Sacramento. Although my fascinating, 22-year career as an Architect was cut short in 2005 due to permanent disability, I maintain a keen interest as a "spectator" of massive, heavy- engineering Type-I Concrete/Steel facilities. Diablo Canyon fits this bill perfectly for me. Until now, I had no idea that it could be possible for a member of the public; (like me) to observe your meetings, then actually tour all of the incredible locations listed in your Annual Reports.

I am extremely grateful to your committee if you will kindly keep me informed by e-mail of any developments forthcoming or additional information you may require of me prior to your next scheduled meetings noted as 2/8-9/2012 and 6/20-21/2012.

Please do not be concerned that my disability will hamper your tours in any way. At this time, I can still be ambulatory without a wheelchair.

To be frank, my biggest hurdle (not yours, of course) will be financial in making the trip. Nothing will divert my attendance, if you find that I could be a beneficial member of the group.

Goodbye for now. Thank you very much for making this opportunity available to members of the public.

Regards,

John Holman

From: attys mail <attys@wellingtonlaw.com>
To: Timothy Cleath
Cc: info@dcisc.org
Sent: Mon, October 10, 2011 4:54:05 PM
Subject: RE: fukushima analysis

Mr. Cleath-

The pages you refer to (B-33 to B-37) are part of the minutes of the Committee's June 2011 public meeting. The minutes of the meetings remain in draft form until approved at the next meeting (October 2011). I have not yet had a chance to make any corrections to those pages but when I do so I will certainly send you a copy of the Committee's discussion of the events at the Fukushima Plant in Japan.

Meanwhile, you will find attached the powerpoint slides used by Dr. Budnitz at the June public meeting.

Thank you for your interest in the DCISC and for contacting the Committee.

Regards,

Bob Rathie
DCISC Asst. Legal Counsel
1-800-439-4688

From: Timothy Cleath
Sent: Monday, October 10, 2011 10:15 AM
To: dcsafety@dcisc.org
Subject: fukushima analysis

Dear Sir:

I attended the NRC hearing for a brief time last week and noted the interesting analysis of the Fukushima event prepared by Dr. Bunitz within the 21st Annual Report 2nd draft pages B.9-33 to -37. Would it be possible to get a copy of this analysis? I am a geologist doing a tsunami hazard presentation and would find this information very helpful.

Thank you.

Timothy S. Cleath, Professional Geologist

DCISC

From: Timothy Cleath [illegible]
Sent: Friday, October 21, 2011 9:12 AM
To: attys mail
Subject: Re: fukushima analysis

Bob-

Once again, thanks for your help.

Tim

From: attys mail <attys@wellingtonlaw.com>
To: Timothy Cleath [illegible]
Cc: info@dcisc.org
Sent: Thu, October 20, 2011 3:14:14 PM
Subject: RE: fukushima analysis

Tim –

Attached is a copy of the June 2011 Minutes of the DCISC' public meeting (which is Exhibit B.9 to the DCISC's 21st Annual Report).

I think the presentations you refer to in your email may be two presentations by PG&E, one of which followed Dr. Budnitz presentation on Tuesday evening and concerned a summary of lessons learned to date from Fukushima and the second, which was presented by PG&E on Wednesday afternoon, concerning a comparison of the design features DCPP and Fukushima. I have attached a copy of the power point slides used for both presentations.

As the Committee's charge from the CPUC is to review the operational safety of only PG&E's Diablo Canyon facility, there has been no discussion with PG&E concerning the effects of the tsunami on other nuclear plants and I don't believe we can be of assistance in providing information concerning the effects of the tsunami on any other nuclear plant. The only reference source for information I can think of in that regard would be the NRC.

Bob Rathie
DCISC
1-800-439-4688

From: Timothy Cleath [illegible]
Sent: Saturday, October 15, 2011 7:22 AM
To: attys mail
Subject: Re: fukushima analysis

Bob

Thank you for sending Dr. Budnitz's report but when I reviewed the draft minutes at the last meeting, there was additional useful information through page 9-37 as I mentioned in my

email. It also mentions that PGE made a presentation on the event. Is this a part of the minutes or is it available elsewhere?

I am interested in learning more about the other nuclear power plants to the north of this plant where the tsunami was reportedly significantly higher and if so, why they did not have the same issues. Was this discussed by the committee or addressed by PGE?

Appreciate any input on this.

Would it be appropriate to ask these questions to someone who can easily refer me to more in-depth evaluations of the tsunami impacts to the nuclear power plants in the proximity to the earthquake/tsunami?

Sincerely,
Tim Cleath

From: attys mail <attys@wellingtonlaw.com>
To: Timothy Cleath
Cc: info@dcisc.org
Sent: Fri, October 14, 2011 3:12:13 PM
Subject: RE: fukushima analysis

Mr. Cleath –

In response to your request, the pages from the Minutes of the Committee's June 2011 public meeting which contain the record of Dr. Budnitz discussion of the Fukushima Daiichi events are attached.

I hope you find this responsive to your request, again thank you for your interest in the Diablo Canyon Independent Safety Committee. Please let me know if I can be of further assistance.

Regards

Bob Rathie
1-800-439-4688

From: Timothy Cleath
Sent: Tuesday, October 11, 2011 8:48 AM
To: attys mail
Subject: Re: fukushima analysis

Mr. Rathie

Thank you for the power point and the promise to send the minutes/fukushima discussion.

Sincerely,
Tim Cleath

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Monday, November 21, 2011 5:56 PM
To: 'June Cochran'
Cc: 'dcsafety@dcisc.org'
Subject: RE: PG&E binders
Attachments: October 2011 DCISC PM Presentations Rev 1.pdf

Ms. Cochran –

The power point slides from the Committee's public meetings are not posted on the Committee's website. I've attached a copy of the slides used at the October 5-6, 2011, DCISC public meeting to this email for your information and review.

My apologies for the delay in replying to your inquiry. I returned today to the Committee office after a brief vacation.

Regards,

Bob Rathie
DCISC

From: June Cochran
Sent: Thursday, November 10, 2011 2:55 PM
To: dcsafety@dcisc.org
Subject: PG&E binders

To Whom it May Concern,
Where are the binders PG&E submits located on your web site?
Thank you, June Cochran

DCISC

From: MCENTIRE John (AREVA) [illegible] n]
Sent: Thursday, January 19, 2012 12:46 PM
To: attys mail
Subject: RE: Requesting Information on a Previous Fact Finding Document

Thank you Mr. Rathie, this is the information I was looking for. Have a good weekend!

From: attys mail [mailto:attys@wellingtonlaw.com]
Sent: Thursday, January 19, 2012 3:39 PM
To: MCENTIRE John (EP/PE)
Cc: info@dcisc.org
Subject: RE: Requesting Information on a Previous Fact Finding Document

Mr. McEntire:

Certain areas of the Committee's website are currently unavailable due to activities in connection with posting the Committee's 21st Annual Report to the site. I apologize for any inconvenience. From the information on the link you sent, I believe the applicable fact finding report is D-10 from May of 2006, with reference to emergency preparedness equipment reliability at Diablo Canyon, and a copy of that report is attached. I hope you find it responsive to your request.

Thank you for contacting the Diablo Canyon Independent Safety Committee.

Robert Rathie
DCISC

From: MCENTIRE John (AREVA)
Sent: Thursday, January 19, 2012 8:06 AM
To: dcsafety@dcisc.org
Subject: Requesting Information on a Previous Fact Finding Document

Hello!

I am performing some research on a paper for the International Youth Nuclear Congress. My topic is emergency preparedness equipment reliability. Prior to the new year I came across this topic in one of your online reports dated back in May 2006 I believe. Here is the link that I saved but it no longer works. (http://www.dcisc.org/fact-finding/16-d10-2006-05-31.php) Could you please send me this fact finding report for informational purposes?

Thanks in advance.

John A. McEntire
PEDIA-3 Engineering / Plant Integration
Project Integration Division, Design Engineering, E&P
AREVA Inc

DCISC

From: attys mail [attys@wellingtonlaw.com]
Sent: Monday, December 05, 2011 2:59 PM
To:
Cc: 'info@dcisc.org'
Subject: RE: re visit or visitor's centre

Mr. Willis:

Pacific Gas &Electric Company does have a visitor's center in the San Luis Obispo area which is open to the public and has a number of exhibits, etc., concerning PG&E's Diablo Canyon nuclear power plant. It is my understanding that PG&E does, on occasion, offer tours of Diablo Canyon through the Energy Education Center.

The Energy Education Center is open from 9 AM to 1 PM Monday through Friday and by appointment.

Our committee, the Diablo Canyon independent Safety Committee, also offers tours to members of the public but only in conjunction with our public meetings. Unfortunately, there are no public meetings of the DCISC scheduled during December 23-30, 2011. (Our next meeting is February 8-9, 2012.)

You may contact the PG&E Energy Education Center by telephone at 805-546-5280, by fax at 805-546-5232 or by email at EnergyEducationCenter@pge.com.

The Energy Education Center is located at 6588 Ontario Road, San Luis Obispo, California.

I apologize for any delay in responding to your message. Thank you for contacting the Diablo Canyon Independent Safety Committee.

Robert Rathie
DCISC

-----Original Message-----
From: Paul Willis
Sent: Monday, November 28, 2011 10:56 PM
To: dcsafety@dcisc.org
Subject: re visit or visitor's centre

My Dear Sirs:

I am a US citizen living in New Zealand. My partner, a New Zealand citizen, has always been fascinated by the wonders of atomic plants and we will be in the bay area form the 23rd to the 30th of December and would love to visit to see some part of Diablo Canyon facilities. We wonder is there a visitor's center or tours of the outside so that she can fulfill her dream? Please let me know the possibilities as soon as possible. We are over 50; she a nurse and I a teacher originally from California.
Thanks for your courtesy,
Paul A Willis

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA EMAIL
jchilders@thetribunenews.com

January 17, 2012

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Ms. JoEllen Childers, Account Executive
Advertising Department

Re: Diablo Canyon Independent Safety Committee; Public Tour Display Ad

Dear Ms. Childers:

Attached herewith is a copy of a public tour display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the enclosed as a two column wide ad in your edition on Sunday, January 22, 2012. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert W. Rathie
DCISC Asst. Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL • ROBERT R. WELLINGTON
• 857 CASS STREET • SUITE D • MONTEREY • CA • 93940 -
TELEPHONE [800] 439-4688/[831] 647-1044 • FACSIMILE [831] 373 7106 • INFO@DCISC.ORG

DIABLO CANYON POWER PLANT PUBLIC TOUR WITH THE MEMBERS OF THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

At 8:00 A.M. on the morning of Wednesday, February 8, 2012, the Diablo Canyon Independent Safety Committee will conduct an inspection tour of certain accessible areas at the Diablo Canyon Nuclear Power Plant. This tour, which will take approximately three and a half hours, will be open to members of the public on a limited basis.

Because the plant is an operating nuclear facility, the number of participants must be limited and space will be reserved on a first-come, first-served basis. Reservations, which have usually been in high demand, will be accepted for a maximum of four immediate family members, each of whom must be at least twelve years of age, per call. Priority will be given to those persons who have not attended previous public tours conducted by the Committee. The Committee makes every effort to make its public tour wheelchair accessible and to accommodate specialized equipment and other services useful to persons with disabilities. If you plan to attend and need specialized accommodations, please so indicate when making your reservation. Prior security clearance of all attendees is required in compliance with the rules of the U.S. Nuclear Regulatory Commission.

Reservations may only be made by telephoning the Committee's toll-free number

1-800-439-4688

on January 23, 2012

Between the hours of 9:00 A.M. - Noon and 2:00 P.M. - 5:00 P.M.

Please place your call no earlier than 9:00 A.M. & prior to 5:00 P.M.

Please be patient as call volume is expected to be very heavy

Email reservations cannot be accepted nor will requests for reservations left with anyone other than Committee staff answering the telephone at the number provided above.

In the event that security considerations preclude a public tour of Diablo Canyon on February 8th, in the alternative the DCISC may convene an informal question and answer session at the PG&E Community Center, 6588 Ontario Road, San Luis Obispo at 8:00 A.M. Information concerning the agenda for DCISC public meetings on February 8-9, 2012, will be available on the Committee's homepage at www.dcisc.org or by contacting the office of the Committee's Legal Counsel at the Committee's toll-free telephone number.

Dated: January 22, 2012.

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

E-MAIL:ttlegals@thetribunenews.com

January 24, 2012

The Tribune
3825 South Higuera
Post Office Box 112
San Luis Obispo, California 93406-0112

Attention: Legal Advertising.

Re: Diablo Canyon Independent Safety Committee - Legal Notice of Meeting.

Dear Sir of Madam:

Enclosed herewith is a copy of a legal Notice of Meeting for the Diablo Canyon Independent Safety Committee. Would you please publish this Notice with your edition on Sunday, January 29, 2012. Upon completion of publication, please provide us with your Affidavit of Publication.

As we have done in the past, upon receipt of this Notice, would you please provide us with your invoice for the cost of publication, and we will send our check to cover same.

If you require anything additional in order to comply with this request, please advise.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
NOTICE OF PLANT TOUR AND PUBLIC MEETING

NOTICE IS HEREBY GIVEN that on February 8, 2012, at 8:00 A.M., the members of the Diablo Canyon Independent Safety Committee ("DCISC") will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant ("DCPP"). This tour, which will take approximately three and one-half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission ("NRC").

In the alternative if security considerations preclude the public tour on February 8th, the DCISC may convene an informal presentation and question and answer session at the Pacific Gas & Electric Company ("PG&E") Energy Education Center, 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY FURTHER GIVEN that on February 8-9, 2012, at the Avila Lighthouse Suites Point San Luis Conference, Conference Facility, located at First and San Francisco Streets, Avila Beach, California, a public meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Afternoon Session - (02/08/2012) - 1:30 P.M.** Opening comments and remarks; receive public comments and communications to the Committee; approve minutes of October 5-6, 2011, public meeting; discussion of administrative matters, including review of PG&E's response to the DCISC 21st Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations for the period July 1, 2010 - June 30, 2011; an update on financial matters and activities during 2012; review of the Open Items List; reports by Committee members, consultants and legal counsel; receive, approve and authorize transmittal of fact-finding reports to PG&E; and review of Committee correspondence and documents received.

2. **Evening Session - (02/08/2012) - 5:15 P.M.** Committee member comments; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including review of plant events, operational status and station performance indicators; recent Licensee Event Reports, NRC Notices of Violation and NRC Performance Indicators; update on the status of issues related to the events at the Fukushima Daiichi Nuclear Power Plant in Japan following the March 11, 2011, earthquake and tsunami and summary of DCPP actions taken to date and actions planned.

3. **Morning Session - (02/09/2012) - 8:00 A.M.** Comments by Committee members; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including an update on DCPP's response to NRC Generic Letter and Issues concerning seismic risk evaluation for U.S. operating reactors; an overview of "stranded plant" issues during which access to DCPP could be significantly impeded during periods of challenge to plant safety systems; and an update on the Self Assessment Program.

4. **Afternoon Session - (02/09/2012) - 12:45 P.M.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including the Quality Verification organization's perspective on plant performance including the Quality Performance Assessment Report (QPAR) and Quality Verification's top concerns; a review of the ten-year concrete inspection for Units 1 and 2 Containment buildings; wrap-up discussion by Committee members, and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Monday, February 6, 2012, at the Reference Department of the Cal Poly Library in San Luis Obispo. **For further information regarding the public meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda on line by visiting the Committee's website at www.dcisc.org.**

Dated: January 29, 2012.

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA EMAIL:
kgray@newtimesslo.com

January 27, 2012

New Times
1010 Marsh Street
San Luis Obispo, California 93401

Attention: Advertising Department- Ms. Katy Gray.

Re: Diablo Canyon Independent Safety Committee; Display Ad

Dear Ms. Gray:

Attached herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the attached in your edition to be published on Thursday, February 2, 2012, which we understand will be available in the local area through Wednesday, February 8. If possible, the same format and style as used for our past advertising publications in the New Times should be used for the February 2012 publication. Please provide a proof copy of the display ad for review prior to publication.

Please confirm receipt of this request.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA · 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

Diablo Canyon

INDEPENDENT SAFETY COMMITTEE (DCISC)

Public Meeting:

Wednesday Afternoon, February 8th 1:30 P.M.
Introductions, public comments and communications to the Committee, Committee business session including review of PG&E's Response to the Committee's 21st Annual Report on the Safety of Diablo Canyon Operations, discussion of Committee activities and plans during 2012, and reports on fact finding visits by members and consultants.

Wednesday Evening, February 8th 5:15 P.M.
Public comments and communications to the Committee members; informational presentations by PG&E officials on topics requested by the Committee including Plant events, operational status and performance indicators, review of licensee event reports and NRC cited or non-cited violations and NRC Performance Indicators, and update on the status of issues related to the events at the Fukushima Daiichi Nuclear Power Plant in Japan following the March 11, 2011, earthquake and tsunami and summary of actions taken and planned by Diablo Canyon.

Thursday Morning, February 9th 8:00 A.M.
Introductions, public comments and communications to the Committee; further informational presentations by PG&E including Diablo Canyon's response to NRC Generic Letter and Issues concerning seismic risk evaluation for U.S. operating nuclear reactors, an overview of "stranded plant" issues during which access to Diablo Canyon could be significantly impeded during periods of challenge to plant safety systems, and an update on Diablo Canyon's Self Assessment Program.

Thursday Afternoon, February 9th 12:45 P.M.
Introductions, public comments and communications to Committee members; further informational presentations by PG&E officials including the Quality Verification organization=s perspective on plant performance including the Quality Performance Assessment Report and Quality Verification=s top concerns, and review of the ten- year concrete inspection for Units and 2 Containment buildings; and wrap-up discussion by Committee members.

Please plan to attend!
For further information call 1-800-439-4688 or visit the Committee's website at www.dcisc.org.

A copy of the meeting Agenda packet may be reviewed at the Cal Poly Library's Reference Department and the Agenda is available on the DCISC's website. Each session of a public meeting of the DCISC is available live and online during the meeting by visiting www.slo-span.org and after a meeting in archived format, indexed to the meeting's agenda, or by following links on the Committee's website.

Avila Lighthouse Suites

Point San Luis Conference Center

First & San Francisco Streets
Avila Beach, California

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FACSIMILE
1-805-781-7871

January 30, 2012

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Advertising Manager/Advertising Department
& County Round-Up Section Editor

Re: Diablo Canyon Independent Safety Committee; Display Ad.

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. As you have done in the past, would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Sunday, February 5, and Wednesday, February 8, 2012. Upon completion of publication, please provide us with a copy of the display ad.

We would also appreciate consideration of the inclusion of information concerning the February 8-9, 2012, meetings of the DCISC in the County Round-Up section of the Tribune on a date prior to the meeting. Please feel free to contact out office if further information is required.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA · 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FACSIMILE
1-805-928-5657

January 30, 2012

TIMES-PRESS-RECORDER
Post Office Box 460
Arroyo Grande, California 93421-0460

Attention: Advertising Department

Re: Diablo Canyon Independent Safety Committee; Display Ad

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Friday, February 3 and Wednesday, February 8, 2012. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA · 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
- PUBLIC MEETING -

When:

Wednesday Afternoon, February 8th
1:30 P.M.

Introductions, public comments and communications to the Committee, Committee business session.

Wednesday Evening, February 8th
5:15 P.M.

Public comments and communications to the Committee members and informational presentations by PG&E officials on Plant events and operational status and specific safety and Plant operational topics requested by the Committee.

Thursday Morning, February 9th
8:00 A.M.

Introductions, public comments and communications to the Committee, and informational presentations by PG&E concerning Plant operations requested by the Committee.

Thursday Afternoon, February 9th
12:45 P.M.

Introductions, public comments and communications to Committee members, further informational presentations by PG&E officials on Plant operational topics requested by the Committee and concluding remarks by the members.

Where:

Avila Lighthouse Suites
Point San Luis Conference Center
First & San Francisco Streets
Avila Beach, California

Please plan to attend! For further information call 1-800-439-4688 or visit the Committee's website at www.dcisc.org.

A copy of the meeting Agenda packet may be reviewed at the Cal Poly Library's Reference Department and the Agenda is available on the DCISC's website.

The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Avila Suites' conference facility is a wheelchair accessible facility and devices for attendees who may be hearing impaired are available.

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FEDERAL EXPRESS

February 3, 2012

R.E. Kennedy Library
Documents & Maps Dept.
California Polytechnic
State University Library
San Luis Obispo, California 93407

Attention: Ms. Janice Klien
Re: Diablo Canyon Independent Safety Committee; Agenda Packet.

Dear Ms. Klien:

Enclosed please find a copy of the Agenda Packet for the next meeting of the Diablo Canyon Independent Safety Committee which will be held in Avila Beach on February 8-9, 2012. Would you please file this packet in the Reference Department and make it available to the public. Thank you for your cooperation and assistance in this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc: w/encl to:

Dr. Robert J. Budnitz
Dr. Peter Lam
Dr. Per F. Peterson
Mr. R. Ferman Wardell, P.E.
Mr. David C. Linnen
California Energy Commission
(c/o Ms. Barbara Byron)
The Attorney General
(c/o Susan Durbin, Esq.)
Governor's Office

Mr. John T. Conway - PG&E/DCPP
Mr. James R. Becker - PG&E/DCPP
Mr. Peter Bedesem - PG&E/DCPP
Jennifer K. Post, Esq. - PG&E/SF
Mr. Truman Burns - CPUC/DRA
Mr. Robert Kinosian - CPUC /EXEC
Ms. Maria Salinas - -CPUC/ENERGY

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA · 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

DCISC

From: Sherry Lewis
Sent: Tuesday, February 07, 2012 7:46 PM
To: Bob Budnitz
Cc: Per Peterson; Peter Lam; attys mail; David Linnen; Ferman Wardell
Subject: Re: Fukushima radiation fatalities

Thank you very much for your quick response. I have only just begun to read it but I am disturbed that the information is primarily from TEPCO. They have a vested interest in presenting a favorable report to the nuclear industry. I don't know how many grains of salt I would need to swallow this. But I will read it, and I very much appreciate your corresponding to me.

Sherry Lewis

On Feb 7, 2012, at 2:39 PM, Bob Budnitz wrote:

TO: Sherry Lewis
FROM: Bob Budnitz

COPIES TO: P. Peterson & P. Lam, DCISC
COPIES TO: DCISC Consultants (D. Linnen, R.F. Wardell, R. Wellington)

This is a response to your question below. This is NOT a DCISC response but just my own response.

I couldn't find anything from the Japanese. Of course, I don't have "everything." (If there is something, it has apparently not been translated into English yet.) However, I did find a discussion in a recent INPO report. (INPO = Institute for Nuclear Power Operations.) INPO's report has been widely praised in the community of nuclear experts as being thorough and complete. It is attached, and I will also bring a hard printed copy with me on this trip for you. Look at Section 5. Two workers got doses in the range above 60 Rem (0.60 Sieverts), see page 40. Such a dose is large but it is not a fatal dose, although it is serious enough that these 2 workers unfortunately do have some important risk of cancer later in life. But nobody off-site got anything close to a dose that large.

There is no evidence of any radiation-induced fatalities to either workers or offsite populations. No, that statement is too weak -- <u>there is very strong evidence that nobody received a fatal dose</u>.

We can discuss this, if you wish, at the DCISC public meeting.

Robert J. Budnitz
Member, DCISC (but writing this is my private capacity)

****

Robert J. Budnitz
Lawrence Berkeley National Laboratory

On 2/6/2012 8:43 PM, Sherry Lewis wrote:
Dear Dr. Budnitz:

Last October you assured me that there were no fatalities in Fukushima due to radiation. I found that hard to believe and asked for corroborating evidence of that. Do you have some that you could email me before you arrive here this week?

Thank you for your time.

Sherry Lewis
Mothers for Peace

<INPO 11_005 (Special_Report_on_Fukushima_Daiichi) 11_08_11.pdf>

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

BY FEDERAL EXPRESS

February 23, 2012

Mr. John T. Conway
Senior Vice President - Energy Supply
& Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 56
Avila Beach, California 93424

Re: DCISC Twenty-first Annual Report on
Safety of Diablo Canyon Operations
July 1, 2010 - June 30, 2011

Dear Mr. Conway:

At its October 5, 2011, meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its "Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011." We enclose a completed report with PG&E's comments incorporated therein for your information and files.

If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc w/o encl.: DCISC Members
William V. Manheim, Esq., PG&E Law Dept.
Jennifer K. Post, Esq., PG&E Law Dept.
Mr. Brian K. Cherry, PG&E Vice President Regulatory Relations
cc w.encl.: Mr. Peter Bedesem. PG&E/DCPP

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DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

BY FEDERAL EXPRESS

February 23, 2012

The California Public
Utilities Commission
505 Van Ness Avenue
San Francisco, California 94104

Attention: Mr. Paul Clanon, Executive Director

Re: Diablo Canyon Independent Safety Committee; Annual Report on Safety of Operations.

Dear Mr. Clanon:

Enclosed please find a copy of the two volumes which comprise the "Twenty-first Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 - June 30, 2011," which was adopted at the sixty-fourth public meeting of the Diablo Canyon Independent Safety Committee ("DCISC") held in San Luis Obispo on October 5, 2011.

As required, the DCISC first submits a copy of its report to PG&E, and then includes PG&E's written response as part of the report. We then file our report with your office as well as with the California Energy Commission, the Governor and the Attorney General. This Report is also made available to the public on the DCISC's website.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports.

Thank you for your attention to this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc w/o encl: Larry Chaset, Esq. - CPUC/LEGAL
Mr. Massis Galestan - CPUC/ENERGY
Ms. Maria Salinas - CPUC/ENERGY
DCISC Members
cc w/encl: Mr. Truman Burns - CPUC/DRA
Mr. Peter Bedesem - PG&E/DCPP

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DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

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ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

BY FEDERAL EXPRESS

February 23, 2012

Office of the Attorney General
State of California
California Department of Justice
1300 "I" Street
Sacramento, California 95814

Attn: Senior Assistant Attorney General -Natural Resources Section.

Re: Diablo Canyon Independent Safety Committee; Annual Report on Safety of Operations.

Dear Senior Assistant Attorney General:

Enclosed please find a copy of the two volumes which comprise the "Twenty-first Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 - June 30, 2011," which was adopted at the sixty-fourth public meeting of the Diablo Canyon Independent Safety Committee ("DCISC") held in San Luis Obsipo on October 5, 2011.

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The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc w/o encl.: Deputy Attorney General Susan L. Durbin
DCISC Members
cc w/encl: Mr. Peter Bedesam - PG&E/DCPP

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DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

BY FEDERAL EXPRESS

February 23, 2012

Office of the Governor
State of California
State Capitol Building
Suite 1173
Sacramento, California 95814

Re: Diablo Canyon Independent Safety
Committee; Annual Report on Safety of Operations.

Dear Sir or Madam:

Enclosed please find a copy of the two volumes which comprise the "Twenty-first Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 - June 30, 2011," which was adopted at the sixty-fourth public meeting of the Diablo Canyon Independent Safety Committee ("DCISC") held in San Luis Obispo on October 5, 2011.

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The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have been concerning the value and usefulness of this and the previous DCISC annual reports.

Thank you for your attention to this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc w/o encl.: DCISC Members
w/encl.: Mr. Peter Bedesem -PG&E/DCPP

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON · 857 CASS STREET · SUITE D · MONTEREY · CA · 93940

attys mail

From: attys mail [attys@wellingtonlaw.com]
Sent: Sunday, March 04, 2012 2:55 PM
To: 'Sherry Lewis'
Cc: 'dcsafety@dcisc.org'
Subject: RE: Response to your inquiry of the DCISC entitled "Vocabulary Request"

Ms. Lewis – thanks for your reply. I'm glad you found the materials helpful.
We appreciate your interest in the Committee and its activities.

Regards,

Bob Rathie
DCISC
1-800-439-4688

From: Sherry Lewis [
Sent: Saturday, February 25, 2012 5:04 PM
To: DCISC
Cc: dcsafety@dcisc.org
Subject: Re: Response to your inquiry of the DCISC entitled "Vocabulary Request"

Dear Mr. Rathie:

Thank you very much for your response. It was quite helpful. And in the future I will try to write directly to <dcsafety@dcisc.org> as you suggested. I appreciate the help you all give me when I ask.

Sincerely,
Sherry Lewis

On Feb 24, 2012, at 5:10 PM, DCISC wrote:

Ms. Lewis:

The following will respond to the email you sent on Saturday,. February 18 to DCISC Consultant David Linnen, which was copied to the Committee members, Legal Counsel and the Committee's other technical consultant.

Please see the following NRC web pages for their official definitions of the terms you mentioned:

- Allegations (http://www.nrc.gov/about-nrc/regulatory/allegations-resp.html): items/concerns that any person can bring to NRC's attention.

- Notices of Violation (NOV) (http://pbadupws.nrc.gov/docs/ML0934/ML093480037.pdf): notices to the plant that the NRC has found a violation.

- License Event Report (LER) (http://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-0073.html): a report of an event made by a nuclear plant to the NRC.

Answers to your specific questions:

1. *How do allegations lead to Notices of Violation?* Allegations could lead to Notices of Violation if the NRC determines that they are severe enough. To the best of the DCISC's knowledge DCPP has had no recent allegations which have led to violations.

2. *How do allegations/Notices of Violation (NOV) dovetail with Licensee Event Report (LER)?* If the NRC determines the event reported in an LER is significant enough, they can issue a NOV.

3. *How do allegations/NOVs dovetail with Fact-finding Reports?* NRC allegations and NOVs are independent of the DCISC's Fact-finding Reports. The DCISC reviews allegations/NOVs which are then discussed in our Fact-finding Reports and subsequently our Annual Report.

4. *Couldn't find any Notices of Violation.* DCPP presents all violations and LERs at each of the DCISC's public meetings. DCPP violations are all described and discussed in the DCISC Annual Report Section 3.0 (Nuclear Regulatory Commission Assessments and Issues).

I'd suggest contacting the NRC website or personnel for any further information on their documents and processes.

In the future please be aware that the appropriate way to communicate with the DCSC is not by writing to an individual member or consultant but by an email (or other mode, like a letter) to the DCISC at dcsafety@dcisc.org and a link to this email address and the Committee's mailing address is provided on our website. The DCISC policies and procedures require that all communications with the DCISC become part of its public record (unless the correspondent asks for confidentiality and has a rationale for such a request).

Thank you for contacting the DCISC and I hope you find the foregoing responsive to your questions.

Robert Rathie
DCISC
Office of its Legal Counsel
(1-800)439-4688
dcsafety@dcisc.org

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

HAND DELIVERED

March 5, 2012

Hon. Robert B. Weisenmiller, PhD.
Chair
California Energy Commission
1516 Ninth Street, MS-33
Sacramento, California 95814

Attention: Commission Supervising Librarian

Re: Diablo Canyon Independent Safety Committee; Annual Report on Safety of Operations.

Dear Chair Weisenmiller:

Enclosed please find a copy of the two volumes which comprise the "Twenty-first Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2010 - June 30, 2011" which was adopted at the sixty-fourth public meeting of the Diablo Canyon Independent Safety Committee ("DCISC") held in San Luis Obispo on October 5, 2011.

As required, the DCISC first submits a copy of its report to PG&E, and then includes PG&E's written response as part of the report. We then file the report with your office as well as with the CPUC, the Governor and the Attorney General. This Report is also made available to the public on the DCISC website.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports.

Thank you for your attention to this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc w/o encl.: Ms. Barbara Byron - CEC
DCISC Members
cc w/encl: Mr. Peter Bedesem - PG&E/DCPP

OFFICE OF LEGAL COUNSEL • ROBERT R. WELLINGTON • 857 CASS STREET • SUITE D • MONTEREY • CA • 93940

OFFICE OF THE GOVERNOR

March 22, 2012

Mr. Michael Peevey, President
Public Utilities Commission
State of California
505 Van Ness Avenue
San Francisco, CA 94101

Dear President Peevey:

Pursuant to PUC Resolution E-4368, I am appointing Dr. Per Peterson to the Diablo Canyon Independent Safety Committee, a standing committee with the Public Utilities Commission. His term will end on June 30, 2014. Please contact Mona Pasquil, Appointments Secretary, if you need any additional information.

Sincerely,

Edmund G. Brown Jr.

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Ms. Kristin Inman
Media Relations & Nuclear Communications
Diablo Canyon Power Plant
P.O. Box 56
Mail Code 104/6/33
Avila Beach CA 93424

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Inman:

At its October 5, 2011, public meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. A compact disk is also being sent to Senior Vice President and Chief Nuclear Officer Edward D. Halpin, Jennifer Post, Esq., PG&E Law Department, and Mr. Peter Bedesem at Diablo Canyon. The two bound volumes which comprise the Annual Report were sent previously to Senior Vice President John Conway.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON · 857 CASS STREET · SUITE D · MONTEREY · CA · 93940
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

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COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

County Library
County of San Luis Obispo
Shell Beach Branch
230 Leeward Avenue
Pismo Beach, California 93449

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Librarian:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein. Please make it available to the public. Compact disks are also being sent to the Arroyo Grande County Branch Library, to the San Luis Obispo City Library and to the R.E. Kennedy Library at Cal Poly. The two bound volumes which comprise the Annual Report were sent previously to the Reference Department Desk at the Cal Poly Library.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this annual report. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members

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PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

County Library
County of San Luis Obispo
Arroyo Grande Branch
800 W. Branch
Arroyo Grande, California 93420

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Librarian:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's comments incorporated therein. Please make it available to the public. Compact disks are also being sent to the San Luis Obispo City Library, to the Shell Beach County Branch Library and to the R.E. Kennedy Library at Cal Poly. The two bound volumes which comprise the Annual Report were sent previously to the Reference Department Desk at the Cal Poly Library.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this annual report. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members

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TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

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DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

City Library
Cities of San Luis Obispo
995 Palm Avenue
San Luis Obispo, California 93401

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Librarian:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein. Please make it available to the public. Compact disks are also being sent to the County Public Library Branches at Arroyo Grande and Shell Beach and to the R.E. Kennedy Library at Cal Poly. The two bound volumes which comprise the Annual Report were sent previously to the Reference Department Desk at the Cal Poly Library.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this annual report. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members

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COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

R.E. Kennedy Library
Attn: Ms. Gayle Chipman
Government Document Specialist
California Polytechnic State University
San Luis Obispo, California 93407

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Chipman:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein. Please make it available to the public. Compact disks are also being sent to the San Luis Obispo, Arroyo Grande and Shell Beach public libraries. The two bound volumes which comprise the Annual Report were sent previously to the Reference Department Desk at Kennedy Library.

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Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members

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PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Martin A. Mattes, Esq.
Nossaman, Guthner, Knox & Elliott, LLP
50 California Street
San Francisco, California 94111

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Mr. Mattes:

At its October 5, 2012, public meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files.

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Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

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PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Mr. Edward D. Halpin
Senior Vice President & Chief Nuclear Officer
Pacific Gas & Electric Company
Diablo Canyon Power Plant
Mail Code 104/6
P.O. Box 56
Avila Beach, California 93424

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Mr. Halpin:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. A compact disk is also being sent to Jennifer Post, Esq., PG&E Law Department, Ms. Kristin Inman, Diablo Canyon Media Relations and Mr. Peter Bedesem, Technical Assistant to the Site Services Director. The two bound volumes which comprise the Annual Report were sent previously to Senior Vice President John Conway.

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Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

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ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Mr. Peter Bedesem
Technical Assistant to the Site Services Director
Pacific Gas & Electric Company
Diablo Canyon Power Plant
P.O. Box 56
Mail Code 104/6/35
Avila Beach, California 93424

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Mr. Bedesem:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. A compact disk is also being sent to Senior Vice President and Chief Nuclear Officer Edward D. Halpin, Mr. Kristin Inman, Diablo Canyon Media Relations and Jennifer Post, Esq. of PG&E's Law Department. The two bound volumes which comprise the Annual Report were sent previously to Senior Vice President John Conway.

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Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members

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DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

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PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Jennifer K. Post, Esq.
Pacific Gas & Electric Company
Law Department
77 Beale Street, B30A
San Francisco, California 94177

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Post:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. A compact disk is also being sent to Senior Vice President and Chief Nuclear Officer Edward D Halpin, Ms. Kristin Inman, Media Relations and Mr. Peter Bedesem at Diablo Canyon. The two bound volumes which comprise the Annual Report were sent previously to Senior Vice President John Conway.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON · 857 CASS STREET · SUITE D · MONTEREY · CA · 93940

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DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Mr. Ron Alsop
Emergency Services Manager
Office of Emergency Services
County of San Luis Obispo
County Government Center
San Luis Obispo, California 93408

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Mr. Alsop:

At its October 5, 2012, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files.

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ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Mr. Robert Kinosian
California Public Utilities Commission
505 Van Ness Avenue, Suite 5202
San Francisco, California 94102

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Mr. Kinosian:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. Compact disks are also being sent to Ms. Carol Brown, Mr. Donald Lafenz and Ms Maria Salinas. The two bound volumes which comprise the Annual Report were sent previously to the CPUC Executive Director Clanon and Mr. Truman Burns of DRA.

The Members of the Committee welcome and invite any thoughts and comments which you might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

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ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Ms. Maria Salinas
California Public Utilities Commission
Energy Division
505 Van Ness Avenue
San Francisco California 94102

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Salinas:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. Compact disks are also being sent to Ms. Carol Brown, Mr. Donald Lafrenz and Mr. Robert Kinosian. The two bound volumes which comprise the Annual Report were sent previously to the CPUC Executive Director Clanon and Mr. Truman Burns of DRA.

The Members of the Committee welcome and invite any thoughts and comments which you might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

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WEBSITE - WWW.DCISC.ORG

June 1, 2012

Mr. Donald J. Lafrenz
California Public Utilities Commission
Energy Division.
505 Van Ness Avenue
San Francisco, California 94102

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Mr. Lafrenz:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. Compact disks are also being sent to Ms. Maria Salinas, , Ms. Carol Brown and Mr. Robert Kinosian. The two bound volumes which comprise the Annual Report were sent previously to CPUC Executive Director Clanon and Mr. Truman Burns of DRA.

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Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

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ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Ms. Carol Brown
Chief of Staff
President Michael R. Peevey
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Brown:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. Compact disks are also being sent to Ms. Maria Salinas, Mr. Donald Lafrenz and Mr. Robert Kinosian. The two bound volumes which comprise the Annual Report were sent previously to the CPUC Executive Director Clanon and Mr. Truman Burns of DRA.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

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ROBERT J. BUDNITZ
PETER LAM
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June 1, 2012

Susan Durbin, Esq.
Deputy Attorney General
Office of the California Attorney General
1300 "I" Street
P.O. Box 944255
Sacramento, California 94244-2550

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Durbin:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. The two bound volumes which comprise the Annual Report were sent previously to the attention Senior Assistant Attorney General, Natural Resources Section.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

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DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Ms. Barbara Byron
California Energy Commission
1516 Ninth Street, MS-36
Sacramento California 95814

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Byron:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. A compact disk is also being sent to Chairman Weisenmiller. The two bound volumes which comprise the Annual Report were previously delivered to the Chair of the Energy Commission by DCISC Chairman Dr. Peter Lam.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
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ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Commissioner & Chair Robert B. Weisenmiller Ph.D.
California Energy Commission
1516 Ninth Street, MS-34
Sacramento California 95814

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Chairman Weisenmiller:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. A compact disk is also being sent to Ms. Barbara Byron. The two bound volumes which comprise the Annual Report was previously delivered by DCISC Chairman Dr. Peter Lam.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

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PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 1, 2012

Mr. Ken Alex
Senior Policy Advisor
Director, Office of Planning and Research
Office of California Governor Edmund G. Brown Jr.
State Capitol
Sacramento, California 95814

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Mr. Alex:

At its October 5, 2011, public meeting in San Luis Obispo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. The two bound volumes which comprise the Annual Report were sent previously to the Governor's office.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

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COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

June 8, 2012

Mr. James R. Becker
Site Vice President and Station Director
Pacific Gas & Electric Company
Diablo Canyon Power Plant
Mail Code 104/5/601
P.O. Box 56
Avila Beach, California 93424

Re: Diablo Canyon Independent Safety Committee;
21st Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Mr. Becker:

At its October 5, 2011, public meeting in San Luis Obsipo the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twenty-first Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2010 through June 30, 2011. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. A compact disk is also being sent to Senior Vice President/CNO Edward Halpin, Jennifer Post, Esq., PG&E Law Department, Ms. Kristin Inman, Diablo Canyon Media Relations and Mr. Peter Bedesem, Technical Assistant to the Site Services Director. The two bound volumes which comprise the Annual Report were sent previously to Senior Vice President and then Chief Nuclear Officer John Conway.

The Members of the Committee welcome and invite any thoughts and comments which you might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
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OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON · 857 CASS STREET · SUITE D · MONTEREY · CA · 93940

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ITEM# 6
I.D.# 11296

ENERGY DIVISION **RESOLUTION E-4499**
June 7, 2012

RESOLUTION

Resolution E-4499. Confirmation of a candidate for appointment by the Chair of the California Energy Commission (CEC) to the Diablo Canyon Independent Safety Committee (Safety Committee) for a three-year term beginning July 1, 2012.

PROPOSED OUTCOME: The Commission ratifies the President's selection of Dr. Peter Lam for consideration by the Chair of the CEC for reappointment to the Safety Committee.

ESTIMATED COST: None.

As required by Decision (D.) 07-01-028 dated January 25, 2007.

SUMMARY

This resolution ratifies the Commission President's selection of Dr. Peter Lam as a candidate for reappointment to the Diablo Canyon Independent Safety Committee (Safety Committee) for a three-year term commencing on July 1, 2012. The appointing authority is the Chair of the California Energy Commission (CEC).

BACKGROUND

The Safety Committee independently monitors the operations of Pacific Gas and Electric Company's Diablo Canyon Power Plant.

The Commission created the Safety Committee in Decision (D.)88-12-083 as part of the overall settlement of the ratemaking issues for the Diablo Canyon Power Plant (DCPP) which is owned and operated by Pacific Gas and Electric Company (PG&E). The Safety Committee is an independent three-member committee responsible for monitoring the safety of PG&E's

operation of DCPP. The Safety Committee's budget is paid out of PG&E's revenues and charged to PG&E's ratepayers (D.88-12-083, Appendix C, Paragraph 16). D.88-12-083 established the qualification and procedures for appointment of members to the Safety Committee and defined the scope of the Committee's operations and responsibilities (D. 88-12-083, Appendix C, Attachment A).

The Safety Committee consists of three members, one each appointed by the Governor of California, the California Attorney General, and the Chair of the CEC, respectively, serving staggered three-year terms.

D.07-01-028 approved changes to the Safety Committee nomination process.

On October 24, 2006, the Safety Committee submitted Application 06-10-024, to propose a restated charter. The Commission adopted the restated charter in D.07-01-028 dated January 25, 2007.

Section 1.B of the restated charter concerns appointments of the Committee members. It states that candidates for the Committee membership shall be selected from those applicants responding to an open request for applications. The incumbent member whose term is about to expire shall be deemed an additional candidate if he or she consents. The Commission shall provide for public comment on the applicants' qualifications and potential conflicts of interest. The President of the Commission shall review the applicants' qualifications, experience, and background, including any conflict of interest, together with any public comments , and shall propose as candidates to the appointing authority only persons with knowledge, background, and experience in the field of nuclear power plants and nuclear safety issues. The Energy Division shall prepare and circulate for public comment, and place on the Commission's public agenda a resolution ratifying the President's selection of candidates and an incumbent member.

An open request for applications to fill the July 1, 2012 vacancy on the Safety Committee was posted on the Commission's website. Dr. Peter Lam, the incumbent member of the Safety Committee whose term is expiring on July 1, 2012, consented to reappointment for another term. No other responses to the open request for applications were received.

In accordance with the nomination process approved in D.07-01-028, an announcement was posted on the Commission's website on January 17, 2012 seeking applications for the July 1, 2012 vacancy on the Safety Committee.[1] The candidate filling this vacancy will be appointed by the Chair of the CEC.

The open request for applications asked that applications be submitted to the Energy Division by February 29, 2012. No applications were received. By letter dated February 16, 2012 to the Commission's Energy Division, Dr. Peter Lam confirmed his willingness to continue to serve as a member of the Safety Committee.[2] Dr. Lam included a synopsis of his professional experience and technical activities with his letter. Dr. Lam had previously been appointed to the Safety Committee for a three-year term beginning July 1, 2009 by the Chair of the CEC.

Comments were received in support of Dr. Lam's reappointment.

On March 16, 2012 an announcement inviting comments on Dr. Lam as a candidate for reappointment to the Safety Committee was posted on the Commission's website.[3] A summary of Dr. Lam's qualifications was included with the announcement.
On March 17, 2012, comments in support of Dr. Lam's reappointment were submitted by Dr. Robert J. Budnitz, Dr. Lam's colleague on the Safety

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[1] A link to the announcement posted on the Commission's website was sent to the service list in A.10-01-014 and A.10-01-022 to assure that parties interested in issues relating to DCPP were aware of the announcement. A.10-01-014 addresses PG&E's request for funding of seismic studies at Diablo Canyon. A.10-01-022 addresses PG&E's request for funding its DCPP relicensing application at the Nuclear Regulatory Commission.

[2] Section I.B of the restated charter adopted in D.07-01-028 sets forth that up to three qualified candidates selected from those responding to the open request for applications be provided by the Commission's President to the appointing authority as alternatives to the reappointment of Safety Committee member whose term is expiring. The restated charter provides that the incumbent, if he or she consents, shall be considered an additional candidate. The restated charter does not require that the incumbent submit an application.

[3] A link to the announcement was also sent to the service lists in A.10-01-014 and A.10-01-022. See footnote 1 above.

Committee. On March 23, 2012, the Alliance for Nuclear Responsibility (A4NR) also submitted comments in support of Dr. Lam's reappointment. No other comments were received.

Dr. Budnitz stated in comments that Dr. Lam has outstanding qualifications, noting his experience as a member of the U.S. Nuclear Regulatory Commission's (NRC) Atomic Safety and Licensing Board, and international reputation in nuclear safety engineering. Dr. Budnitz stated that Dr. Lam is "100-percent impartial in his judgments" and especially effective in interacting with the public. Dr. Budnitz pointed out that Dr. Lam was elected Chairman of the Safety Committee by the other committee members.

In comments supporting Dr. Lam's reappointment, A4NR highlighted Dr. Lam's statements following the Fukushima tragedy at the CEC's Integrated Energy Policy Report hearings held after the 2011 tsunami in Japan. According to A4NR, Dr. Lam demonstrated his "post-Fukushima thinking and caused him to re-evaluate his previous assumptions about safety and probability" in his statements at the CEC.[4]

The President of the Commission has selected Dr. Lam as a candidate for reappointment to the Safety Committee.

The Commission's President, Michael Peevey, has reviewed Dr. Lam's qualifications, experience and background, and responses to the March 16, 2012 announcement inviting comments on Dr. Lam's reappointment. President Peevey has chosen to provide to the Chair of the CEC, Dr. Lam's name as a candidate for reappointment to the Safety Committee for a three-year term beginning July 1, 2012.

The purpose of this resolution is to evaluate and ratify President Peevey's selection in accordance with Section I.B of the restated charter adopted in D.07-01-028.

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[4] A4NR included quotes from Dr. Lam's statements made at the CEC hearings to support its comments.

NOTICE

Notice of this resolution was made by publication in the Commission's Daily Calendar. A copy of the draft resolution was sent to the service list for the draft resolution which includes those submitting comments on Dr. Lam's qualifications, the Chair of the CEC, and Dr. Lam. A copy of the draft resolution was also sent to the service lists in PG&E's A.10-01-014 and A.10-01-022.

DISCUSSION

Dr. Lam's qualifications are included in the appendix to this resolution.

Dr. Lam is qualified to be reappointed to the Safety Committee.

The restated charter adopted in D.07-01-028 requires that candidates for appointment to the Safety Committee be persons with knowledge, background and experience in the field of nuclear power facilities and nuclear safety issues who demonstrate they have no conflict of interest.[5]

Dr. Lam is an incumbent member of the Safety Committee, having been appointed to a three-year term beginning July 1, 2009 by the Chair of the CEC. He served as an Administrative Judge of the NRC from 1990 until 2007 where he adjudicated nuclear safety issues. Prior to his judicial appointment at the NRC, Dr. Lam worked in managerial and technical capacities in the nuclear energy business for 20 years. Dr. Lam has published numerous technical papers and reports in national and international publications addressing nuclear reactor operations, design,

[5] Conflicts of interest are set forth in Section I.C of the restated charter. They establish limits on income and gifts from PG&E or an affiliated company, and investments in PG&E or an affiliate for Safety Committee members. They also prohibit members of the committee from attempting to use their position to influence action of the committee in which they have a financial interest. Safety Committee members are required to file a Statement of Economic Interest in the same manner as designated Commission employees. No person shall serve on the Safety Committee who has a prior history of supporting or opposing PG&E as a witness or intervenor in nuclear licensing or Commission proceedings associated with Diablo Canyon.

and safety. He earned a PhD in nuclear engineering from Stanford University in 1971.

Dr. Lam has no conflicts of interest that would preclude his continuing to serve on the Safety Committee.[6] His qualifications show that he has knowledge, background, and experience in the field of nuclear power plants and nuclear safety issues. The comments received from the public support Dr. Lam's reappointment to the Safety Committee.

President Peevey's selection of Dr. Lam as a candidate for reappointment to the Safety Committee is ratified.

President Peevey's selection of Dr. Lam as a candidate for reappointment to the Safety Committee for a three-year term beginning July 1, 2012 is ratified. The President's selection shall be provided to the Chair of the CEC.

COMMENTS

Public Utilities Code section 311 (g) (1) generally requires resolutions to be served on all parties and subject to at least 30 days public review and comment prior to a vote of the Commission. Accordingly, the draft resolution was served on parties and issued for public review and comment no later than 30 days prior to a vote of the Commission.

No comments on the draft resolution were received.

FINDINGS AND CONCLUSIONS

1. D.88-12-083 created the Diablo Canyon Independent Safety Committee (Safety Committee).

[6] By email to Energy Division staff dated April 10, 2012 Dr. Lam confirmed that he has no conflicts of interest as set forth in Section I.C of the restated charter.

2. The Safety Committee is an independent three-member committee responsible for monitoring the safety of PG&E's operation of the Diablo Canyon Power Plant.
3. D.07-01-028 adopted a restated charter for the Safety Committee including revised procedures for appointments of Safety Committee members.
4. On January 17, 2012 in accordance with D.07-01-028 an announcement was posted on the Commission's website seeking applications for the July 1, 2012 vacancy on the Safety Committee.
5. The Chair of the California Energy Commission (CEC) is the appointing authority for the July 1, 2012 vacancy on the Safety Committee.
6. Dr. Peter Lam, the incumbent member of the Safety Committee whose term expires on July 1, 2012 responded to the Commission's January 17, 2012 announcement, and consents to being a candidate for reappointment to the Safety Committee.
7. No other responses to the Commission's January 17, 2012 announcement were received.
8. The Commission invited comments on Dr. Lam's qualifications in an announcement posted on the Commission's website on March 16, 2012.
9. Comments in support of Dr. Lam's reappointment to the Safety Committee were submitted by Dr. Robert J. Budnitz, a Safety Committee member, on March 17, 2012, and by the Alliance for Nuclear Responsibility on March 23, 2012.
10. The Commission's President, Michael Peevey, has reviewed Dr. Lam's qualifications, experience and background and the comments received on Dr. Lam's qualifications.
11. President Peevey has chosen to provide to the Chair of the CEC, Dr. Lam's name as a candidate for reappointment to the Safety Committee for a three-year term beginning July 1, 2012.
12. Dr. Lam has knowledge, background, and experience in the field of nuclear power plants and nuclear safety issues, and is a qualified candidate for reappointment to the Safety Committee.

13. President Peevey's selection of Dr. Lam as a candidate for reappointment to the Safety Committee for a three-year term beginning July 1, 2012 should be ratified and provided to the Chair of the CEC.

THEREFORE IT IS ORDERED THAT:

President Michael Peevey's selection of Dr. Peter Lam as a qualified candidate for consideration by the Chair of the California Energy Commission for reappointment to the Diablo Canyon Independent Safety Committee for a three-year term beginning July 1, 2012 is hereby ratified.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on June 7, 2012; the following Commissioners voting favorably thereon:

PAUL CLANON
Executive Director

Appendix
Qualifications of Dr. Peter Lam

Dr Lam is an incumbent member of the Diablo Canyon Independent Safety Committee, having been appointed by the honorable Karen Douglas, J.D., Chair of the California Energy Commission in June 2009. His term runs through June 30, 2012.

Dr. Lam served as an Administrative Judge of the United States Nuclear Regulatory Commission (NRC) from 1990 until his retirement in 2007. In this capacity Dr. Lam adjudicated safety issues in public proceedings mandated by the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974. These proceedings related to granting, suspending, revoking or amending licenses issued by the NRC, especially those involving nuclear power plants. His jurisdiction covered all of the existing 104 nuclear power plants, approximately 21,000 medical and material licensees, and nuclear waste storage in the United States. From 2002 to 2003, Dr. Lam sat on the Atomic Safety and Licensing Boards to conduct the public proceeding on the application of Pacific Gas and Electric Company to construct and operate an independent spent fuel storage installation at the Diablo Canyon Power Plant.

Prior to his judicial appointment at the NRC Dr. Lam worked in managerial and technical capacities in the nuclear energy business for 20 years. This included working as a nuclear engineer at General Electric on the design and analysis of boiling water reactors advanced fuels, and serving as a program manager at Argonne National Laboratory managing the research and development of advance fast reactor metal fuels. Dr. Lam also was a manager at Science Applications, Inc., and a consultant at NUS Corporation, consulting firms in the nuclear industry where he was involved in managing probabilistic risk assessments of operating nuclear reactors.

Dr. Lam has published 71 technical papers and reports in national and international journals and in company publications which focus on issues in nuclear transport theory, nuclear reactor fuel design, nuclear reactor operating experience, and nuclear reactor safety. Dr. Lam has also issued more than 110 judicial decisions resolving technical and legal issues on nuclear power plant operation and safety, nuclear waste disposal, and other civilian use of nuclear technology. Dr. Lam has presented lectures at international conferences held by the International Atomic Energy Agency, and chaired an IAEA working group to develop a technical treatise for the analysis and evaluation of operating experience of the world's nuclear power plants.

Dr. Lam earned a Ph.D. in nuclear engineering from Stanford University in 1971, an M.S. in nuclear engineering from Stanford University in 1968, and a B.S. in mechanical engineering from Oregon State University in 1967.

End of Appendix

DCISC

From: DCISC [info@dcisc.org]
Sent: Friday, May 25, 2012 9:55 AM
To: 'Childers, JoEllen'
Cc: 'DCISC'
Subject: Request to Publish DCISC Tour Ad in the Tribune's Sunday, June 3, Edition
Attachments: Tour ad.pdf; Tour Ad Text.doc

May 25, 2012

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Ms. JoEllen Childers
Advertising Department

Re: Diablo Canyon Independent Safety Committee; Public Tour Display Ad

Dear Ms. Childers:

Attached herewith is a copy of a public tour display ad for the Diablo Canyon Independent Safety Committee. I have attached a "text only" version (in Word) as well as an attachment showing how the ad should appear in a text box (in pdf). Please provide a proof for review and approval prior to publication.

Would you please publish the enclosed advertisement as a two column wide ad in your edition on Sunday, June 3, 2012. Prior to publication, please provide a proof for approval and upon completion of publication, please provide us with a copy of the final display ad.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Please give me a call at 1-800-439-4688 if you have any questions and confirm receipt of this email by reply email. Thank you.

Very truly yours,

Robert W. Rathie
DCISC Asst. Legal Counsel

RRW:rr
Enclosure

DIABLO CANYON POWER PLANT PUBLIC TOUR WITH THE MEMBERS OF THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

At 8:00 A.M. on the morning of Wednesday, June 20, 2012, the Diablo Canyon Independent Safety Committee will conduct an inspection tour of certain accessible areas at the Diablo Canyon Nuclear Power Plant. This tour, which will take approximately three and a half hours, will be open to members of the public on a limited basis.

Because the plant is an operating nuclear facility, the number of participants must be limited and space will be reserved on a first-come, first-served basis. Reservations, which have usually been in high demand, will be accepted for a maximum of four immediate family members, each of whom must be at least twelve years of age, per call. Priority will be given to those persons who have not attended previous public tours conducted by the Committee. The Committee makes every effort to make its public tour wheelchair accessible and to accommodate specialized equipment and other services useful to persons with disabilities. If you plan to attend and need specialized accommodations, please so indicate when making your reservation. Prior security clearance of all attendees is required in compliance with the rules of the U.S. Nuclear Regulatory Commission.

Reservations may only be made by telephoning the Committee's toll-free number

1-800-439-4688

on Monday, June 4, 2012

Between the hours of 9:00 A.M. - Noon and 2:00 P.M. - 5:00 P.M.

Please place your call no earlier than 9:00 A.M. & prior to 5:00 P.M.

Please be patient as call volume is expected to be very heavy

Email reservations cannot be accepted nor will requests for reservations left with anyone other than Committee staff answering the telephone at the number provided above.

In the event that security considerations preclude a public tour of Diablo Canyon on June 20th, in the alternative the DCISC may convene an informal question and answer session at the PG&E Community Center, 6588 Ontario Road, San Luis Obispo at 8:30 A.M. Information concerning the agenda for DCISC public meetings on June 19-20, 2012, will be available on the Committee's homepage at www.dcisc.org or by contacting the office of the Committee's Legal Counsel at the Committee's toll-free telephone number.

Dated: June 3, 2012.

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

E-MAIL:ttlegals@thetribunenews.com

June 6, 2012

The Tribune
3825 South Higuera
Post Office Box 112
San Luis Obispo, California 93406-0112

Attention: Legal Advertising.

Re: Diablo Canyon Independent Safety Committee - Legal Notice of Meeting.

Dear Sir of Madam:

Enclosed herewith is a copy of a legal Notice of Meeting for the Diablo Canyon Independent Safety Committee. Would you please publish this Notice with your edition on Saturday, June 9, 2012. Upon completion of publication, please provide us with your Affidavit of Publication.

As we have done in the past, upon receipt of this Notice, would you please provide us with your invoice for the cost of publication, and we will send our check to cover same.

If you require anything additional in order to comply with this request, please advise.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
NOTICE OF PLANT TOUR AND PUBLIC MEETING

NOTICE IS HEREBY GIVEN that on June 20, 2012, at 8:00 A.M., the members of the Diablo Canyon Independent Safety Committee ("DCISC") will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant ("DCPP"). This tour, which will take approximately three and one-half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant, the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission ("NRC").

In the alternative if security considerations preclude the public tour on June 20th, the DCISC may convene an informal presentation and question and answer session at the Pacific Gas & Electric Company ("PG&E") Energy Education Center, 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY FURTHER GIVEN that on June 19-20, 2012, at the Avila Lighthouse Suites Point San Luis Conference Facility, located at First and San Francisco Streets, Avila Beach, California, a public meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Morning Session - (06/19/2012) - 8:00 A.M.** Opening comments and remarks; receive public comments and communications to the Committee; approve minutes of February 8-9, 2012, public meeting; discussion of administrative matters, including an update on financial matters and activities during 2012; review of the Open Items List; nomination and election of Chair and Vice Chair to serve for the July 1- 2012 to June 30, 2013 term; reports by Committee members, consultants and legal counsel and scheduling of future public meetings and site visits; receive, approve and authorize transmittal of fact-finding reports to PG&E; review of Committee correspondence and documents received; and receive information presentation requested by the Committee from PG&E on the status of the DCPP steam generators.

2. **Afternoon Session - (06/19/2012) - 1:30 P.M.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including review of plant events, operational status and station performance indicators; a report on the DCPP 2012 Operating Plan; recent Licensee Event Reports, NRC Notices of Violation and NRC Performance Indicators; and a status report on the NRC-Identified cross-cutting issue concerning problem evaluation (P.1(c)).

3. **Evening Session - 06/19/2012 - 5:30 P.M.** Committee member comments; receive public comments and communications to the Committee; remarks by the NRC Senior Resident Inspector at DCPP; and receive informational presentation requested by the Committee from PG&E on topics relating to plant safety and operations, including update on the status of issues related to the events at the Fukushima Dai-ichi Nuclear Power Plant in Japan following the March 11, 2011, earthquake and tsunami and summary of DCPP actions taken to date and actions planned.

4. **Afternoon Session - (06/20/2012) - 1:00 P.M.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including DCPP/PG&E interface with local agencies with respect to emergency planning and preparedness activities; and a presentation on the results of the seventeenth refueling outage for Unit 1 (1R17); and wrap-up discussion by Committee members.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Monday, June 18, 2012, at the Reference Department of the Cal Poly Library in San Luis Obispo. The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Point San Luis Conference Facility is a wheelchair accessible facility. Devices for attendees who may be hearing impaired are available. **For further information regarding the public meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone:1-800-439-4688 or read the agenda on line by visiting the Committee's website at www.dcisc.org.**

Dated: June 9, 2012.

June 9, 2012

6989359

PRESS RELEASE:

PUBLIC MEETING OF THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

WHO: The Members of the Independent Safety Committee:

Robert J. Budnitz
Peter Lam
Per F. Peterson

WHAT: An opportunity for the public to observe and receive information concerning the activities of the Independent Safety Committee including recent fact-finding visits and informational presentations concerning safety-related issues at Diablo Canyon:

- *Committee Business Session - Tuesday morning*
- *Status Report on the Diablo Canyon Steam Generators*
- *Plant Performance, Events, and Operational Status*
- *The 2012 Diablo Canyon Operating Plan*
- *Licensee Event Reports, Notices of Violation & NRC Performance Indicators*
- *The NRC-identified Cross-cutting Issue in Problem Evaluation*
- *Remarks by the NRC Senior Resident Inspector for Diablo Canyon*
- *Update on the Status of Issues Related to the Events at the Fukushima Dai-ichi Nuclear Power Plant in Japan*
- *Diablo Canyon's Interfaces with Local Agencies with Respect to Emergency Planning & Preparedness Activities*
- *Results of the Seventeenth Refueling Outage for Unit-1 (1R17)*

WHERE: Avila Lighthouse Suites
Point San Luis Conference Facility
First & San Francisco Streets, Avila Beach, CA

WHEN: Tuesday and Wednesday
June 19-20, 2012

TIMES: 8:00 a.m. to Noon (Tuesday, June 19th)
1:30 p.m. - 5:00 p.m. (Tuesday, June 19th)
5:30 p.m. to approx. 7:00 p.m. (Tuesday, June 19th)
1:00 p.m. to approx. 3:00 p.m. (Wednesday, June 20th)

FOR FURTHER INFORMATION:

Including more information on these and other topics
to be reviewed by the Independent Safety Committee
or the specific days and times for particular presentations
Contact 1-800-439-4688
or review the meeting agenda online at
www.dcisc.org

The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Point San Luis Conference Facility is a wheelchair accessible facility and devices for attendees who may be hearing impaired are available.

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA EMAIL:
kgray@newtimesslo.com

June 7, 2012

New Times
1010 Marsh Street
San Luis Obispo, California 93401

Attention: Advertising Department- Ms. Katy Gray.

Re: Diablo Canyon Independent Safety Committee; Display Ad

Dear Ms. Gray:

Attached herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the attached in your edition to be published on Thursday, June 14, 2012, which we understand will be available in the local area through Wednesday, June 20. If possible, the same format and style as used for our past advertising publications in the New Times should be used for the June 2012 publication. Please provide a proof copy of the display ad for review prior to publication.

Please confirm receipt of this request.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA · 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

Diablo Canyon

INDEPENDENT SAFETY COMMITTEE (DCISC)

Public Meeting:

Tuesday Morning, June 19th 8:00 A.M.

Introductions, public comments and communications to the Committee, Committee business session including reports on fact finding visits by members and consultants; informational presentation by PG&E officials on a topic requested by the Committee on the status of the Diablo Canyon steam generators.

Tuesday Afternoon, June 19th 1:30 P.M.

Introductions, public comments and communications to Committee members; further informational presentations by PG&E officials including Plant events, operational status and performance indicators, a report on the 2012 Diablo Canyon Operating Plan, review of licensee event reports and NRC cited or non-cited violations and NRC Performance Indicators, and a status report on the NRC-identified cross-cutting issue concerning problem identification.

Tuesday Evening, June 19th 5:30 P.M.

Public comments and communications to the Committee members; remarks by the NRC Senior Resident Inspector for Diablo Canyon; and an informational presentation by PG&E officials updating the status of issues related to the events at the Fukushima Dai-ichi Nuclear Power Plant in Japan following the March 11, 2011 earthquake and tsunami and summary of actions taken and planned by Diablo Canyon.

Wednesday Afternoon, June 20th 1:00 P.M.

Introductions, public comments and communications to Committee members; further informational presentations by PG&E officials including Diablo Canyon's interfaces with local agencies and organizations with respect to emergency planning and preparedness activities, a presentation on the results of the seventeenth refueling outage for Unit-1 (1R17); and wrap-up discussion by Committee members.

Please plan to attend!

For further information call 1-800-439-4688 or visit the Committee's website at www.dcisc.org.

A copy of the meeting Agenda packet may be reviewed at the Cal Poly Library's Reference Department and the Agenda is available on the DCISC's website. Each session of a public meeting of the DCISC is available live and online during the meeting by visiting www.slo-span.org and after a meeting in archived format, indexed to the meeting's agenda, or by following links on the Committee's website.

Avila Lighthouse Suites

Point San Luis Conference Center

First & San Francisco Streets
Avila Beach, California

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FACSIMILE
1-805-781-7871

June 11, 2012

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Advertising Manager/Advertising Department
& County Round-Up Section Editor

Re: Diablo Canyon Independent Safety Committee; Display Ad.

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. As you have done in the past, would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Sunday, June 17, and Tuesday, June 19. Upon completion of publication, please provide us with a copy of the display ad.

We would also appreciate consideration of the inclusion of information concerning the June 19-20, 2012, meetings of the DCISC in the County Round-Up section of the Tribune on a date prior to the meeting. Please feel free to contact out office if further information is required.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL • ROBERT R. WELLINGTON
• 857 CASS STREET • SUITE D • MONTEREY • CA • 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 • FACSIMILE [831] 373 7106 • INFO@DCISC.ORG

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FACSIMILE & EMAIL
1-805-928-5657
dchavez@santamariatimes.com

June 11, 2012

TIMES-PRESS-RECORDER
Post Office Box 460
Arroyo Grande, California 93421-0460

Attention: Advertising Department

Re: Diablo Canyon Independent Safety Committee; Display Ad

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the enclosed as a two-column wide ad on Friday, June 15. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure

OFFICE OF LEGAL COUNSEL • ROBERT R. WELLINGTON
• 857 CASS STREET • SUITE D • MONTEREY • CA • 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 • FACSIMILE [831] 373 7106 • INFO@DCISC.ORG

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
- PUBLIC MEETING -

When: **Tuesday Morning, June 19th**
8:00 A.M.

Introductions, public comments and communications to the Committee, Committee business session and informational presentation by PG&E concerning Plant operations requested by the Committee.

Tuesday Afternoon, June 19th
1:30 P.M.

Introductions, public comments and communications to the Committee, and informational presentations by PG&E concerning Plant events and operational status and specific Plant safety topics requested by the Committee.

Tuesday Evening, June 19th
5:30 P.M.

Public comments and communications to the Committee members, remarks by the NRC Senior Resident Inspector for Diablo Canyon, and informational presentation by PG&E officials on status of issues related to the Fukushima Dai-ichi plant in Japan following the March 11, 2011 earthquake and tsunami and Diablo Canyon actions in response.

Wednesday Afternoon, June 20th
1:00 P.M.

Introductions, public comments and communications to Committee members, further informational presentations by PG&E officials on Plant operational topics requested by the Committee and concluding remarks by the members.

Where: **Avila Lighthouse Suites**
Point San Luis Conference Center
First & San Francisco Streets
Avila Beach, California

Please plan to attend!

For further information call ***1-800-439-4688*** or visit the Committee's website at ***www.dcisc.org.***

A copy of the meeting Agenda packet may be reviewed at the Cal Poly Library's Reference Department and the Agenda is available on the DCISC's website.

The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Avila Suites' conference facility is a wheelchair accessible facility and devices for attendees who may be hearing impaired are available.

DCISC

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FEDERAL EXPRESS

June 14, 2012

R.E. Kennedy Library
Documents & Maps Dept.
California Polytechnic
State University Library
San Luis Obispo, California 93407

Attention: Ms. Janice Klien
Re: Diablo Canyon Independent Safety Committee; Agenda Packet.

Dear Ms. Klien:

Enclosed please find a copy of the Agenda Packet for the next meeting of the Diablo Canyon Independent Safety Committee which will be held in Avila Beach on June 19-20, 2012. Would you please file this packet in the Reference Department and make it available to the public. Thank you for your cooperation and assistance in this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc: w/encl to:

Dr. Robert J. Budnitz
Dr. Peter Lam
Dr. Per F. Peterson
Mr. R. Ferman Wardell, P.E.
Mr. David C. Linnen
California Energy Commission
(c/o Ms. Barbara Byron)
The Attorney General
(c/o Susan Durbin, Esq.)
Governor's Office

Mr. Edward Halpin - PG&E/DCPP
Mr. James R. Becker - PG&E/DCPP
Mr. Peter Bedesem - PG&E/DCPP
Jennifer K. Post, Esq. - PG&E/SF
Mr. Truman Burns - CPUC/DRA
Mr. Robert Kinosian - CPUC /EXEC
Ms. Maria Salinas - -CPUC/ENERGY

OFFICE OF LEGAL COUNSEL · ROBERT R. WELLINGTON
· 857 CASS STREET · SUITE D · MONTEREY · CA · 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 · FACSIMILE [831] 373 7106 · INFO@DCISC.ORG

CALIFORNIA ENERGY COMMISSION
ROBERT B. WEISENMILLER, CHAIR
1516 NINTH STREET, MS 33
SACRAMENTO, CA 95814-5512
(916) 654-5036
FAX (916) 653-9040

July 12, 2012

Michael R. Peevey, President
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

RE: Energy Commission Reappointment of Peter Lam, Ph.D. to the Diablo Canyon Independent Safety Committee

Dear President Peevey:

Thank you for your selection of Dr. Peter Lam as a qualified candidate for consideration by the California Energy Commission for reappointment to the Diablo Canyon Independent Safety Committee (Safety Committee) for a three-year term beginning July 1, 2012.

I hereby reappoint Dr. Peter Lam to the Safety Committee for a term of three years from July 1, 2012 through June 30, 2015. I am grateful for Dr. Lam's invaluable contribution as a member of the Safety Committee over the past three years and look forward to working with him again as he serves another three-year term.

If you have any questions regarding this reappointment, please contact Joan Walter, Senior Nuclear Policy Advisor, at 916-654-3873 or via email at: Joan.Walter@energy.ca.gov.

Sincerely,

ROBERT B. WEISENMILLER
Chair

22nd Annual Report, Volume 2, Exhibit G.3, Comments Received at Public Meetings

This exhibit provides summaries of comments received by the DCISC from members of the public at public meetings. The full text of the meeting minutes can be found in Exhibits B.3, B.6, and B.9.

October 5–6, 2011 Public Meeting

Afternoon Session, October 5, 2011:

Ms. Sherry Lewis was recognized during public comments and communications to the Committee and stated she resides in the local area and wished once again to register her belief that nuclear power is far too dangerous to be used. She stated her opinion that the waste produced by nuclear power operations is so dangerous for so long that it is not worth any gain from the production of electric power by nuclear reactors and all such reactors should be closed down and replaced by renewable energy sources. The Chair thanked Ms. Lewis for her comments.

Ms. Sherry Lewis was recognized following discussion of the Open Items List. Ms. Lewis stated her belief that seismic thrust faulting exists within California in the vicinity of DCPP.

Ms. Sherry Lewis was recognized following presentation of fact finding reports. Ms. Lewis identified herself as a member of the group San Luis Obispo Mothers for Peace (MFP). She remarked that a 57% response rate from DCPP employees to the Premier Survey was not high. Ms. Lewis stated that the surveys to be conducted of the coastline offshore from DCPP should go beyond the three-mile limit to include the entire shelf to better understand what conditions may exist there.

Mr. Stanley Yucikas was recognized following presentation of fact finding reports. Mr. Yucikas thanked the Committee for the work it is doing. He inquired whether, with all the attention now on earthquakes and tsunamis, studies have been done relative to disasters involving fire or mud slides in connection with earthquakes, where the plant due to its isolated location and limited harbor facilities nearby, might find itself isolated and inaccessible by road for some considerable period of time.

Evening Session, October 5, 2011:

Ms. Sherry Lewis was recognized during public comments and communications to the Committee. Ms. Lewis inquired concerning a presentation during the June 2011 DCISC public meeting on the events at Fukushima and asked if there was any new information on the condition of the spent fuel pools at that plant following the accident on March 11, 2011.

Ms. Sherry Lewis was recognized following PG&E's presentation on the ISFSI and the future of spent fuel at DCPP. Ms. Lewis inquired about precautions being taken to prevent damage or release of fuel from human acts such as from terrorist or missile attacks. She stated her belief the ISFSI was not protected from attacks from the air. She stated the fact that certain fuel rods could not be removed from the spent fuel pools did not alter that fact that there was way too much spent fuel in the pools. She stated her opinion that the density was too much and the pools should be returned to their original racking configuration. Ms. Lewis stated her opinion that continuing to produce radioactive waste year after year when that waste will require storage for thousands of years is too dangerous and a huge mistake. Ms. Lewis stated that as human beings on the earth, the members of the DCISC have more than simply their mandate from the state and to claim that the DCISC's responsibility concerning the ISFSI does not extend beyond 40 years is absolutely ridiculous and the fuel is going to be dangerous for far longer than that and will need to be stored somewhere and that should be of concern to the DCISC and its members. Ms. Lewis insisted the Committee's view was much too narrow and people are personally responsible for what goes on within their purview and she stated the DCISC's position is furthering policies already in place with which she strongly disagrees.

Morning Session, October 6, 2011:

Ms. Sherry Lewis was recognized during public comments and communication to the Committee and identified herself as a member of the group San Luis Obispo Mothers for Peace. Ms. Lewis stated she appreciated the DCISC's interest in keeping nuclear power safe and stated her belief the Committee was doing a good job, but she reiterated her belief that nuclear power is too inherently unsafe and unforgiving a technology particularly when coupled with human error and mistakes, the effect of which cannot be minimized. She stated the waste created by nuclear power operations remains dangerous for a very long period of time and human error is bound to occur and she questioned who will take responsibility for the waste in the future. Ms. Lewis stated her belief that nuclear power needs to be phased out as quickly as possible.

Ms. Sherry Lewis was recognized following PG&E's presentation on lessons learned from the events at Fukushima. Ms. Lewis posed two questions and two requests to the Committee. Ms. Lewis inquired whether there were better materials available to use as fuel cladding in order to preclude the production of hydrogen which can occur when zirconium cladding, as is used on the fuel at DCPP, comes into contact with steam; she inquired why the containment venting at the Fukushima was unsuccessful; she requested that the margin for protection from external beyond design basis events include acts of terrorism as well as natural phenomena; and she requested that the DCISC review the requirements or guidelines presented by the Physicians for Social Responsibility group.

Unit Chief Robert Lewin of Cal Fire was recognized to address remarks to the Committee following PG&E's presentation on lessons learned from the events at Fukushima. Chief Lewin stated that as Cal Fire Chief he is also Fire Chief for San Luis Obispo County ("County") and therefore has jurisdiction around DCPP. He stated his department has a good relationship with DCPP and its fire brigade and conducts regular training with the DCPP Fire Department. There is a Memorandum of Understanding with PG&E and he stated that in his professional opinion DCPP has a first-rate fire department. He stated, however, that there are many lessons to be learned from the events at

Fukushima for first responders. He remarked that in the past his responsibilities did not appear to extend to participating in trying to cool down the plant and its spent fuel and based on the events in Japan that now appears to be a real possibility. He questions whether his Department is training on the correct methods to be used in such an event and expressed his belief that his Department should have real time experience in laying hose lines from the heat sink in the Pacific Ocean to the reactors and spent fuel pools at DCPP. Chief Lewin stated he has questions about the robustness of the communications systems which would be required and how to conduct briefings and schedule personnel rotations if sustained, extended fire fighting duty were required at DCPP. His Department has not trained for this in the one-day scenarios which have taken place in the past where the incident is concluded and everyone goes home after one day. Chief Lewin stated that PG&E has recognized these issues. He stated that the local fire departments, along with law enforcement also have off-site responsibilities away from DCPP during emergencies and there could be conflicts with what resources his Department is required to commit to DCPP as well as to other areas. He questioned the adequacy of the two access roads now available to DCPP, as both are within the tsunami inundation area, and commented that perhaps use of the access road which serves the power lines going up Diablo Canyon should be reviewed. Chief Lewin stated he would not be satisfied until personnel from his Department have actually been on site at DCPP performing the necessary exercises and he stated that PG&E is supportive of this. He stated review of other types of issues would also be necessary including training, the adequacy of the County's Emergency Operations Center, communications, and sustained response planning. Chief Lewin stated that in California there is a considerable ability to mobilize rapidly in any emergency, such as wildland fires during which it is common to have more than 1,000 fire fighters mobilized and on the fire lines for extended periods of time. He stated there are systems in place to do that for all disasters and it was his intention to make sure that capability existed specifically for DCPP.

Ms. Lisa Bonyer was recognized following PG&E's presentation on lessons learned from the events at Fukushima. Ms. Bonyer stated she was the agricultural liaison to the San Luis Obispo Board of Supervisors and a local farmer who farms within ten miles of DCPP. She observed that the main industry in San Luis Obispo County is agriculture and like Fukushima, DCPP is surrounded by agricultural uses. She requested an update of what planning efforts have been undertaken concerning contamination and food safety matters, including reentry onto land to get it back into production in the event of a radioactive release at DCPP. She observed that after the accident at Chernobyl contamination was widespread and there were significant food safety issues.

Ms. Sherry Lewis was recognized following PG&E's informational update on seismic issues. She stated she wanted to receive information on the potential for landslides on the continental shelf. Mr. Sharp replied that the off shore studies now being undertaken by PG&E are 3D seismic studies based on mapping earthquake faults to determine and assess how deep in the earth's crust and at what angle such faults may exist in the vicinity of DCPP.

Afternoon Session, October 6, 2011:

Ms. Sherry Lewis was recognized following PG&E's informational presentation on an overview of the containment sump,. Ms. Lewis inquired what was meant by "bypassing" in context of filtering by the containment sump screens.

February 8–9, 2012 Public Meeting

Afternoon Session, February 8, 2012:

Ms. Sherry Lewis was recognized during public comment and communication to the Committee. Ms. Lewis identified herself as a member of the governing board of the group San Luis Obispo Mothers for Peace (MFP) and remarked that she has an overarching dislike for nuclear power because the waste produced is so deadly for so long. Ms. Lewis stated she does not believe all the information is available from the accident at the Fukushima Dai-ichi Nuclear Power Plant in Japan ("Fukushima") and she does not believe all the information from the accident at Chernobyl is in the public domain. She commented nuclear power is too dangerous for far too long and that efforts should be made to move toward renewable or alternative energy sources.

Ms. Patricia Miller was recognized following Ms. Lewis comments. Ms. Miller described herself as a founding member of MFP and stated MFP has been an intervener for the last forty or fifty years in issues related to DCPP. She stated a terrible problem is created by the waste produced by nuclear power operations and there have been accidents in the U.S., Russia and Japan and that radiation from Fukushima is now appearing on our shores. Ms. Miller stated she hoped the Committee would take these issues into account and emphasize things such as solar, wind and geothermal power.

Ms. Sherry Lewis was recognized following review of the Open Items List. Ms. Lewis stated that she has read that the reactor operators at Fukushima were, contrary to what she has heard at DCISC meetings, able to take independent action without receiving prior authorization from the Japanese government and although the operators were advised it was better to wait for such authorization, it was not required. Ms. Lewis stated that she did not want an impression to be given that the rules in Japan were so different from those in the United States that what happened in Japan couldn't happen here.

Evening Session, February 8, 2012:

Fire Chief Robert Lewin of CalFire and the San Luis Obispo (SLO) County Fire Department was recognized during public comment and communication to the Committee. Chief Lewin stated that following the events in Japan at the Fukushima plant there is an opportunity to address onsite issues in regard to fire protection at U.S. nuclear power plants. Chief Lewin commented that DCPP might serve as an example of a well-prepared plant as the plant has an excellent fire department which works closely with his departments but he observed there are some things which can be done to improve preparation for events which may occur at DCPP in light of lessons learned at Fukushima. Chief Lewin stated he is looking forward to meeting with and discussing these issues with the Committee during a future fact-finding.

Ms. Sherry Lewis of MFP was recognized following Chief Lewin's remarks. Ms. Lewis stated that she had written a letter to the editor of a local newspaper concerning the natural gas pipeline explosion in San Bruno CA. Ms. Lewis stated that PG&E, the owner of that gas pipeline, lied to the public regarding the inspection of that pipeline and she stated that it was her hope that PG&E would be more cautious concerning nuclear power. Ms. Lewis observed that safety is apparently not PG&E's

number one concern and there still remains the possibility of human error. She commented the waste stored at DCPP remains toxic and companies and individuals cannot be trusted to keep it safe with zero risk. She stated it was her opinion that the use of nuclear power should be phased out and no more waste should be created. She stated that it was her assumption, based on PG&E's actions concerning the accident in San Bruno, that profit not safety is PG&E's number one concern.

Ms. Patricia Miller was recognized to address remarks to the Committee following Ms. Lewis' comments. Ms Miller stated that she is a local resident and in her opinion there is really no way to speedily escape from the Avila Beach area in the event there was a fire or an accident which required immediate evacuation and she stated she hoped the Committee would take this into account when reviewing the adequacy of safety preparations.

Ms. Beth Barnes was recognized to address the Committee following PG&E's presentation on licensee event reports and notices of violation. Ms. Barnes stated she has resided in San Luis Obispo County for four days and her daughter now attends California Polytechnic University (Cal Poly) in San Luis Obispo. Ms. Barnes expressed her deep concern about DCPP. She stated that one of the lessons of the accident at Fukushima is that nature holds the trump card. Ms. Barnes stated, on behalf of herself and her daughter, that she strongly opposes the power plant.

Ms. Sherry Lewis was recognized to address remarks to the Committee following PG&E's presentation on the status of issues related to the events at the Fukushima Dai-ichi nuclear plant in Japan. Ms. Lewis stated that the point to be learned from the accident at Fukushima is that not everything was thought of and it is conceivable that something will happen that nobody has thought of. She stated the reason that so much effort is being placed on preparation following Fukushima is because of the devastating nature of an accident to a nuclear power plant. She stated it was her opinion that it would be better to just stop using nuclear power and she cautioned against a mindset that allows the belief that somehow American plants are different from those in Japan. Ms. Lewis stated it would be her wish that all the thousands of hours of research and millions of dollars go toward the development of alternative, sustainable energy sources that would not have horrible consequences because it is a matter of when, and not if, things will go wrong.

Ms. Jane Swanson, a member of MFP, stated she agreed with Ms. Lewis' remarks. She commented on the information received and stated that the reality of the matter is that the probability of a beyond design basis event cannot be reduced to zero and she stated that since the possibility of a catastrophe cannot be reduced to zero, and under the National Environmental Policy Act it is required that events with extremely low probability but extremely high consequences be taken into account, it is MFP's conclusion that it is not worth taking the risk to continue to operate DCPP or any other nuclear plant. Ms. Swanson stated that as the DCISC serves the public it was important for members of the public to let the Committee know that sustainable energy is going to be the answer and nuclear is not. She thanked the Committee for the opportunity to express her views.

Ms. June Cochran, a resident of Shell Beach, was recognized following Ms. Swanson and Ms. Lewis remarks to address remarks to the Committee. Ms. Cochran stated she concurred with Ms. Lewis and Ms. Swanson and the Committee members when they indicated that no one can fully anticipate

what will happen, prepare and manage the consequences of dealing with a beyond design basis disaster. She stated that what she heard did not give her any confidence that DCPP could manage the consequences. She reviewed some of the comments in the information presented during the evening including references to challenges to human efficiency; incorrect authorization and removal of a blind flange from the ventilation system; personnel error; data not supporting test conclusions; PG&E not pleased with human performance; and corrective actions not taken to make sure doors were closed. She observed there was a report that an error had continued to exist, undiscovered, for 26 years. She commented on the prohibition on reactivity manipulation during shift turnover having been misinterpreted and DCPP not being rigorous in risk awareness; on forms not having been properly completed and procedures not being followed; and on current communication capabilities not being seismically robust. Ms. Cochran remarked that every time she attends a DCISC meeting she hears of these types of issues repeatedly and there are more and more problems which are found by the NRC and by PG&E. She stated she applauds PG&E for reporting the problems but a plant of the size and complexity of DCPP just cannot be safely managed. She stated this has much to do with its aging components including corroded piping which is not addressed until a problem occurs. She wondered how the wrong data which did not support the test conclusions was used and where did it come from? Ms. Cochran stated she has heard issues about fire barrier doors during at least four DCISC public meetings and about the Fire Protection System being deficient. She inquired about what were the cross-cutting trends found at DCPP by the NRC and asked that they be identified. Ms. Cochran concluded her remarks by stating that she is aware PG&E is going through a reconfiguration following the natural gas line explosion at San Bruno and she wondered how PG&E would deal with these recommendations and whether it was possible to do so and she inquired who at the plant was responsible for managing and overseeing the recommended enhancements.

Fire Chief Robert Lewin was recognized following Ms. Cochran's remarks. Chief Lewin stated he read the INPO public report on Fukushima and it was clear that fire engines were used as the final method used to provide a heat sink for the Fukushima reactors. He stated, however, if that method were to be used in the U.S. it needs to be included in the training process. Chief Lewin stated he is aware that DCPP has increased its fire protection resources and the plant now has two relatively new fire engines available but two fire engines may not be sufficient and he estimated that up to six fire engines could be required just to lay enough hose from the cooling water reservoirs, or from the ocean, to the DCPP reactors. He stated that his Department should be training on this already. He commented that it is important that not only the NRC but also the federal, state and local emergency responders should be involved in emergency planning and preparation. He stated that he acts as Operations Area Coordinator for mutual aid for fire resources for San Luis Obispo County and reports through the California Emergency Management Agency (Cal EMA), and resources are moved up and down the state in response to emergencies and when California's resources are exhausted the Federal Emergency Management Agency (FEMA) is called upon and this process needs to be part of DCPP emergency planning. He stated that although he has met with DCPP emergency planners and with Mr. Guldemond he has not been contacted about what the Operations Area requirements would involve and he stated he was unsure when that would take place if it isn't included in the process. Chief Lewin commented the issues involve not only equipment but also qualified personnel resources. Concerning wildfires, he stated his agency uses

punch lists so that teams which are accustomed to working with one another are dispatched to manage an incident and resources are lined up in order of anticipated needs and it is that level of organization which would be required to respond to an emergency at a nuclear plant. He observed that in his opinion DCPP is probably ahead of many other U.S. nuclear power plants because of its location in California and its emphasis on fire protection. Chief Lewin stated that the issue of road access to DCPP needs to be reviewed, as both access roads to the plant are vulnerable to flooding and that alternatives can be explored including possibly creating a third access road over the mountains on the power line roads. Chief Lewin stated he was in agreement with the emphasis on prevention and the emphasis on a quick response and prevention at the incipient stages of a fire or a radiation release incident. He commented steps need to be taken to improve response times of the onsite fire department and to update the technology used to alert the fire department of an incident. Chief Lewin commented there is also a balance between security issues and fire department response which needs to be reviewed to improve response time.

Ms. Patricia Miller was recognized following Chief Lewin's remarks and addressed remarks to the Committee. Ms. Miller stated that there was little discussion on conservation in the presentations and that the use of electricity could perhaps be reduced by a factor of 50%. Ms. Miller encouraged the state to engage in a dialogue about conservation in context of the amount of electricity being produced.

Morning Session, February 9, 2012:

Ms. Jane Swanson, a member of MFP, was recognized during public comment and communication to the Committee. Ms. Swanson commented she has reviewed NRC inspection reports for DCPP from 2010 and 2011 which discuss cross-cutting areas in Human Performance, Problem Identification and Resolution, and in Safety Conscious Work Environment and she reviewed a section from an NRC annual inspection letter regarding an open cross-cutting issue in Problem Identification and Resolution at DCPP wherein the NRC previously identified 14 findings with this aspect in its mid cycle assessment and concluded DCPP's action s had not proven effective. She commented that 14 was a significant number and she inquired how many of each cross-cutting issues there are.

Mr. Bill Dineen was recognized following Ms. Swanson's remarks. Mr. Dineen stated he is a retired biologist who, since 1977, has been concerned about nuclear waste's destructive effect on DNA. He stated it was his opinion that there should be no nuclear waste and DCPP should not have been operated until the nuclear waste problem was solved. He remarked he was arrested in 1977 because of his opposition and now, many years later, nuclear waste is being stored on site at DCPP. He stated that those responsible should be put in jail just as he was in 1977.

Ms. Sherry Lewis, following Mr. Dineen's remarks, was recognized. Ms. Lewis stated that there is no solution without danger to the problems of nuclear waste as it remains lethal for hundreds of thousands of years. She stated she opposes a repository such as Yucca Mountain as it is her belief that it would encourage creating more nuclear waste. She stated that she wants no more waste created because it is too lethal to deal with.

Ms. Jane Swanson, was recognized following PG&E's presentation on seismic risk for U.S. operating

nuclear reactors. Ms. Swanson stated that the reason DCPP was the only plant in the U.S. with a LTSP was because it is the only plant built within 3 ½ miles from an earthquake fault classified by the USGS as major and active. She observed that PG&E and the NRC knew of the existence of the fault and yet allowed DCPP to be constructed anyway. She praised PG&E for work it is doing on its LTSP but commented the reason they need to do the work is because there should not be a plant where DCPP is located in the first place. Ms. Swanson stated there is an apparent assumption that each of the faults in the vicinity of DCPP is a separate fault and she commented there is a possibility some may be connected and might rupture at the same time or a rupture on one fault might trigger another rupture on another fault and therefore the possibility for greater ground motion than is currently predicted exists. Ms. Swanson stated that not all equipment in a nuclear power plant is safety-related but there is the possibility damage to a non safety-related equipment might impact safety-related equipment and affect the plant. Ms. Swanson questioned concerning the LAR to be submitted by PG&E whether the change in criteria PG&E is requesting in the plant's design basis for seismic risk assessment is actually lowering the existing standards for safe shutdown during an earthquake.

Ms. Sherry Lewis was recognized following Ms. Swanson's remarks. Ms. Lewis stated Dr. Budnitz discussed the segments of the Shoreline fault but Ms. Swanson was inquiring about the possibility of connections to the other faults in the area. Dr. Budnitz replied that there has been consideration given to the possibility of connectivity with other faults, including the Los Osos and San Luis Bay Faults, and this remains a concern and has not escaped the attention of the seismic community.

Ms. Sherry Lewis, was recognized following PG&E's presentation on "stranded plant" issues and emergency preparedness. Ms. Lewis inquired whether the DCPP emergency preparedness organizations review information from groups such as the Union of Concerned Scientists or the Nuclear Information Resource Service because those groups, while not necessarily promoting the use of nuclear power, do provide a resource and might be able to provide useful information.

Ms. Jane Swanson, a representative of MFP, was recognized following Ms. Lewis' remarks. Ms. Swanson commented that she was in the Avila Beach area during the March 2011 tsunami warning and the resulting evacuation and she observed that roadway closures were well done. She remarked that she is a former elementary school teacher and a recent convert to the use of social media and observed that while the schools provide training on teacher responsibilities in the event of a radiation release or other emergency, parents would need to be advised concerning the whereabouts of their children and social media could be a significant help in that regard. Ms. Swanson remarked that there are two colleges in the local area and often students who are not from the local area are unaware of the presence of DCPP in the local community and the administrations for those campuses need to review the need for training and drills for their students.

Afternoon Session, February 9, 2012:

Ms. Sherry Lewis was recognized during public comment and communication to the Committee. Ms. Lewis identified herself as a member of MFP and stated that, while it appears to her that the DCISC, the NRC and PG&E are all doing a good job in trying to keep the use of nuclear

power safe, she wished to register a complaint that the issue of whether nuclear power should be used at all is never on the table for discussion.

Ms. Sherry Lewis was recognized following PG&E's presentation on the ten-year concrete inspections for the DCPP containment buildings. Ms. Lewis inquired for how long the concrete was expected to last and concerning the effects of a possible buildup of pressure due to the presence of hydrogen gas inside containment, similar to what occurred at Fukushima which resulted in explosions at that site.

Ms. Liz Apfelberg, a member of the public and of MFP, following Ms. Lewis' remarks, inquired about the effects of the marine environment on DCPP concrete.

Mr. David Taggart, a member of the audience and a former PG&E employee, was recognized following Ms. Apfelberg's remarks. Mr. Taggart stated he thought the presentations by PG&E were excellent and he expressed his belief that the DCISC's role is vital and provides an excellent educational opportunity for the public. He remarked that the Vogtle nuclear plant in the State of Georgia received construction license approval from the NRC on this date for two new nuclear units and he extended accolades to PG&E and to the DCISC for the information presented to the public at these public meetings.

June 19–20, 2012 Public Meeting

Morning Session, June 19, 2012:

Ms. Sherry Lewis identified herself as a member of the Board of the group San Luis Obispo Mothers for Peace and inquired whether a list of acronyms might be provided with the minutes of the Committee's public meetings. Ms. Lewis also remarked that it was her belief that everyone involved in the nuclear power industry including the Nuclear Regulatory Commission (NRC) and PG&E and the DCISC must believe that nuclear power is worth having and therefore opponents of nuclear power who believe that it is simply impossible to produce nuclear power safety are at a disadvantage.

Ms. Sherry Lewis of Mothers for Peace was recognized following Consultant Wardell's report on the May 22-23, 2012 Fact Finding Report. Mr. Lewis inquired whether information on current, local, radiation levels could be made available to the public on a daily basis. Ms. Lewis remarked she has experienced issues with screws being secured in drywall in her home. She cited this as an example of human error which she stated is a good reason why nuclear power is not a good idea as it is just too dangerous. Ms. Lewis also inquired whether the flotsam arriving on the California coast from Japan is checked for radioactivity. Ms. Lewis stated there may be reasons why information might not be made public as happened in Japan to attempt to prevent people from fleeing. She urged that DCPP be shut down.

Ms. Sherry Lewis was recognized following Consultant Linnen's report on the April 3-4, 2012 Fact Finding Report. Ms. Lewis inquired whether the nuts discovered to be loose on the spent fuel dry storage casks, if not discovered, would have worked completely off the studs.

Ms. Sherry Lewis of Mothers for Peace was recognized following PG&E's informational presentation on the status of the DCPP steam generators. In response to Ms. Lewis' inquiry, Dr. Budnitz confirmed that SONGS Unit 1 has been shutdown for several years. Dr. Peterson confirmed Ms. Lewis' understanding that both SONGS units had SG damage but only one had tube failures which was very surprising and represents a very serious operational issue for SONGS.

Afternoon Session, June 19, 2012:

Ms. Linda Seeley was recognized to address remarks to the Committee following PG&E's presentation on the DCPP Operating Plan. Ms. Seeley thanked PG&E and DCPP Site Vice President Mr. Becker on behalf of the group San Luis Obispo Mothers for Peace, of which she is a member, for his hard work at Diablo Canyon and wished him good luck in the future. Ms. Seeley stated she believes that, as part of the wider assessment suggested by Dr. Budnitz, a review should be conducted of the Diablo Cove Fault which she stated is not currently part of the seismic studies of the plant site and which runs directly beneath DCPP's U-1. She commended the testimony before the CPUC of Dr. Doug Hamilton to the Committee attention and for its review and she stated the Diablo Cove Fault is of exceptional interest to the Mothers for Peace and the group requests that it be studied along with other faults. Ms. Seeley then posed some questions for Mr. Becker or the Committee including: how much pounds of highly radioactive spent fuel is stored at DCPP; what are the plans to move irradiated waste into dry cask storage and the timetable for moving the waste; what is the model designation of the casks manufactured by the Holtec Company and what is the length of their guarantee? Ms. Seeley remarked that there is a lack of signs on local roadways regarding their use as possible evacuation routes and that this information should be more widely known as the San Luis Obispo area receives many visitors and tourists who are unaware of the presence of a nuclear power plant which sits on earthquake faults in the local area. She requested that PG&E fund a program to designate the evacuation routes. Ms. Seeley observed that Cal Poly students do not currently receive information during their campus orientation activities concerning the presence of DCPP in the area of the safety and evacuation issues associated with a nuclear power plant and she requested PG&E's cooperation with Mothers for Peace in providing information to Cal Poly's students. Ms. Seeley remarked that children in San Luis Obispo schools are, under current guidelines, recommended to remain at their schools in the event of an alert or an emergency at DCPP because there are not enough buses to evacuate all the children and she remarked it was important that potassium iodide tablets be available to them within twelve hours of exposure to radiation and that teachers need to be trained in its administration. She stated it was her request that PG&E conduct educational programs with the county's schools.

Ms. June von Ruden of Pismo Beach, California was recognized following Ms. Seeley's remarks and addressed the Committee. Ms. von Ruden stated that all the efforts by the Committee seemed to her to be intricate, special, and sincere but in reality the plant and local residents are in the hands of geologic whims of the earth. She stated there have been a number of incidents of air traffic controllers falling asleep on the job and she wondered that sort of measures are taken at DCPP to ensure operators remain awake and alert at their stations.

Ms. Linda Seeley was recognized to address remarks following Mr. Baldwin's presentation on the NRC-identified substantive cross-cutting issue (SCCI) concerning problem evaluation. Ms. Seeley

expressed her thanks to Mr. Baldwin for his clarity, attentiveness and concern for safety. She stated she was happy the SSCI in performance evaluation had been resolved but that she wished DCPP was not such a large, complex and difficult to manage organization but she hoped that it could continue to be successfully managed and she thanked Mr. Baldwin for his efforts in keeping the community safe.

Afternoon Session, June 20, 2012:

Ms. Sherry Lewis was recognized to address remarks to the Committee. Ms. Lewis stated that unexpected things happen such as those the Committee experienced during its public tour that morning and mistakes will always happen. She observed that the problem of having no suitable solution to the problem of the storage of nuclear waste leads her to the conclusion that plans should be put in place to store what waste has already been produced and not to produce more as there is no adequate solution for this lethal waste and it is not obvious that any such solution will ever be found.

Mr. Ken Thompson of the Avila Valley Advisory Council was recognized following Ms. Lewis' remarks. Mr. Thompson stated that in response to comments made by Ms. Linda Seeley yesterday he would like to see the DCISC put information received from PG&E on emergency evacuation and preparedness on the Committee's website or otherwise inform the public on where to obtain that information.

Ms. Linda Seeley was recognized following Mr. Thompson's remarks and stated that following her comments earlier during this public meeting she called the County Office of Emergency Services and was told to contact the San Luis Obispo Visitors Bureau regarding her concerns about signage and information to the public concerning emergency preparedness. However, the response from the Visitors Bureau was that this was not part of the Visitors Bureau's job. She stated she has also made a call to DCPP and is awaiting a further response from the County Office of Emergency Services and she promised to report to the Committee at its next public meeting on the responses she receives.

Mr. David Weisman was recognized following Ms. Seeley's comments and identified himself as a member of the Alliance for Nuclear Responsibility and remarked that miscommunication issues such as those experienced by the Committee members this morning during the tour will always happen. He stated that PG&E was required to provide its response to the NRC's Near Term Task Force Recommendation 9.3 stemming from the accident at Fukushima which would include identifying procedures to notify augmented staff in the event of an emergency at DCPP. He observed that PG&E has submitted a License Amendment Request (LAR) to extend the operating licenses for both units and while funding is tentative for this, PG&E is required to analyze three design basis earthquakes for the site. Mr. Weisman commented the PG&E Long Term Seismic Program (LTSP) identifies the Hosgri Fault as the bounding fault and PG&E claims that new seismic information is only required to be analyzed under the LTSP. Mr. Weisman stated his belief that the NRC is not in concurrence with PG&E on this matter and this is a critical issue. He read from a communication from the NRC Region IV office to PG&E. Mr. Weisman observed that it was his belief the NRC has concluded the LTSP is not adequate for purposes of the NRC's analysis and he

commented that not all the data regarding the Shoreline Fault have been analyzed and he queried when PG&E will complete that analysis of the design basis and double design basis earthquakes. Mr. Weisman stated that the 50.54(f) letter relies heavily on probabilistic risk analysis without acknowledging the internal flaws in the use of that methodology.

Mr. Ron Alsop, Manager of the County's Office of Emergency Services was recognized following Mr. Weisman's remarks. Mr. Alsop stated Ms. Seeley should have received a more informative response when she contacted his office. He observed, regarding a decision to stockpile quantities of potassium iodide (KI) for use following a radiological event, that decision not to stockpile KI was made by the local school districts. He reported KI has been distributed in advance only to emergency responders such as members of the California Highway Patrol (CHP). Mr. Alsop reported that the local school districts also determine their actions and procedures in response to plant events and have determined to evacuate local schools in response to a declaration of an alert by DCPP. He stated that emergency preparedness information has been distributed to local area lodging establishments and is available on a calendar distributed locally by PG&E. Concerning signage on evacuation routes Mr. Alsop remarked that the primary routes are posted, however, there are other routes which might be considered for use depending on an event. The CHP has established traffic control points for evacuation planning purposes, with 26 such points located within Avila Valley. He stated information concerning the emergency alert and response system is available and evacuation times are being reevaluated and updated. He observed that information for an actual event would be dependent on many factors and the Office of Emergency Services has done contingency planning. Mr. Alsop reported that the decision to evacuate is up to each local school district. During the tsunami alert following the March 11, 2011 earthquake in Japan, although the County closed the local beaches, the Port San Luis authorities made a decision not to follow their operating procedures. He stated his Office of Emergency Services provides advice to school districts regarding emergency response and continues to work with the school districts on these issues. Mr. Alsop commented his office would rely on the CHP and has participated in drills which postulate that insufficient resources would be available to allow for all alternate evacuation routes to be considered. Mr. Alsop stated he participated in a critique of the August 2011 earthquake's affect on the nuclear plant located in North Anna, Virginia and reported that while cell phones did not work there was a capacity to sent text messages. He reported that portable radios are available to local government as are different satellite phones serviced by different providers and these resources are being reviewed. The Office of Emergency Services also has a separate channel of communication directly with DCPP and he confirmed he is confident that in the event of an emergency local responders would retain the ability to communicate with DCPP.

Ms. Jane Swanson was recognized by the Chair, following Mr. Alsop's remarks, and addressed remarks to the Committee. Ms. Swanson stated she participated in an emergency planning drill held in Santa Maria, California and was assigned to play a role as a person evacuated to an intake station. She commented the volunteers playing the role of intake personnel did not have any idea of the levels or thresholds of radiation exposure for adults or children which would dictate differing treatment regimes. She observed the computer system which was available to record contact information did not work properly and she was asked to record her contact information on a piece of paper. In her role as an agitated evacuee she was sent to counseling and received information on

deep breathing techniques. Ms. Swanson stated her experienced led her to conclude serious defects and inadequacies exist in emergency preparedness and there are many students in the local area who are totally unprepared and don't realize there is a nuclear plant in the area. Ms. Swanson reported those in charge of the drill did not solicit or were aware of Ms. Swanson's concerns at the time of the drill and she stated she received an email later from the Red Cross inquiring about her experience. Ms. Swanson stated that the people involved in managing drills need to be able to answer the most basic questions which will certainly be asked of them in a real emergency.

Ms. Linda Seeley was recognized following Ms. Swanson's comments and Ms. Seeley posed several questions. She inquired why the decision concerning stockpiling a supply of KI was left to the school districts and whether there were a sufficient number of buses available to evacuate school children. She observed that visitors would not be made aware of emergency planning information on the calendars distributed by PG&E or by the information provided concerning the siren tests in the area and how would people know which channels on radio or television to receive information? She wondered how the presence of sufficient numbers of CHP officers might be assured and she commented that signs could be posted along every possible evacuation route. She observed that there are 28,000 college students in the local area and not to provide them with public education is a disservice as many families might not send their sons and daughters to the area for an education if they realized there was a nuclear plant in the vicinity. Ms. Seeley stated it was her opinion that there was a reason that information about emergency planning for DCPP was not more prominently featured within the local communities.

Ms. Sherry Lewis of Mothers for Peace was recognized following PG&E's presentation on DCPP and PG&E interface with local counties, agencies and organizations with respect to Emergency Planning and Preparedness activities. Ms. Lewis inquired about the function of the UDAC and the hours of training provided to local responders and organizations.

Mr. Larry Kallenberger was recognized following Ms. Lewis remarks. Mr. Kallenberger stated he moved to the local area two years ago from Colorado where he worked for twenty years in state and local government including for the Governor of Colorado as the head of the Department of Local Affairs which included the Division of Emergency Management which was involved with a number of diverse issues including assessment of tailings from uranium mining activities and the transportation of nuclear waste through the state. He observed that in an emergency nothing happens according to the plan and the only persons with any immediate control are the first responders. He stated there was no solution to this situation but it is unwise to accept assurances that things will proceed according to plans which are inorganic in nature. He advised that it was important to not pay too much attention to the details of a plan but rather to put yourself in the position of the people you are trying to help. Dr. Budnitz concurred and observed that General Eisenhower had observed with reference to the World War II invasion of Normandy that "plans are useless but planning is everything."

Ms. Sherry Lewis of Mothers for Peace was recognized following PG&E's presentation on the results of the seventeenth refueling outage for Unit 1 (1R17). Ms. Lewis inquired whether either or both of the workers who received a radiation dose when moving a fuel assembly during the outage was still working and whether the dose resulted in either worker exceeding his or her limit or

required a job change.

22nd Annual Report, Volume 2, Exhibit B9, Minutes of the Diablo Canyon Independent Safety Committee June 19–20, 2012 Public Meeting(Approved at the October 10, 2012 Public Meeting)

Tuesday & Wednesday, June 19–20, 2012, Avila Beach, California

Notice of Meeting

A legal notice of plant tour and public meeting and several display advertisements were published in local newspapers and mailed to the media and those persons on the Committee's service list. A copy of the meeting agenda was also posted on the Committee's website at www.dcisc.org.

I. Call To Order – Roll Call

The June 19, 2012, public meeting of the Diablo Canyon Independent Safety Committee (DCISC) was called to order by Committee Chair, Dr. Peter Lam, at 8:00 a.m. at the Avila Lighthouse Suites Point San Luis Conference Room in Avila Beach, California. Dr. Lam welcomed the members of the public present www.slospan.org, and he reviewed the formation of the Committee by the California Public Utilities Commission (CPUC), its role and responsibilities in reviewing operational safety at Diablo Canyon Power Plant (DCPP). He then introduced and briefly reviewed the professional backgrounds, experience, appointment and term of each member of the Committee.

Present:

Committee Member Robert J. Budnitz

Committee Member Peter Lam

Committee Member Per F. Peterson

Absent:

None

II. Introductions

Dr. Lam introduced the Committee's technical consultants, Mr. David C. Linnen and Mr. R. Ferman Wardell, DCISC Assistant Legal Counsel Robert W. Rathie, and Mr. Pete Bedesem, Technical Assistant to the Site Services Director at DCPP, who also acts as Pacific Gas and Electric Company (PG&E) liaison to the Committee.

III. Public Comments and Communications

The Chair reviewed the procedures and advice from the agenda for the meeting concerning receipt of comments from members of the public wishing to address remarks to the Committee. The Chair advised time would be set aside for members of the public to comment on those matters listed on the agenda at the time the matter was considered by the Committee and he inquired whether there were any members of the public present who wished to address remarks to the Committee on items not appearing on the agenda for the public meeting.

Ms. Sherry Lewis identified herself as a member of the Board of the group San Luis Obispo Mothers for Peace and inquired whether a list of acronyms might be provided with the minutes of the Committee's public meetings. Mr. Rathie replied that a list of acronyms is available on the Committee's website which includes a number of the acronyms used in the minutes, each of which is defined in the minutes upon first use. Drs. Budnitz and Peterson remarked it might be useful to review the use of acronyms in general.

Ms. Lewis remarked that it was her belief that everyone involved in the nuclear power industry including the Nuclear Regulatory Commission (NRC) and PG&E and the DCISC must believe that nuclear power is worth having and therefore opponents of nuclear power who believe that it is simply impossible to produce nuclear power safely are at a disadvantage.

Dr. Lam thanked Ms. Lewis for her comments.

IV. Consent Agenda

The only item on the Consent Agenda was approval of the Minutes of the Committee's February 8–9, 2012, public meeting held in San Luis Obispo.

Items were discussed and reviewed for follow up action, clarification was provided to the Assistant Legal Counsel concerning the accuracy of certain references in the draft Minutes provided in the agenda packet for this meeting and editorial and substantive changes were made to the draft of the February 2012 Minutes.

Minutes of the Committee's public meetings, following their approval at a public meeting, become part of its Annual Reports on Safety of Diablo Canyon Nuclear Power Plant Operations (Annual Report). On a motion by Dr. Budnitz, seconded by Dr. Peterson, the Minutes of the Committee's February 2012 public meeting were approved as amended, subject to inclusion of the changes provided to its Assistant Legal Counsel.

V. Action Items

A. **Update on Financial Matters and Committee Activities**. Mr. Rathie reported that the Committee's twenty-first Annual Report on Safety of DCPP Operations is available on the Committee's website, www.dcisc.org, and the report has been published in bound volumes and as a compact disk. Work has begun on the 22nd Annual Report. He reported the tour of DCPP scheduled for tomorrow has 33 persons registered. A copy of the activity on the DCISC

website during 2012 was distributed and Mr. Rathie reported the site presently averages 500 visitors per month with most visits coming from the United States, Japan, China and India. Mr. Rathie remarked that there was an agenda packet for this public meeting placed in the rear of the meeting room available to members of the public. At the request of the Chair, Consultant Wardell briefly reviewed the correspondence to members, legal counsel, and consultants with the schedule and assignments for preparation and review of the 22nd Annual Report.

B. **Discussion of Issues on Open Items List:**

Items discussed and concerning which action was taken at the meeting included the following:

Item	Re:	Action Taken
CO-10	Mispositioning Errors	Change to 2Q13
HS-1 & HS-5	Employee Concerns & Differing Profession Opinion Program & Safety Culture, Safety Conscious Work Environment	Combine
EP-3	MIDAS Upgrade	Close
SE-41	Spent Fuel Pool Cooling	Close
SF-1	Monitor ISFSI Operations	Change "hod-down" to "hold-down"
SC-5	Seismic Safety Program–Personnel	Review at each fact-finding
SC-6	Seismically Induced System Interactions	Change to 4Q12
SC-7	Shoreline Fault	Defer to after NRC issues its finding & RJB to report at Oct 12PM
SC-8	DCPP Response–NRC Generic Letter	Change to 4Q12 FF
SC-9	Non Safety-related Equipment Seismic Survivability	Schedule for 4Q12 FF
SC-6-8-9	Re NRC March 2012 Generic Letter	RJB to review together 4Q12 FF
LD-6	Operator Requalification	Change to 3Q12 FF
CL-2	SWRCB Nuclear Review Committee	Update at Oct.12 PM
2/11 PM-8	Emergency Drills/Precautionary Evacuation	Close
6/11 PM-7	MIDAS Uninterrupted Power Sources	Close
6/11 PM-8	Fukushima Radiation Surveys	Close
6/11 PM-9	Lighting System Battery Back-up	Close
6/11 PM-10	Catalytic Converter Capacity	Close
6/11 PM-11	Review Adverse Unit Interaction	Close
10/11 PM-1	Limit Switch Positional Setting Change	Close
10/11 PM-3	Subsurface Seismic Measurement	RJB 3Q12 FF

10/11 PM-7	Spent Fuel Pool Instrumentation	Close
10/11 PM-8	Cal Fire Chief Lewin Comments & FF	Close
10/11 PM-10	Battery Capacity post Fukushima	Close
10/11 PM-11	Employee Concerns and Differing Profession Opinion Programs	Close
10/11 PM-12	Safety Culture Monitoring Panel	Close
2/12 PM-1	Providing Documents Prior to PM	Close
2/12 PM-2	Recommendation R11-3 Post Earthquake Response	Close
2/12 PM-3	Recommendation R11-4 Seismic Bracing of Furniture	Close
2/12 PM-5	Meeting with Cal Fire Chief Lewin	Schedule for RJB FF
2/12 PM-6	Review of ACE 50449872	Close
2/12 PM-7	Seismic Equipment Qualification	Close
2/12 PM-8	Role of Social Media in Emergency Planning	Change to PP 4Q12 FF

Consultant Linnen commended Mr. Wardell for putting together the Open Items List which Mr. Linnen observed reflects good organizational skills, attention to detail and understanding of the role of the DCISC.

C. **Nomination and Election of Chair and Vice Chair for the July 1, 2012 – June 30, 2013 Term**. On a motion made by Dr. Budnitz, seconded by Dr. Peterson, with Dr. Lam abstaining, the Committee reelected Dr. Lam to the position of DCISC Chair for a term of office from July 1, 2012 through June 30, 2013. On a motion by Dr. Budnitz, seconded by Dr. Lam, with Dr. Peterson abstaining, the Committee reelected Dr. Peterson to the position of DCISC Vice-Chair for a term of office from July 1, 2012 through June 30, 2013.

A short break followed.

VI. Committee Member Reports and Discussion

A. **Public Outreach, Site Visits and Other Committee Activities**. The Committee members and consultants reviewed and scheduled fact-finding visits and public meetings of the Committee as follows: public meetings of the Committee were confirmed and scheduled for October 10 – 11, 2012 at Embassy Suites San Luis Obispo and February 6–7, June 5–6, and October 9–10, 2013 at Avila Lighthouse Suites, Avila Beach. Fact-finding visits were confirmed and scheduled for 2012 as follows: July 18–19 (PL/DCL); August 7–8 (PFP/RFW); September 5–6 (RJB/DCL); November at a date to be determined (RJB/DCL); and December 5–6 (PFP/RFW). For 2013 fact-finding visits were confirmed and scheduled for January 16–17 (PL/DCL); March 12–13 (RJB/RFW); April 16–17 (PFP/RFW); May 7–8 (PL/DCL); July 1–2 (RJB/RFW); August 13–14 (PFP/DL); September 10–11 (PL/RFW); November 19–20 (RJB/DL); and December 10–11 (PFP/RFW).

B. Documents Provided to the Committee: Mr. Rathie directed the Committee's attention to the

list of documents received since its last public meeting in February 2012. A copy of the list was included with the public agenda packet for this meeting.

VII. Staff-Consultant Reports and Receive, Approve and Authorize Transmittal of Fact Finding Reports To PG&E

The Chair requested Consultant Wardell to report on fact-finding visits to DCPP. Mr. Wardell began his remarks with a report on the March 13 – 14, 2012, fact-finding visit to DCPP with Dr. Lam. Items and topics reviewed with PG&E during that visit included:

- Trends of NRC Non-cited Violations (NCVs) & Allegations - Mr. Wardell reported trends for NCVs had been decreasing in frequency and the DCISC included a recommendation in its last Annual Report that PG&E review the trend in NCVs. PG&E has developed its Regulatory Excellence Plan, performed an apparent cause evaluation (ACE) to look at the root cause of the large numbers of NCVs, and has undertaken the Licensing Basis Verification Project (LBVP) in the effort to reduce the numbers of NCVs. In 2011 there were 9 NCVs, which was a reduction from the 31 and 40 NCVs received by the plant during 2010 and 2009 respectively. Mr. Wardell reported DCPP is now below the average for NCVs received for NRC Region IV plants. Allegations are concerns a member of the public or DCPP personnel can raise in confidence with the NRC. The number of allegations has been reduced substantially and there was only a single allegation raised during 2011.

- Unified Dose Assessment Center (UDAC) Process Interface Weaknesses - DCPP Quality Assurance (QA) audited the UDAC and determined that training deficiencies amongst San Luis Obispo County (County) personnel were responsible for the interface between DCPP and County personnel, as well as their respective roles and responsibilities, not being as clearly defined and understood as they might otherwise be. UDAC functions during an emergency to analyze a radioactive plume, inform the public and make recommendations for protective action. **Mr. Wardell remarked the fact-finding team believes the DCISC should follow up on the corrective action taken to address improved UDAC process interface issues.**

- Outage 1R17 Safety Plan - the Outage Safety Plan is used to provide information on safety requirements for all personnel and to highlight the risk of moving from one operational mode to another or taking equipment out of service for repair. Accident prevention is key although the Outage Safety Plan also addresses mitigation and control of radioactive materials should a release occur. The DCISC fact-finding team found the outage safety plan to be satisfactory and to reflect a defense-in-depth strategy.

- Vital DC Power Cross-tie - the DCISC team received information about the removal of a cross-tie between DCPP Unit-1 (U-1) and Unit-2 (U-2) which was removed prior to the plant commencing operations so as not to tie a vital DC power supply system to a non vital DC system. Other means were provided to supply battery power to the non vital system.

- DCISC Meeting with NRC Resident Inspector - the DCISC representatives met with the Assistant NRC Resident Inspector and discussed the 230kV System capability, which is currently under review by NRC's Office of Nuclear Reactor Regulation in Washington, D.C. and

to review information concerning the plant's seismic design basis, and to receive information concerning the NRC lifting the substantive cross-cutting issue (SCCI) in problem identification and resolution.

- Operational Decision-making (ODM) – Mr. Wardell stated ODM is used for decisions which must be made in days or hours and provides a well documented and proceduralized process. The fact-finding team reviewed ODM determination of a condenser differential pressure increase and for a U-2 control switch and found the ODM documentation and the process to be satisfactory.

- Eagle 21 Replacement Project - Mr. Wardell stated that the plant's original reactor protection system was an analog system which was replaced by the digital Eagle 21 System during refueling outages 1R6 and 2R6. The reactor protection system monitors pressure, temperature and nuclear fluxes to assess whether conditions exist that would require the shutdown of a reactor. Eagle 21 is now to be replaced with a software based system which is new in the industry and requires diversity, that is, two systems which provide backup to each other and are made by different manufacturers, and defense-in depth. The new reactor protection system will be implemented during refueling outages 2R18 and 1R19.

- Containment Fan Cooler Units (CFCU) Anti-rotation Modification Performance - Mr. Wardell reported the DCISC representatives reviewed the anti-rotation devices installed on the CFCUs, which are large fans located in containment that would be used post accident. The CFCUs had been rotating backwards when not engaged and the anti-reverse rotation pawls are making some noise. **The pawls have been refurbished but DCPP remains unsatisfied with their long term reliability and is planning to conduct an independent design review of the devices. Mr. Wardell suggested the DCISC should review the issue when the independent design review is completed.**

- Control Room Ventilation System - during fact-finding the DCISC team often selects a single system for review and this was the system selected for review during this fact-finding. The Control Room Heating, Ventilation, and Air Conditioning (HVAC) System operates in several modes including: normal mode to provide cooling and heating; smoke evacuation mode; 100◊ air recirculation mode; and pressurization mode. The system engineer reported the Control Room HVAC System is currently in yellow, or undesirable, health status with most of the actions to improve the system to be taken during 2012, but with some going out until 2017 for resolution. Mr. Wardell observed the system is operable but its health is less than desirable. In response to Dr. Budnitz' question and comment that the Control Room HVAC System has been the subject of some NCVs, Mr. Wardell replied that action items identified for the system have completion dates in June 2012 and it may be premature to assess their effectiveness.

- Human Performance Line Ownership Action Plan – the DCISC team reviewed performance by the Maintenance organization during refueling outage 2R16 when more human error than desirable was experienced due to maintenance personnel not using human error prevention tools. DCPP instituted an action plan and its effectiveness will be measured by the error rate

per 10,000 hours worked, the performance on the plant misposition index, and cumulatively by both of these indices.

- Emergency Response Organization Drill - the DCISC team began its observation of the drill in the Control Room Simulator facility and moved to the Emergency Operations Center and the Joint Information Center where California State Polytechnic University at San Luis Obispo (Cal Poly) journalism students played the role of the media representatives and asked questions. PG&E performed a post drill critique which Mr. Wardell described as honest and straightforward. He reported the DCISC team found the drill to be well designed and well implemented.

- Dr. Lam Meeting with Station Director Jim Welsch - to review and provide feedback from the fact-finding visit and other items of interest.

Upon a motion by Dr. Peterson, seconded by Dr. Budnitz, the March 13 – 14, 2012 Fact Finding Report was approved and its transmittal to PG&E authorized.

Once the Committee's fact finding reports are approved at a public meeting they are no longer considered to be in draft form and are made available in a binder for inspection by members of the public, together with information concerning the professional backgrounds of the Committee's technical consultants involved with preparation of its fact finding reports. Fact finding reports become part of DCISC's Annual Reports.

The Chair then requested Consultant Wardell to report on the next fact-finding visit to DCPP. Mr. Wardell reported on the May 22 – 23, 2012, fact-finding visit to DCPP with Dr. Peterson. Items and topics reviewed with PG&E during that visit included:

- Update on Upgraded Meteorological Information and Dose Assessment System (MIDAS) – Mr. Wardell observed PG&E and other utilities use this system in an accident situation to input radiological releases and meteorological information to predict the direction and intensity of a radiation release. He reported MIDAS now uses two onsite meteorological towers and receives input from seven offsite towers; thirteen pressurized ion chamber radiation detectors located around the plant site; and three sonic ranging and detection units to determine temperature inversion. MIDAS software has also been upgraded and the system has been successfully used in at least two drills. The DCISC fact-finding team found the upgrade to be completely successful and **Mr. Wardell suggested that MIDAS be removed from the Open Items List and follow-up be conducted during future drills.**

- Electrical Clearance Apparent Cause Evaluation – DCPP had experienced a negative trend on clearances in the area of electrical maintenance. Mr. Wardell stated electrical clearance involves clearing a system of its energy so that personnel may work safely. Causes for the negative trend were found to be procedures not providing significant guidance to create and review electrical clearances and personnel doing clearances not having adequate electrical print reading expertise. Procedures have been upgraded and training has been provided. Subject matter expert review is now required for complex electrical clearances. DCPP utilizes

the "live-dead-live" process to test the live system then to test the dead system and then to recheck the live system. Dr. Budnitz commented this is a process which is used nationwide and is included in electrical codes to protect from electrocution. DCPP has benchmarked with other nuclear power plants and found DCPP to be within industry standards on six areas, but not in the areas of independent verification and post clearance preparation observation by management. Increased attention has been given concerning those two areas. In response to the apparent cause evaluation, DCPP has taken steps to ensure clearances are properly verified with live-dead-live checks and the health of the protective tagging six-month rolling average remains in green status. **Mr. Wardell stated the DCISC team believes PG&E has solved its problems with complex electrical clearances but the Committee should review progress and the status of this area after refueling outage 1R17.**

- Health of DCPP Steam Generators (SGs) – Mr. Wardell deferred his discussion of this item to the informational item to be presented later during this public meeting. Dr. Peterson reported the first two cycles of operation of the new DCPP steam generators found negligible damage from tube wear and he commented that the DCPP steam generators are quite different in their design and construction from those at the San Onofre Nuclear Generating Station (SONGS) in southern California where significant problems with steam generator tubing have occurred.

- Refueling Outage 1R17 Plant Tour – the DCISC team toured the plant during the refueling outage and found the conditions to be clean and the outage work to be professionally performed.

- Outage Coordination Center Meeting – the DCISC fact-finding team observed a meeting at the Outage Coordination Center which receives and considers status reports and any emerging issues from all areas of the plant twice each day during a refueling outage. Mr. Wardell reported the fact-finding team found the meeting to be thorough and efficient. In response to Dr. Budnitz' inquiry, Mr. Wardell reported at the time of their visit DCPP was 31 days into the 1R17 refueling outage.

- Safety Injection System Review – Mr. Wardell commented the Safety Injection System is part of the Emergency Core Cooling System (ECCS) which functions to keep the core cool in the event of a loss of coolant accident (LOCA). The ECCS consists of the high pressure Centrifugal Charging System, the intermediate pressure Safety Injection System, and the low pressure Residual Heat Removal System. The Safety Injection System has 200◊ capacity with pumps and independent electrical power, it is seismically designed and designed to withstand tsunamis, missiles, etc., and any one of its two trains can provide 100◊ of the flow requirements into the Reactor Coolant System. Mr. Wardell reported the system is in green health status with no substantial items to be addressed. The system engineer was knowledgeable and proactive in monitoring the system.

- Office and Workspace Seismic Safety Update – Mr. Wardell commented the DCISC made a recommendation in its last Annual Report that the plant develop and implement a schedule for taking action to securely anchor tall furniture and other items to prevent personnel being

injured in a seismic event. PG&E agreed with the DCISC' recommendation but has taken no action other than to initiate a Notification within the plant's Corrective Action Program (CAP). **Mr. Wardell reported the fact-finding team believes a second recommendation should be considered by the Committee that plant management assign a manager with the authority and inclination to develop an effective plan to address office and workspace seismic safety.**

Dr. Peterson stated the Committee has followed this issue for a number of years and has identified hazards associated with furniture in the control room which could fall and injure operators. Dr. Peterson asked for consideration and a determination by the other members as to whether the issue of improperly or unsecured furniture or fixtures within the plant, or any of its associated work spaces including the Emergency Operations Facility and the Joint Information Center, constitute an operational safety issue as personnel who may be injured by falling items would be unavailable to perform their response tasks in an emergency and other personnel would be diverted from their tasks by the need to provide first aid or medical assistance. Drs. Lam and Budnitz expressed their concurrence with Dr. Peterson's remarks and observations and they agreed that operational safety is impacted by the presence of unsecured or improperly secured heavy objects. Dr. Budnitz stated that the NRC's Post Fukushima Near Term Task Force has required every U.S. nuclear plant to conduct a seismic walkdown evaluation within the next six months with plant personnel and the NRC Resident Inspector, as well as any consultants involved, required to participate. Dr. Budnitz reported he served as one of the NRC's principal consultants in developing guidance on how those walkdowns should be conducted by the industry.

Dr. Peterson reported during the May 22 – 23, 2012, fact-finding visit the DCPP team inspected various tall furniture and cabinets and found furniture which appears to be seismically braced was not adequately or appropriately secured, including a set of cabinets in the control room briefing room which did not appear to have adequate counterweights to prevent them from tipping over in an earthquake. Bookshelves in the Instrument & Control Building were found to be secured only with screws in the drywall which could be pulled from the wall by hand and Dr. Peterson stated that visual inspection alone is not sufficient. **Dr. Peterson stated it is important the DCISC verifies that personnel in the plant have a basis to assess whether or not their work spaces are safe and he requested and received the concurrence of the other members concerning this matter. Dr. Peterson recommended that at least three fact-findings during 2012 include this issue so that it is monitored on a regular basis until the Committee is satisfied the plant has responded and put measures in place which will ensure personnel safety and that this item be placed on the Open Items List and presentations be made at each public meeting until the members are satisfied this matter has been adequately addressed and finally resolved.**

- Fukushima Update – as this topic is to be presented later during this public meeting Mr. Wardell deferred his discussion of this item.

- Open Items List – Mr. Wardell and Dr. Peterson met with Mr. Bedesem to resolve eight items on the Open Items List which were closed out earlier during this public meeting.

- Component Mispositioning Prevention Team – Mr. Wardell reported the team was in the process of developing its charter, however, the mispositioning performance indicator shows

good performance through March 2012.

- Dr. Peterson Meeting with Site Vice President Jim Becker – to discuss items from the fact-finding visit and other items of mutual interest.

Upon a motion by Dr. Budnitz, seconded by Dr. Lam, the May 22 – 23, 2012 Fact Finding Report was approved and its transmittal to PG&E authorized.

Ms. Sherry Lewis of Mothers for Peace was recognized. Mr. Lewis inquired whether information on current, local, radiation levels could be made available to the public on a daily basis. Ms. Lewis remarked she has experienced issues with screws being secured in drywall in her home. She cited this as an example of human error which she stated is a good reason why nuclear power is not a good idea as it is just too dangerous. Ms. Lewis also inquired whether the flotsam arriving on the California coast from Japan is checked for radioactivity. Ms. Lewis stated there may be reasons why information might not be made public as happened in Japan to attempt to prevent people from fleeing. She urged that DCPP be shut down.

Mr. Wardell replied that during any accident continuous information concerning radiation levels is available regularly through the Joint Information Center press releases. **Dr. Peterson observed the DCISC will be reviewing the use of social media and the internet in preparing and responding to emergency situations and perhaps the type of information Ms. Lewis is seeking could be made available more broadly by the use of social media or on the internet, provided that the infrastructure to do so was not damaged.** Dr. Budnitz observed procedures in the United States concerning the release of information during emergencies are much different from what occurred in Japan following the March 11, 2011 earthquake and tsunami and the DCISC has observed the use of those procedures during drills and information is also available through the NRC's website. Dr. Budnitz stated it is his opinion that in the United States information releases are unlikely to be held up in an emergency once there is confidence that the information is accurate. Dr. Lam acknowledged Ms. Lewis' concern and commented it has to do with how individuals react in a major crisis situation. Assistant Legal Counsel Rathie commented that the National Oceanographic and Atmospheric Administration (NOAA) has provided press releases to California landfills concerning items which might be washed on shore from Japan and subsequently delivered to a local landfill. Mr. Wardell commented that he believed that information from the two meteorological towers onsite at DCPP is currently being made available on the internet by PG&E or by the County.

The Chair requested Consultant Linnen to report on the next fact-finding visit to DCPP. Mr. Linnen reported on the April 3 – 4, 2012, fact-finding visit to DCPP with Dr. Budnitz.

- Emergency Preparedness External Interfaces and Support - Mr. Linnen stated this topic would be discussed later during this public meeting. The fact-finding team examined the interface between the Emergency Preparedness organization at DCPP and outside agencies including public education and information, emergency facilities and equipment, support on drills and tests, training and responding to radiological emergencies, distribution of measuring instruments, and maintenance of letters of agreement.

- NRC Substantive Cross-cutting Issue on Problem Evaluation - Mr. Linnen stated this involved a broad issue which spans a number of functions or programs at DCPP including the Corrective Action Program, operability determinations, the relationship of problems to the licensing basis, and whether certain problems needed to be reported to the NRC. The station has been working on these issues since 2009 but had not made sufficient progress. However, during 2012 progress on these issues was made and the NRC closed its substantive cross-cutting issue on problem evaluation at DCPP.

- Human Performance Non-Outage Error Rate - the DCISC team noted that DCPP's human error performance rate during operational conditions had been rising for a number of months. Mr. Linnen reported the plant also identified the trend and has taken action on it by placing increased emphasis on work techniques.

- Implementation of National Fire Protection Association (NFPA) Standard 805 - Mr. Linnen observed implementation of this standard is an extensive and complex activity involving engineering evaluations and calculations and utilizes probabilistic risk assessment of fire risk. Implementation by stations is voluntary and DCPP is considered to be a leader in the effort and the fact-finding team found the station is making adequate progress toward submitting its request to the NRC by June 2013 to incorporate NFPA 805 into DCPP's operating license.

- Probabilistic Risk Assessment (PRA) Group Status - the PRA group has had difficulty in achieving full staffing. The group currently has four full time professionals compared to two professionals one year ago. The goal is eight full time professionals and Mr. Linnen commented, as it is presently constituted, the PRA group is on the small side compared to other plants engaging in similar PRA activities. Major PRA work undertaken includes the NFPA 805 standards, updating both the internal events and the seismic PRA models, and the replacement of the qualitative program for assessing risk for online maintenance with the Safety Monitor fully quantitative program.

- Loose Hold-down Nuts on Spent Fuel Storage Casks - three different hold-down nuts located on studs on spent fuel storage casks at the Independent Spent Fuel Storage Installation (ISFSI) were found to have loosened and to be only hand tight. Each spent fuel cask is held in place by sixteen large studs with threaded nuts. The nuts found to be loose were located on different casks and were in different positions on each cask. The cause for the loose nuts could not be conclusively determined but is believed to be caused by foreign debris having intruded under the surface of the nuts and as that material was crushed a subsequent relaxation of tension occurred. Corrective actions include improving cleanliness during tensioning and reverification of tension prior to personnel departing the storage site and the completion of the tensioning procedure. Dr. Peterson commented the studs are unique to DCPP and at the North Anna Nuclear Generating Station in Virginia during a recent earthquake dry storage casks slid a few inches without damage even thought the North Anna casks are not anchored at all. Dr. Peterson observed a second function of the studs is to prevent uplift of the casks due to overturning moment during an earthquake and he stated his belief that the nuts themselves may not be necessary and a requirement that they be torqued may

therefore be unnecessary. Mr. Linnen stated that the pretensioning process has been eliminated but the nuts will still be tightened as their presence in the storage system is part of the current licensing basis of the ISFSI.

- Operation's "Block and Tackle" Action Plan - Mr. Linnen reported this plan focuses on operator fundamentals for achieving high levels of performance in aspects of plant operations including leak management, emergency planning drill and exercises performance, plant status control, consistency of crew performance, reactivity management and surveillance. He stated none of the areas reviewed by the DCISC team appeared to have unsatisfactory performance and the fact-finding team concluded activities in all areas appeared to be appropriate. **The fact-finding team suggested that future review by the Committee focus on selected aspects of Operation's Block and Tackle Action Plan rather than the entire plan.**

- Plant Health Committee Meeting - this committee consists of director level and some manager level personnel who review the status of plant systems with emphasis on those not performing satisfactorily. Plant programs and the status of action plans addressing plant issues are also reviewed. During the meeting attended by the DCISC representatives radiation monitoring for both units and the plant process computers for both units were reviewed. Radiation monitoring for both DCPP units was rated in yellow health status with major health issues with action plans in place which pertain primarily to equipment reliability. For U-1 the plant process computer was in green, that is healthy, status while for U-2 it was rated as in white health status, trending toward green. A tactical list of the status of important actions being taken for a variety of plant systems was also reviewed by the Plant Health Committee. Mr. Linnen stated the meeting was conducted very efficiently and effectively with good participation by the members. **Dr. Budnitz encouraged any of the other members who have not attended a meeting of the Plant Health Committee recently to do so.**

- Performance Improvement Station Initiative -Mr. Linnen described this as a major station initiative focused on interdisciplinary areas including leadership, human performance, operating experience, corrective actions, self assessments and benchmarking, trending, and observations. He stated the goal is to achieve an ongoing process of continuous improvement through this management process to identify, measure, and compare performance and identify gaps and assign corrective actions. Results are then measured and the process repeats. Mr. Linnen observed that of all the areas identified, the one area which is still open in the Performance Improvement Station Initiative concerns corrective actions. The DCISC team concluded the station has made progress in the areas addressed by the initiative.

- Differing Professional Opinion (DPO) Program - the most recent use of this program was in 2007. **The DCISC team concluded that the Committee need no longer review this program as a separate topic.**

- Meeting with new PG&E Senior Vice President and Chief Nuclear Officer - Dr. Budnitz and Mr. Linnen met with Senior Vice President and Chief Nuclear Officer Edward D. Halpin to discuss the role of the DCISC.

- Dr. Budnitz' Meeting with Site Vice President - Dr. Budnitz met with DCPP Site Vice President Jim Becker to discuss the fact finding and topics of mutual interest.

Upon a motion by Dr. Peterson, seconded by Dr. Budnitz, the April 3 – 4, 20121 Fact Finding Report was approved and its transmittal to PG&E authorized.

Ms. Sherry Lewis was recognized to address a comment to the Committee. Ms. Lewis inquired whether the nuts discovered to be loose on the spent fuel dry storage casks, if not discovered, would have worked completely off the studs. Mr. Linnen replied that without being purposely unscrewed it was very unlikely any of the nuts would have ever become detached from a stud.

Assistant Legal Counsel Rathie reported there are at present no regulatory matters pending before the CPUC. Dr. Peterson's reappointment to the Committee for another three-year term has been finalized by Governor Brown and Dr. Lam's reappointment to the DCISC is now pending before the California Energy Commission (CEC). He reported that on March 5, 2012, Dr. Lam and Mr. Rathie met in Sacramento with the Chair of the CEC, Dr. Robert B. Weisenmiller, his advisor Mr. Kevin Barker, and Senior Nuclear Policy Advisor Barbara Byron to discuss the events in Japan, the NRC's 50.54 letter regarding beyond design basis scenarios, and the report on pressurized thermal shock and seismic interaction submitted to the CEC by the DCISC and issues related to the loss of station power. The group also discussed the Committee's assessment of DCPP priorities and issues concerning safety culture, fuel storage and the potential elimination of once-through cooling. Then on March 14, 2012, Dr. Budnitz and Mr. Rathie met in Sacramento with Deputy Attorney General Susan Durbin, Chief Assistant Attorney General for the Public Rights Section Mark Breckler, and Senior Assistant Attorney General for the Environmental Section Sally Magnani. Topics discussed during their meeting included the nomination process for membership on the DCISC, the role of the Committee and the recommendations in its 21st Annual Report. The group also discussed issues regarding station transformers, seismic studies, the events at Fukushima, and fuel storage and the NRC's Waste Confidence Rule. Dr. Budnitz reported that Mr. Breckler and Ms Magnani expressed an interest in why there isn't a safety committee similar to the DCISC for SONGS and inquired concerning Dr. Budnitz' assessment of the benefits of forming such a committee.

VIII. Correspondence

The Chair directed the members and consultants to the copies of all correspondence sent and received at the office of the Committee's Legal Counsel since the last public meeting of the Committee in February 2012, which were included with the public agenda packet for this meeting.

IX. Information Items Before the Committee

The Chair requested DCPP's Mr. Pete Bedesem to commence the informational presentations requested by the Committee for this public meeting. Mr. Bedesem introduced DCPP Steam Generator Engineer Mr. John Arhar to make that presentation.

Status Report on DCPP Steam Generators (SGs).

Mr. Arhar stated he would be presenting information to the Committee on the replacement SGs after two cycles of operation and would discuss in his presentation the features of the replacement SGs which are a Westinghouse, Model Delta 54, design.

Mr. Arhar reported the tubing for the SGs was fabricated at Sandvik, Sweden; major forgings were fabricated at Japan Steel Works; the SGs were assembled at ENSA, Spain; and were installed at DCPP in 2008 (2R14) and 2009 (1R15). Mr. Arhar remarked there are more than 25 design enhancements from original SG design with the most significant being the use of corrosion resistant Alloy 690 thermally treated (TT) tubing. He displayed a picture of the original and a replacement SG for comparison and remarked there are 18 primary separators in the new SGs as compared to 3 primary separators in the old SGs. Mr. Arhar stated that basically the overall design is similar with 54,000 square feet of surface area in the new SGs, which is somewhat greater than in the old SGs, with smaller diameter tubing having been used in the new SGs.

Mr. Arhar reviewed with the Committee the SG tube inspection requirements. Tube inspection frequency and extent of inspection is governed by NRC Technical Specification (TS) 5.5.9. Eddy current testing (ECT) of 100% of the tubing is required after the first cycle of operation. Following this initial in-service inspection (ISI), each SG is inspected every third refueling outage, if that inspection frequency is supported by an operational assessment. Three refueling outages is the maximum inspection frequency for 690TT tubing, which Mr. Arhar reported is greater than the two refueling outage inspection frequency for 600TT tubing and the single refueling outage inspection frequency for 600MA tubing. In response to Consultant Linnen's inquiry, Mr. Arhar reported that 46 nuclear reactor units in the U.S. now use Alloy 690TT tubing.

Mr. Arhar reviewed the results of the first ISI tube inspections during refueling outages 2R15 and 1R16 in 2009 and 2010, respectively, which were conducted on 100% of the tubes by ECT inspections with bobbin coil, and with excellent results achieved. For U-2, only a single shallow wear indication from a tube support plate (5% through-wall (TW)) was found, which was left in service, and no tube plugging was done. For U-1, a single shallow wear indication from an antivibration bar (5% TW), was found which was left in service, and no tube plugging was done. In response to Dr. Lam's question, Mr. Arhar replied there are 4,444 tubes in each SG and 17,776 in all four SGs. Mr. Arhar summarized the ISI tube inspections as achieving excellent results and performance. Dr. Budnitz observed that steam generators are a potential route for direct communication between radioactivity in the core and the outside environment and represent an important fission barrier which must be maintained. Mr. Arhar confirmed Dr. Budnitz observation and confirmed that 50% of the DCPP Reactor Coolant System pressure boundary is within the SG tubing.

Mr. Arhar reported that DCPP operational assessment supports operation for next three inspections cycles without additional ECT inspections. The next TS-required ECT inspections are scheduled during refueling outages 2R18 and 1R19 in 2014 and 2015 respectively.

Mr. Arhar reviewed the maintenance activities which DCPP continues to perform on the SGs secondary side including sludge lancing and visual examinations of the top of the tubesheets which are performed during each refueling outage since replacement (2R15/1R16 and 2R16/1R17). Sludge

lancing has removed 2 to 3 lbs per SG compared to the 50 lbs typically removed from each SG during sludge lancing on the old SGs. Lancing also removed some small foreign material that may have entered SGs from manufacturing and from the upstream feedwater system through feedring spray nozzles. Mr. Arhar reported the new SGs offer a better blowdown design with integrated blowdown piping which also contributes to moving more sludge. DCPP also opted to add a sludge collector as a design feature in its SGs. In response to Mr. Linnen's inquiry, Mr. Arhar replied during a hot or cold shutdown the SGs are always maintained in wet lay-up condition and the only time the SGs are drained is when sludge lancing is performed which is done on a single SG at a time.

Mr. Arhar reported inspections have shown very good conditions at top of the tubesheet regions. The upper internals baseline visual examinations, recommended by Westinghouse, were performed in refueling outages 2R16/1R17 on steam drum components including feedring, moisture separators, and sludge collectors with no abnormal in-service conditions noted.

Mr. Arhar reviewed some information concerning the replacement SGs and non Westinghouse design wear issues which he previously presented to the DCISC at a public meeting. He again reported that 46 domestic nuclear units replaced their SGs with Alloy 690TT tubing by end of 2011. He remarked that SG replacement with Alloy 690TT tubing has guaranteed corrosion-free tubing but it has not guaranteed wear-free tubing. Tube wear from support structures and loose parts can limit operational assessment run times. Because of tube wear only 25 units are performing tube inspections at maximum allowed three refueling outage frequency. Tube support wear issues are usually discovered in the first ISI and wear rates are trended in subsequent inspections. Historically, for recirculating SGs the most significant wear has been from antivibration bar (AVB) structures, with some tube support plate (TSP) wear.

However, Mr. Arhar reported that for the San Onofre Nuclear Generating Station (SONGS) Unit-3 SGs, the Mitsubishi designed replacement SGs have experienced significant U-bend tube to tube wear due to fluid elastic instability caused by high steam velocity, high void fraction (low damping), and less than expected AVB-to-tube contact forces. In response to questions from the Committee, Mr. Arhar stated it was his understanding that SONGS' problems may be due to a design error resulting in a faulty hydraulic model incorrectly predicting steam flows and velocities in the U-bends. The replacement SGs of Westinghouse design have an excellent record with all 15 units with Westinghouse-designed SG replacements (including DCPP U-1 and U-2) at three refueling outage inspection frequencies based on excellent tube inspection results. Insignificant numbers of tubes have been found with AVB wear and TSP wear and no tube-to-tube wear. Dr. Budnitz asked whether the same error as may have occurred at SONGS could have occurred for DCPP but at DCPP the SG design may not have been susceptible to that error and whether DCPP would consider reviewing that possibility. Dr. Peterson replied that high cycle damage such as what is occurring at SONGS with tube-to-tube contact is self-revealing very quickly and would have revealed itself during the first cycle of DCPP's operation of the new SGs. Dr. Peterson stated it is extremely rare for a plant to experience problems such as SONGS is dealing with and, to Dr. Peterson's knowledge, this has not occurred at any other plant. Mr. Arhar agreed with Dr. Peterson and reported that Westinghouse uses the Ethos hydraulic model which was not the model used by Mitsubishi.

Mr. Arhar displayed a photo of the AVB support structure and described and discussed the design

and composition of the tube bundles and the AVB assemblies. He described the AVB design as essentially a floating system which is not tied to anything in the SG structure to prevent the AVBs from moving up during a steam line break or a seismic event. U-bend tubes are supported by rectangular shaped stainless steel AVBs. AVB assemblies stiffen the U-bend region of the tube bundle and facilitate proper tube spacing and tube alignment while mitigating tube vibration. Each AVB end cap (Alloy 690TT) is welded to peripheral retaining rings (Alloy 690TT). U-shaped retainer bars (chrome plated Alloy 690TT) are installed between several U-tubes and welded to a retaining ring. These retainer bars provide support to the AVB assemblies during seismic and postulated steam line break loading conditions.

Dr. Peterson stated that to have vibration as occurred at SONGS the AVB must not have adequate contact forces so that they are not damping in the middle of the span between other AVBs or the AVBs are spaced too far apart. In either case the resonant frequency for the tubes at SONGS is clearly lower than it should be to resist the flow induced vibration that exists at full power. Dr. Peterson remarked SONGS may be able to restart power generation operations but may be reduced to running at derated power levels at which flow induced vibration would decrease and could be measured by instrumentation.

Mr. Arhar confirmed, in response to Dr. Budnitz' question, that DCPP will not perform ECT during its next refueling outages. In response to Consultant Wardell's questions, Mr. Arhar reported SONGS had a single leaking tube in service in its Unit-3 and, following pressure testing, eight tubes subsequently failed in that unit. SONGS Unit-2 had some wear problems but no failures. SONGS Unit 3 had eight tubes fail performance criteria which Mr. Arhar described as unprecedented and more tube failures than would be expected during the life of a plant. In response to Mr. Wardell's comment, Mr. Arhar confirmed SONGS has 9,000 tubes per SG.

Ms. Sherry Lewis of Mothers for Peace was recognized. In response to Ms. Lewis' inquiry, Dr. Budnitz confirmed that SONGS Unit 1 has been shutdown for several years. Dr. Peterson confirmed Ms. Lewis' understanding that both SONGS operating units had SG tube damage but only one had tube failures, and that such failures are very surprising and represent a very serious operational issue for SONGS.

X. Adjourn Morning Meeting

The Chair adjourned the morning meeting of the DCISC at 11:40 a.m.

XI. Reconvene For Afternoon Meeting

Dr. Lam convened the afternoon meeting of the DCISC at 1:35 p.m. He reviewed the agenda and the topics to be presented by PG&E at the request of the Committee.

XII. Committee Member Comments

There were no comments at this time from the Committee members. Mr. Rathie remarked for the benefit of the public that the Committee website includes a video of the replacement of the steam generators which is available to any interested member of the public.

XIII. Public Comments and Communications

Dr. Lam invited any member of the public present to address comments to the Committee on topics not on the agenda. There was no response to his invitation

XIV Information Items Before the Committee (Cont'd.)

The Chair requested Mr. Cary Harbor, Special Assistant to the DCPP Site Vice President, to continue the informational presentations requested by the Committee for this public meeting.

Update on Plant Events, Operational Status and Performance Indicators.

Mr. Harbor stated in his presentation he would focus on operational performance, equipment performance, and program performance since the last public meeting of the DCISC in February 2012. Mr. Harbor first reviewed reportable injuries at DCPP relative to those at other nuclear power plants and reported there was one injury during the recent refueling outage which involved an operator who injured his foot while working in the condensate pump area. The area where the injury occurred has now been marked. Dr. Peterson remarked that the statistics for injuries in the nuclear industry represent about one-tenth of those experienced by office workers. Mr. Harbor confirmed Dr. Peterson's observation and stated that DCPP believes that good performance concerning recordable and other injuries translates to a better focus on nuclear safety issues as well and DCPP will continue to monitor injuries at a low level and to continue to use observations in the plant as a tool to improve. In response to Dr. Lam's inquiry, Mr. Harbor confirmed the data reported to the DCISC and to the industry includes injuries to both DCPP employees and contractor personnel. In response to Mr. Wardell's observation, Mr. Harbor confirmed DCPP ramped down its goal substantially for reportable injuries between December 2010 and January 2011 and has maintained a challenging goal going forward to continue to meet first quartile industry performance and, as those metrics change, DCPP will adjust its goal accordingly.

Mr. Harbor reported concerning the Reactivity Management Program that cumulative performance for U-1 is currently below the goal set which has been adjusted to reflect top quartile industry performance. U-1 recently completed a refueling outage and DCPP expects increased performance. He stated human performance and equipment issues effectively drive and affect the reactivity management metric. Issues experienced with U-1 power oscillation should now be resolved by replacement of a current-to-processor converter on the main feedwater system. He also reported that rod worth measurement technology has improved.

Recent generation history for U-1 was reviewed and includes a manual reduction in April 2012 to 63% power due to high seas and increased main condenser pressure. U-1 entered its seventeenth refueling outage (1R17) on April 22 and completed that outage on June 17, 2012. For U-2, recent generation history includes a manual reduction to 93% power on March 30, 2012, to repair two main steam valves and a manual reduction to 18% power on April 23, 2012, due to an overload of salp, a jellyfish like sea creature, on the traveling screens at the Intake which resulted in a 2.8-day forced outage for U-2.

Mr. Harbor reviewed all and described some of the areas of improving and declining performance at DCPP as follows.

- Areas of Improved Performance:
  - ALARA - Collective Radiation Exposure Non Outage.
  - Boric Acid Leaks.
  - Engineering Human Error Rate.
  - Cause Analysis - due to improved quality in identifying issues and trends.
  - Capital Project Milestone Bar Chart - due to achievement of milestones.
  - Secondary System Health – U-1.
  - Chemistry Effectiveness Index.
- Areas of Declining Performance:
  - Management Observations - due to issues with the Operations Department.
  - Station Human Performance Clock Resets - due to two events in 2Q12 including high dose rates received by workers in the spent fuel pool area and alignment of steam traps to the AFW System.
  - Operations Human Error Rate - an adverse trend review has been initiated.
  - CAP Index for Learning Services - indicator remains green for the station and actions to improve performance related to Learning Services are coming due soon.
  - Management Observations of Training - decline was anticipated due to 1R17.
  - Secondary System Health - U-2 - due to feedwater iron transport.
  - Chemistry Effectiveness Index - U-2 - also due to feedwater iron transport.
  - Personnel Contamination Incidents - due to the number of activities during 1R17 in radiologically controlled areas during which there were 19 personnel contamination incidents.
  - Configuration Management - due to issues with drawings and temporary modifications.
  - Station Rework - due to post 1R17 changes; DCPP working with its STARS partners to improve performance.
  - Foreign Material Exclusion Program Health - precursors were seen during 1R17 and a post outage evaluation will be performed.
  - Preventive Maintenance Performance Deferrals - due to four preventive maintenance activities deferred due to unavailability of parts.

Mr. Harbor reviewed four issues on the QV Top Quality Performance Issues List including: ineffective efforts to ensure problems remain in the Corrective Action Program, for which an evaluation is to be performed; design quality associated with larger modifications and field changes;

and outage preparation challenges concerning the number of managed exceptions in the outage performance evaluation. Mr. Harbor then reviewed the Operation Focus Index and observed the entire nuclear power industry tracks this metric regarding equipment. DCPP goals are set in accordance with the top quartile and all indications for June 2012 are green and will continue to be monitored.

Concerning plant misposition component performance, Mr. Harbor reported there has been a decrease in performance. Targeted evaluations and corrective actions will be taken to evaluate Operations Department performance and, in response to Mr. Wardell's inquiry, Mr. Harbor stated that component misposition may occur during an outage but performance on this metric should not drop significantly due to a refueling outage. The human performance error rate for the station is yellow for the 12-month average for two months previous, and red for both the 2-month average for the current month and the 12-month average for one month previous. Mr. Harbor reported this metric includes and is affected by mispositions. System health, that is the age of red and yellow systems, is currently green with some outstanding items and issues with undervoltage in connection with the 4kV System. In response to Mr. Wardell's inquiry, Mr. Harbor stated one of the plant's communications systems is currently in red status and will be reviewed by the Plant Health Committee which did not meet during refueling outage 1R17. He stated a system remains in red status until a plan for its improvement is approved by the Plant Health Committee.

The equipment reliability index for DCPP is another metric used by the entire nuclear power industry and it is presently at 95 for both DCPP units representing performance in the top decile of the industry. Mr. Harbor remarked that DCPP has replaced degraded main turbine 'skinner' valves as a test case which, if proven, will be of benefit to the entire industry. There have been two critical equipment clock resets, one was due to replacement of the skinner valves and the other as a result of a blown fuse on the Eagle 21 process protection system which is being evaluated.

Maintenance Rule performance, which is measured industry-wide, has identified no deficiencies which have become long-standing deficiencies as none are greater than three years. The Corrective Action Program index for the station is currently green and Mr. Harbor stated DCPP is focusing on its Learning Services organization and will monitor performance on a monthly basis.

Mr. Harbor reviewed three issues concerning engineering program health as follows: the Air Operated Valves Program which is currently in yellow overall health status due to the personnel cornerstone not being met because of issues related to the program owner's qualifications which were addressed by the program owner's participation in refueling outage 1R17; Appendix R Fire Protection is currently in red overall health status and is undergoing reverification and licensing basis evaluation for fire barriers and a fire watch is currently in place during this process; the Performance Monitoring Equipment Program is currently in yellow overall health status, however, all plant equipment items are now appropriately calibrated. In response to Consultant Wardell's inquiry, Mr. Harbor confirmed the Plant Health Committee reviews the Engineering program health metric and that metric also receives the same focus from management and the review process by the Plant Health Committee allows the program owners to advocate for their system. In response to Mr. Wardell's observation that about half of the overall health determinations are other than green, Mr. Harbor replied that white status is considered acceptable while green is considered to

exceed the standards. Mr. Harbor replied and stated he would be more worried if all the metrics indicated green status as gaps to performance always exist. In response to Dr. Budnitz' observation, Mr. Harbor confirmed the Fire Protection System, while it is in red health status, remains fully functional and is operational. Dr. Budnitz observed that what is most important is that when something happens a plan is put together to address the problem and then the plan is implemented. He commented that the trends appear to be good. Dr. Lam stated that Mr. Harbor's presentation, without commenting on the merits, demonstrated PG&E is investing substantial resources to reactor safety at DCPP.

Dr. Lam introduced Diablo Canyon Site Vice President Mr. Jim Becker to make the next presentation of the Committee and remarked that Mr. Becker is a senior member of the DCPP management team with responsibility for the 1,400 persons working on site at DCPP. Mr. Becker stated that he would be in his position only for about one more month and this would be the last time he would be reporting to the Committee and accordingly he would provide some concluding remarks after his informational presentation.

Report on the DCPP Operating Plan.

Mr. Becker described the Operating Plan as a multi-year plan with the purpose of ensuring DCPP has alignment across the entire station in terms of results from the standpoints of safety, reliability, and financial goals in its effort to be an industry-leading plant. He stated that each annual Operating Plan includes between four and eight initiatives which are selected either because vulnerabilities have been identified or because of the changing nature of the industry. In the 2012 Operating Plan Mr. Becker reported there are five such initiatives. Before the end of each year an assessment is made of the plant's performance against the goals of the Operating Plan and the operating plan for the coming year is developed.

Mr. Becker reviewed the results of DCPP's performance against the Operating Plan for 2011 and he stated 2011 was a successful year overall as the plant operated well; had no lost time injuries, experienced only minimal recordable injuries, had the lowest radiation exposure in DCPP history, and improved equipment reliability. He remarked the only goal not met from the 2011 Operating Plan was outage duration.

Mr. Becker reviewed the five initiatives from the 2012 Operating Plan. He reported the Operating Plan actually looks ahead over a five-year period as it includes an element of future forecast. The Operating Plan always includes a statement by PG&E's chief nuclear officer reflective of PG&E's commitment, as expressed by an officer at the highest levels of the company, to safety at the plant and Mr. Becker stated that statement for the 2012 Operating Plan includes a reflection on the events at Fukushima and their meaning for the nuclear power industry. He stated the performance measures from the 2012 Operating Plan are organized into categories of safety, reliability, cost, organizational effectiveness, and environmental leadership with performance metrics established in each category and with a goal assigned to each consistent with DCPP performing in the top quartile of the U.S. nuclear industry. In some cases, rather than assigning a goal in the top quartile, a glide path for plant performance is established which if met will bring the plant performance within the top quartile within a reasonable time. Mr. Becker stated the Operating Plan's

performance measures are used as part of the basis of the communication strategy at the plant and also in employee performance evaluations.

In response to Mr. Wardell's inquiry concerning which measures from the Operating Plan are focused on nuclear safety Mr. Becker identified safety and collective radiation exposure, reliability and forced loss rate and the equipment reliability operational focus indexes and industrial safety as measures which focus on nuclear safety. Mr. Becker remarked that PG&E is making a greater capital investment in DCPP than most other plants in the industry. He observed that the Institute of Nuclear Power Operations (INPO) Composite Index provides a broad index used to measure safety and reliability across the industry while the station clock reset rate is a measure of human performance which is related to good nuclear safety practices. Finally he identified the Corrective Action Program index as a core program required to safely run nuclear power plant. In response to Consultant Linnen's question concerning DCPP's excellent performance during 2011 on the Collective Radiation Exposure index, Mr. Becker replied the source term on both units was lower, although U-2 was refueled during 2011 and 80-90‰ of exposure over any year occurs during a refueling outage. He observed DCPP has improved its chemistry controls and the Collective Radiation Exposure index has benefited from the replacement of the steam generators and the reactor vessel heads. Mr. Becker remarked that DCPP has recently completed a U-1 refueling outage and experienced similar results to those in the 2011 refueling outage for U-2.

Mr. Becker reviewed the five station initiatives under the 2012 Operating Plan and reported that each initiative has a detailed action plan and an owner or sponsor from the director level management team at the plant associated with the initiative:

- Employee Industrial Safety – the focus for 2012 is to improve compliance with all safety requirements and to implement a focus on grass-roots safety efforts. In response to Dr. Peterson's remark concerning personnel seismic safety with respect to bracing of tall furniture, and DCPP's apparent lack of progress in this area, Mr. Becker stated the plant management team is aware of the issue and he agreed that attention to this issue was necessary and observed the issue regarding personnel seismic safety would also be addressed through the Operating Plan's modernization initiative.

- Event-Free Operations – the focus for 2012 is to assess how well risk is analyzed at the plant on a daily basis and to further improve human performance, as well as to learn and improve from the experiences at Fukushima. Mr. Becker described this as a fairly broad initiative focused on avoiding events in operating the plant.

- Performance Improvement – the focus for 2012 is on DCPP learning programs including the Corrective Action Program, self assessments, benchmarking, the use of operating experience, and the use of training programs. Mr. Becker remarked this has been an initiative in previous Operating Plans over the past few years and has led to formation of the Corrective Action Review Board and more rigor in the manner in which DCPP performs its self assessments. He described this initiative as also being fairly broad and one on which the plant has made good progress and, accordingly, performance improvement may be removed as an initiative for the 2013 Operating Plan.

- Regulatory Excellence – has been a focus for past Operating Plans and is closely tied to performance improvement. Mr. Becker stated DCPP has made progress toward regulatory excellence as evidenced by the NRC's recent removal of the substantive cross-cutting issue in problem identification and the decrease in the numbers of violations received by the station.

- Modernization – the 2012 focus is on improving and modernizing the conditions at the plant site overall, not just in the power block but in all areas where employees work. Mr. Becker observed DCPP is located in a marine environment and considerable upkeep is required. He described this as a multi-year effort for upgrading DCPP facilities and to do away with the temporary facilities, many of which have been onsite for some time, and replace them with facilities with a higher level of safety and environmental friendliness.

Dr. Budnitz remarked each initiative is admirable individually and collectively but he stated that no list of initiatives could possibly adequately account for a potential accident and he inquired whether DCPP might consider a broader reevaluation of other more fundamental aspects which create overall safety at a nuclear power plant, including such things as the plant site and he acknowledged that the Licensing Basis Verification Project was such an initiative but, in and of itself, it may not be sufficient. Mr. Becker agreed that some issues which could affect a plant would not necessarily show up ahead of time and he commented the DCPP Long Term Seismic Program was an effort, in alignment with what Dr. Budnitz was suggesting, and Mr. Becker remarked the entire nuclear industry is engaged in reviewing and assessing the lessons learned and to be learned from Fukushima. Dr. Budnitz agreed and stated DCPP's effort to implement the NFPA 805 standards was also a broad and admirable effort. Dr. Lam agreed with Dr. Budnitz' and Mr. Becker's comments and Dr. Lam remarked that it was important not to become complacent or rely on differences between Fukushima's situation and the features and characteristics of that plant, or of boiling water reactors in general, and experience or features of other plants. In response to Dr. Budnitz' observation, Mr. Becker agreed that maintaining high employee morale and effectiveness was a key element in achieving the goals of the DCPP Operating Plans.

In closing his remarks to the Committee, Mr. Becker stated he has made presentations to the DCISC for almost twenty years and has enjoyed working with all the members of the DCISC over that time. He stated it is his belief that the Committee has been well-focused on safety and its members have been very professional and knowledgeable and he has appreciated their commitment to safety. The Chairman replied and expressed the Committee's appreciation and thanks for Mr. Becker's cooperation, his commitment to nuclear safety, and the many valuable exchanges over the years which have taken place between Mr. Becker and the DCISC members and consultants. As a gesture of appreciation, the Chair presented two signed notes of appreciation and commendation and directed that their delivery be entered into the records of the Committee, along with a coffee mug as a further token of the Committee's appreciation and respect.

Ms. Linda Seeley was recognized to address remarks to the Committee. Ms. Seeley thanked Mr. Becker on behalf of the group San Luis Obispo Mothers for Peace, of which she is a member, for his hard work at Diablo Canyon and wished him good luck in the future. Ms. Seeley stated she believes that, as part of the wider assessment suggested by Dr. Budnitz, a review should be conducted of

the Diablo Cove Fault which she stated is not currently part of the seismic studies of the plant site and which runs directly beneath DCPP's U-1. She commended the testimony before the CPUC of Dr. Doug Hamilton to the Committee attention and for its review and she stated the Diablo Cove Fault is of exceptional interest to the Mothers for Peace and the group requests that it be studied along with other faults. Ms. Seeley then posed some questions for Mr. Becker or the Committee including: how many pounds of highly radioactive spent fuel is stored at DCPP; what are the plans to move irradiated waste into dry cask storage and the timetable for moving the waste; what is the model designation of the casks manufactured by the Holtec Company and what is the length of their guarantee? Ms. Seeley remarked that there is a lack of signs on local roadways regarding their use as possible evacuation routes and that this information should be more widely known as the San Luis Obispo area receives many visitors and tourists who are unaware of the presence of a nuclear power plant which sits on earthquake faults in the local area. She requested that PG&E fund a program to designate the evacuation routes. Ms. Seeley observed that Cal Poly students do not currently receive information during their campus orientation activities concerning the presence of DCPP in the area of the safety and evacuation issues associated with a nuclear power plant and she requested PG&E's cooperation with Mothers for Peace in providing information to Cal Poly's students. Ms. Seeley remarked that children in San Luis Obispo schools are, under current guidelines, recommended to remain at their schools in the event of an alert or an emergency at DCPP because there are not enough buses to evacuate all the children and she remarked it was important that potassium iodide tablets be available to them within twelve hours of exposure to radiation and that teachers need to be trained in its administration. She stated it was her request that PG&E conduct educational programs with the county's schools.

Ms. June von Ruden of Pismo Beach, California was recognized to address remarks to the Committee. Ms. von Ruden stated that all the efforts by the Committee seemed to her to be intricate, special, and sincere but in reality the plant and local residents are in the hands of geologic whims of the earth. She stated there have been a number of incidents of air traffic controllers falling asleep on the job and she wondered what sort of measures are taken at DCPP to ensure operators remain awake and alert at their stations.

Dr. Lam thanked Ms. Seeley and Ms. Von Ruden for their remarks.

Dr. Budnitz stated he has studied many reports of seismicity in the local area by the U.S. Geological Survey, the State of California, and PG&E and has not seen a report that claims the Diablo Cove Fault is active and of concern. He offered to review any information provided by Ms. Seeley concerning this matter. Dr. Budnitz observed PG&E had completed its evaluation of all seismicity around the DCPP site and this evaluation is now under review by the NRC. **Dr. Budnitz stated the Committee or PG&E would provide responses to Ms. Seeley's questions** Dr. Lam remarked that he served as an Administrative Law Judge on the Atomic Safety Licensing Board (ASLB) which approved dry cask storage at DCPP as well as in another context and part of the approval process was to ensure the casks used are as safe as possible. Dr. Lam stated he wrote the consensus opinion of the ASLB approving the seismic safety of the dry casks on the basis that they are sufficiently robust that they would not be expected to fall in an earthquake; and if they were to fall they have been demonstrated not to break; and if the casks were to fall and be buried by the

earthquake, the cooling of the spent fuel inside would not be in jeopardy; and if they were to break there is not sufficient energy to move the radiation from the spent fuel material beyond the site boundary so the site boundary dose would still be within regulatory limits. **Dr. Peterson stated that the Committee would need to review with PG&E a possible response to issues regarding evacuation route signs and the issue of dispensing potassium iodide by local schools.**

In response to Ms. von Ruden's inquiry about operators falling asleep on the job, Dr. Budnitz stated there was an incident about ten years ago when an employee did fall asleep at another nuclear power plant but this has not occurred since. He stated the approach to manning the control rooms at nuclear power plants is such that the effectiveness of the operators' alertness is assured. The NRC has now put into place a Fatigue Management Rule which limits the amount of time employees can work in any month to assure they are not inadvertently overburdened by long hours and DCPP is complying with the NRC Rule. The Committee has reviewed the issue and it is convinced that an operator falling sleeping while on duty is not a concern at DCPP. Drs. Budnitz and Lam, however, agreed there are no 100‰ guarantees in the world and Dr. Lam stated he believed Ms. von Ruden's concern was of a serious nature.

Mr. Pete Bedesem then introduced the Manager of Regulatory Services at DCPP, Mr. Tom Baldwin, and requested Mr. Baldwin to make the next informational presentation to the Committee.

Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators.

Mr. Baldwin stated he would be providing an overview of station performance since the last meeting of the DCISC in February 2012. He reported during that time all NRC performance indicators continued to meet the NRC performance expectations and are, accordingly, in green status. Four violations were received since the last DCISC meeting, all of which were determined to be of very low safety significance. The substantive cross-cutting issue in problem evaluation was closed by the NRC in its annual assessment letter issued during this period.

> The current status of the NRC Performance Indicators was reviewed, all of which are in green status for NRC performance measures. Mr. Baldwin reviewed the breakdown of the performance indicators in accordance with DCPP criteria which establishes a lower threshold, to preclude getting to a point where the NRC criteria would not be met. Mr. Baldwin stated that three DCPP station performance indicators, with lower thresholds than the NRC, are currently in yellow, representing an unacceptable performance, status per DCPP's performance criteria. These include:

- Safety System Functional Failure with four events for U-1 and one event for U-2. A root cause evaluation was performed for work planning and evaluation of the risk of losing a safety function.
- Emergency Response Organization not meeting station standards, due largely to issues with training performance.
- Occupational Exposure Control Effectiveness with two events. One occurred when a locked

gate in containment was found to be open due to its frame having warped. The gate was subsequently chained and padlocked. The other event occurred during refueling outage 1R17 when two operators of the overhead crane moving a spent fuel assembly near the spent fuel pool caused the assembly to come too close to the edge of the pool wall and the transfer canal, which had been drained of water at the time and therefore provided less shielding than it would have had water been present. Radiation alarms sounded and the operators immediately moved the fuel assembly away from the area. Robust and rigid barriers have now been installed to prevent the crane from again moving into that area. The maximum dose received by either crane operator was 11 millirem.

Mr. Baldwin reviewed and discussed with the Committee the two Licensee Event Reports (LERs) which PG&E, as the DCPP licensee, submitted to the NRC for the period January through June 2012.

- LER 1-2012-001 was voluntarily issued on March 9, 2012, to report three loose anchor stud nuts on spent fuel storage casks due to inadequate cleanliness prior to final tensioning. Mr. Baldwin observed DCPP is unique in that its spent fuel casks are bolted to their pads. One nut out of 16 was found to be loose and was retensioned and torqued. Two other nuts were subsequently found to be loose due to sand getting between the nut and the flange causing release of tension. Cleanliness standards have been established and analysis has shown the casks would not tip even without nuts installed. Dr. Peterson remarked that the nuts increase loading but the studs themselves are sufficient to carry the cask's shear load in a seismic event and the nuts only function to prevent the cask from turning over and, in Dr. Peterson's opinion, the nuts are not necessary for safety. Mr. Baldwin agreed but observed the nuts are part of the ISFSI licensing requirements.

- LER 1-2012-002 was issued on May 7, 2012 to report failure to initiate a plant shutdown when a vendor reported that a level transmitter installed on plant equipment had a flaw. DCPP identified where the transmitters were installed within the plant. One installation had two transmitters and was a concern. Setpoint correction remedied the flaw, however, Technical Specification (TS) 3.03 was entered which limits time to commence shutdown to one hour. DCPP adjusted the setpoint on all the transmitters within 30 minutes but it took more than one hour to complete the paperwork to properly close the operability determination. Mr. Baldwin reported DCPP followed the NRC's guidance to not commence a plant transient in this situation. In response to Dr. Lam's inquiry, Mr. Baldwin confirmed the plant operates best when it is not in transition from one operational mode to another and that mode change increases risk. DCPP had high confidence the setpoint change was made and that the change was effective and the NRC agreed.

Summarizing NRC enforcement since the last DCISC public meeting, Mr. Baldwin stated inspection reports were issued as follows:

- Integrated Inspection Report (IR 2011-005, 2/14/12).
- Annual Assessment Letter (IR 2012-001, 3/5/12).
- Problem Identification and Resolution Inspection Report (IR 2012-007, 5/4/12).

- Integrated Inspection Report (IR 2012-002, 5/4/12).

Five non cited violations (NCVs) in the last four quarters have had a cross-cutting aspect of P.1(c), Evaluation. The NRC noted improved implementation of evaluation processes resulting in more complete, thorough, and accurate evaluations in its annual assessment letter. As a result the NRC has closed the substantive cross-cutting issue for P.1(c).

Mr. Baldwin reported on the three NCVs and one Notice of Violation (NOV) which were received since the last public meeting of the Committee in February 2012, through June 2012. The three NCVs were determined to be of very low safety significance (Green) while the single NOV was determined to be a severity level III violation. Mr. Baldwin reported as follows:

- NCV (Green) – Less than Adequate Evaluations of a Degraded/Nonconforming Control Room Habitability Train (C-C Aspect P.1(c) Evaluation). During maintenance, duct work was left open in a ventilation train. It was determined DCPP had not addressed this situation within its operability process. Some design deficiencies were identified and an opportunity to identify this condition was missed. Mr. Baldwin emphasized that operators in the control room were adequately protected at all times.

- NCV (Green) – Failure to Perform an Operability Determination for New Seismic Information (C-C Aspect H.1(b) Conservative Assumptions). DCPP's January 2011 report on the Shoreline Fault was reviewed using the Long Term Seismic Program methodology. The NRC found that this process did not comply with the process for operability when new information is discovered. Mr. Baldwin stated that all equipment was found to have remained operable and capable of performing its safety function.

- NCV (Green) – Inadequate Operability Determination (C-C Aspect P.1(c) Evaluation). Occurred when a routine diesel generator test found a single criterion was not met but the test team reached an inappropriate conclusion that the diesel generator's performance was satisfactory and the diesel operable without it having met acceptance criteria.

- NOV (SL III) Traditional Enforcement – Incomplete and Inaccurate Information Provided to the NRC in Response to Generic Letter 2003-01, "Control Room Habitability." This violation resulted from a test conducted in 2005 of the control room's habitability which did not indicate there was some in-leakage. The NRC found the test had not been performed in the most conservative manner. In response to Dr. Lam's inquiry regarding why, when the Generic Letter was issued in 2003, the test took place in 2005 period. Mr. Baldwin replied the plant responded within the required time but the testing required special testing applications that only a limited number of companies could perform and all nuclear power plants were seeking that test at the same time. Mr. Baldwin stated that in reviewing this matter the NRC concluded that had the NRC had the correct information in 2005 the NRC would have taken other action at that time. Mr. Baldwin observed that the operators in the control room would have been at all times adequately protected.

In concluding this presentation, Mr. Baldwin reviewed the NRC Cross-Cutting Issue Matrix used by

DCPP to review for dominant contributory causes in Human Performance, Problem Identification and Resolution, and Safety Conscious Work Environment. He reported a single event is enough to move a sub indicator from green to white status, two or three events move a sub indicator from white to yellow status, and four or more result in the indicator being in red status. Mr. Baldwin stated that the matrix indicates improving performance but DCPP continues to learn from the NRC's perspective. Problem Identification and Resolution performance is improving but remains in red status, while Human Performance is in yellow status with a common cause analysis having been performed. In response to Mr. Linnen's inquiry as to what it takes to achieve improved status on the indicators, Mr. Baldwin replied that the principal element is time as the matrix is a rolling record covering the last four quarters of station performance. He confirmed that the plants participating with DCPP in the Strategic Teaming and Resource Sharing (STARS) joint utility cooperative organization also use this matrix.

Dr. Lam thanked Mr. Baldwin for an informative report. Dr. Budnitz remarked that the DCISC receives and reviews all the reports from the NRC and Mr. Baldwin commented that DCPP appreciates the feedback it receives from the DCISC and benefits from the DCISC's perspective.

Mr. Baldwin continued with the next informational presentation to the Committee.

Status Report on NRC-identified Cross-cutting Issue Concerning Problem Evaluation (P.1.c)

Mr. Baldwin reviewed his presentation which he stated would include the NRC inspection process and cross-cutting aspects, NRC identification and oversight, the Significant Cross-Cutting Issue (SCCI) in Problem Evaluation, SCCI actions, results, evaluation program performance, and closure of the Problem Evaluation SCCI.

The NRC standards establish an inspection process to identify cross-cutting aspects of deficient station performance. A cross-cutting aspect is a performance characteristic of a finding or performance deficiency that is the most significant causal factor of the performance deficiency. Violations involving a performance deficiency within the past three years are assessed for assignment of a crosscutting aspect. Mr. Baldwin observed, for example, that a problem during original plant startup or a testing error at that time might constitute a violation but it would not be representative of the current organization's performance and therefore would not be assessed a cross-cutting aspect. Problem Evaluation (P.1(c)) requires that the licensee thoroughly evaluate problems such that the resolution addresses causes and extent of conditions as necessary. This includes properly classifying, prioritizing, and evaluating for operability and reportability conditions adverse to quality.

Mr. Baldwin reviewed NRC identification and oversight since 2008. In 2008, five green findings were assigned a cross-cutting aspect of P.1(c) for inadequate problem evaluation. The NRC identified the cross-cutting theme in its annual assessment letter but did not assign a SCCI because the NRC believed DCPP had recognized the problem and had taken actions to address the trend. In 2009, six green findings were assigned a cross-cutting aspect of P.1(c) and the NRC found the corrective actions had not been adequate to improve performance. The NRC assigned the SCCI in its annual

assessment letter and asked PG&E to identify the cause of the ineffectiveness of the previous cause analysis. In 2010, a number of significant NRC inspections resulted in thirteen green findings being assigned a cross-cutting aspect of P.1(c). The NRC continued the SCCI in its annual assessment letter and informed PG&E that the NRC would conduct a special inspection of DCPP's progress in developing and implementing corrective actions and the performance indicator metrics and measures used to determine performance improvement effectiveness. In 2011, five green findings were assigned a cross-cutting aspect of P.1(c) in a mid-year inspection. The NRC conducted a special inspection of the corrective actions and their effectiveness. The NRC found the cause analysis and corrective actions were thorough but had not been in place long enough to conclude that the actions were sufficient for sustained performance improvement. In December 2011, the NRC performed an additional inspection and concluded DCPP's actions were sufficient to sustain improvement. The NRC closed the SCCI in its annual assessment letter noting improved implementation of evaluation processes resulting in more complete, thorough and accurate evaluations.

Mr. Baldwin reported in 2012, four NRC inspectors conducted a biennial Problem Identification and Resolution inspection over the course of several weeks. This inspection included the evaluation aspect of the corrective action program. The NRC concluded the inspection with no violations having been issued.

Mr. Baldwin reviewed the first root cause evaluation (RCE) performed in April 2009 for inadequate evaluation. The cause was determined, at that time, to be that DCPP evaluations were focused upon meeting historical compliance-based licensing and design positions or relied on previous evaluations. He described this as meaning DCPP looked at what had been concluded in the past, made inadequate use of operating experience, and relied on those previous conclusions. A corrective action was taken to establish a process for performing evaluations. A new process and procedure were developed for performing informal evaluations. Training on the new procedure and on management's expectations was performed for the plant's technical staff. DCPP and the NRC subsequently concluded DCPP was not on the right path and a second RCE was performed.

The second RCE was performed in May 2010 of the continued trend of inadequate evaluations. All key organizations were included and Mr. Baldwin described the review as taking a broad and in depth view. The second RCE found the cause to be that the extended leadership team at DCPP had not provided adequate standards, effectively demonstrated or reinforced behaviors, or established sustainable programs in the area of evaluations which Mr. Baldwin characterized as a very strong statement. Contributory causes were identified including the DCPP licensing bases being neither well documented nor easily retrievable, weaknesses in problem causal evaluation, and loss of proficiency in performing evaluations. Corrective actions were taken to establish governance standards for evaluation programs. Training requirements were developed for evaluation program owners and sponsors. Governance standards were implemented for evaluation programs for:

- Operability.
- Reportability.

Licensing Basis Impact Evaluations.

- Seismically Induced System Interaction Program.
- Problem Cause Analysis.
- Employee Concerns Program.
- On-line Risk Assessment.
- License Amendment Request Process.
- Design Change Process.
- Design Calculations.
- Operational Decision Making.
- Operating Experience Assessment.
- Trending.
- Troubleshooting.
- Final Safety Analysis Report Update.
- Informal Technical Evaluation.

Corrective actions include the License Basis Verification Project which is ongoing and includes development of software tools for information search and retrieval; establishing a qualification and training program for Corrective Action Review Board members; providing oversight of the Corrective Action Program and the apparent cause evaluations (ACE) performers and approvers and the root cause analysts, and root cause team leaders; establishing and implementing correct standards and periodic assessment of DCPP program governance standards; and providing expectations to the senior leadership team on coaching to standards and responsibilities for implementing effective programs.

Mr. Baldwin reviewed the actions taken with respect to the SCCI during May 2010 – June 2012 as follows:

- Issued generic program governance.
- Implemented generic governance for the listed programs.
- Licensing Basis Verification Project completed initial review of generic licensing basis requirements, several high risk safety systems, and implemented extensive improvements and provided corrections to problems they identified.
- New software tools provided for licensing basis information search and retrieval.
- Establishment of oversight boards over key programs.
- Extensive, plant-wide, communication and reinforcement of standards for rigorous evaluations and accurate results.

Mr. Baldwin reviewed with the Committee a matrix of the results of the evaluation of the performance of all DCPP programs which is reviewed monthly and the four cornerstones against which performance is measured including: personnel to address proper training; infrastructure to review processes, procedures, tools and training; implementation to review, with a low tolerance for performance deficiencies, to review the results; and assessment to check and adjust and compare performance to industry standards through feedback to other cornerstones and by self-assessment. Consultant Linnen inquired whether use of this matrix was unique to DCPP and Mr. Linnen stated he was impressed by the reconstruction of the programs and the utility of the matrix which evaluated and categorizes performance on a single sheet and thereby provides a valuable management tool. Mr. Baldwin replied that he was unaware that the matrix had been adopted by DCPP's partners in the STARS cooperative and stated he originally developed a similar matrix to address Engineering programs. Mr. Baldwin reviewed with the Committee examples of the details of the evaluation process for the Cause Analysis Program which shows currently green performance and includes the Corrective Action Oversight Board which is chaired by the Site Vice President. He stated the failure of a single ACE can affect this performance measure. He reviewed the results of the Reportability Program health assessment which includes the results of DCPP having failed to report an event which was identified by both DCPP and the NRC. He remarked the root cause evaluation performed found a knowledge gap and that training was provided and performance results improved. Finally, Mr. Baldwin reviewed the results of the evaluation of the Immediate Operability Determination metric which he described as functioning to provide a day-in, day-out, identification of degraded equipment and the impact of that degradation on operability. He remarked this metric is reviewed on a daily basis by a crew of licensed operators and is graded by them.

Mr. Baldwin reported on the closure of the SSCI for problem evaluation during January 2012 – June 2012 as follows. On March 5, 2012, the NRC noted improved implementation of evaluation processes resulting in more complete, thorough and accurate evaluations in its annual assessment letter to DCPP. As a result, the NRC closed the substantive crosscutting issue for P.1(c). On May 4, 2012, four NRC inspectors including the DCPP Resident Inspector concluded a biennial Problem Identification and Resolution inspection which had been conducted over several weeks. This inspection included the evaluation aspect of the Corrective Action Program. The NRC concluded the inspection with no violations. A similar inspection performed two years before found five violations.

In response to Dr. Budnitz' inquiry, Mr. Baldwin replied that resolution of the SSCI in problem evaluation took longer to resolve than a typical SSCI, which DCPP usually expects to resolve within twelve to eighteen months. Mr. Baldwin observed the NRC needs to see sustained, improved performance. Dr. Lam thanked Mr. Baldwin for an excellent presentation.

Ms. Linda Seeley was recognized to address remarks following Mr. Baldwin's presentation. Ms. Seeley expressed her thanks to Mr. Baldwin for his clarity, attentiveness and concern for safety. She stated she was happy the SSCI in performance evaluation had been resolved but that she wished DCPP was not such a large, complex and difficult to manage organization but she hoped that it could continue to be successfully managed and she thanked Mr. Baldwin for his efforts in keeping the community safe. Dr. Lam stated he agreed with Ms. Seeley regarding the complexities

of managing DCPP and he remarked PG&E deserves credit for its efforts.

XV. Adjourn Afternoon Meeting

The Chair adjourned the afternoon meeting of the Committee at 4:15 p.m.

XVI. Reconvene For Evening Meeting

Dr. Lam convened the evening meeting of the DCISC at 5:30 p.m. He briefly introduced the other members and welcomed members of the public present in the audience and following the meeting on through the streaming video available through a link on the Committee's website at www.dcisc.org and at www.slospan.org.

XVII. Committee Member Comments

There were no comments by the members.

XVIII. Public Comments and Communications

Dr. Lam invited any member of the public to attend this public meeting and to address comments to the Committee. There was no response to this invitation.

XIX. Information Items Before the Committee (Cont'd.)

Dr. Lam welcomed the NRC Senior Resident Inspector for DCPP, Dr. Michael Peck, and stated that Dr. Peck is a nuclear engineer and has been in his present position and onsite at DCPP for five years during which time Dr. Peck has been responsible for the initiation of several programmatic initiatives at DCPP.

Remarks by Dr. Michael Peck, NRC Senior Resident Inspector at Diablo Canyon Power Plant.

Dr. Peck began his presentation by stating he would provide an overview of inspection activities at DCPP and also a review of safety issues. Dr. Peck introduced Mr. Neil O'Keefe, Chief of Reactor Projects, Branch B, for the NRC's Region IV. Mr. O'Keefe is responsible for the resident inspection programs at DCPP as well as the Callaway and Wolf Creek nuclear power plants. Dr. Peck observed that in his role as a resident inspector he makes recommendations to Mr. O'Keefe who acts as a decision maker regarding Dr. Peck's recommendations. Dr. Peck reviewed the NRC's role and its mission to license and regulate civilian use of byproduct, source, and special nuclear materials and to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment.

Dr. Peck stated the NRC Inspection Program and the role of the resident inspectors is to provide operational awareness and detailed facility knowledge, a prompt and independent assessment for emergency response, and to conduct in-depth inspections. The resident inspectors act as the eyes and ears of the NRC and monitor daily operation of both DCPP units. Dr. Peck stated he participates in daily telephone calls with Region IV and with the NRC's headquarters and receives feedback concerning issues and activities at DCPP. Dr. Peck remarked the resident inspectors are considered

to be generalists with broad knowledge of nuclear power operations but when required the NRC provides resources for the resident inspectors to call upon when technical expertise is required. In his role as the DCPP Senior Resident Inspector, Dr. Peck has had the opportunity to exercise his function during emergency response scenarios when he is assigned to the control room to monitor and report to the NRC. Regional technical specialists provide expertise in radiological protection, fire protection, emergency preparedness, problem identification and resolution, physical security, and operator licensing. NRC inspection reports are issued quarterly and are publicly available and establish the significance of each finding. In depth inspections are also performed at each site whether for dual or triple unit plants. Findings and performance indicators provide input to the agency's periodic performance assessments. A baseline inspection program is performed at each site. Additional inspections may be performed for plants with greater than green (i.e., very low safety/security significant) issues, in response to operational events, and for substantive adverse trends. Dr. Peck stated that during his tenure at DCPP additional inspection activities have taken place in response to all three types of initiating events.

Performance assessments are completed twice each year to identify trends and focus future inspection efforts and resources and to assess the effectiveness of PG&E's processes to effectively implement the NRC's recommendations. Assessment letters describing plant performance are publicly available on the NRC's website and identify adverse trends, performance assessments and direct the employment of additional resources. Dr. Peck observed the results of these performance assessments are used to focus resources on apparent needs. All findings at DCPP are currently in green status. The NRC also issues findings categorized as white, yellow, and red in increasing order of severity. In response to Dr. Peterson's question, Dr. Peck stated the Reactor Oversight Process (ROP), which has been employed by the NRC since April 2000, differs from the prior approach which provided for cited and non cited violations based upon 10 CFR 2 Appendix C, which is no longer included in the regulations. However, Dr. Peck stated that some types of issues were reserved under the ROP for disposition under traditional enforcement. These include issues with a potential adverse effect on the NRC's ability to regulate. Severity Level III violations under 10CFR50.59 include the failure to provide complete and accurate information to the NRC. Dr. Peck stated the ROP assumes that all information provided is complete and accurate. Dr. Peck and Mr. O'Keefe, in response to Dr. Budnitz' observation, stated that situations with regulatory significance, such as those involving a willful violation, are subject to traditional enforcement while security for physical protection as it is related to a ROP cornerstone is part of the ROP. The ROP process is used to accumulate data and identify trends while traditional enforcement actions are not included in ROP trend data but rather require a specific response from a plant. Dr. Peck observed that a traditional enforcement action may also result in a finding under the ROP if it involves a specific performance deficiency and therefore a finding may be both a ROP and a traditional enforcement issue.

Concerning power reactor licensing basis, Dr. Peck reported a defense in depth strategy is employed in licensing a nuclear power plant to prevent accidents and is used in plant design, construction, and operation. Mitigation features including design features creating fission product barriers through the fuel cladding, pressure boundary, and containment are employed to prevent a radioactive release should an accident occur. In the event these measures fail, emergency

preparedness including sheltering and evacuation are provided.

Dr. Peck stated that licensing and design requirements went into development of PG&E's safety analyses and these are reviewed by the NRC in the Final Safety Analysis Report (FSAR). Concerning any request for change, the NRC reviews the safety evaluation process and concludes whether licensing and design requirements are met to ensure an adequate safety margin is maintained. Written analyses of worst case accidents and a determination that the plant is capable of mitigating them are required in this process. Technical specifications (TS) are used as an appendix to a plant's license to require certain preventive and mitigating features to be maintained at all times during operation.

Dr. Peck reported that current inspection results for DCPP include all findings in green status, meaning very low safety significance, status with one Severity Level III traditional enforcement issue. He stated the NRC inspects against certain standards including power reactor rules and regulations, license and design requirements, development of the FSAR, and NRC reviewed and approved Safety Evaluation Reports (SERs). Safety analyses demonstrate successful mitigation of specified worst-case accidents while plant technical specifications ensure key assumptions used in the accident analysis are maintained.

Dr. Lam commented that the NRC has been one of the federal agencies in which the public has always placed a high degree of confidence, however, he remarked opponents of nuclear power and members of the news media have made assertions that the NRC may be too close with the nuclear utilities it regulates and he asked Dr. Peck to share with the Committee any thoughts Dr. Peck may have on these assertions. Dr. Peck replied that the NRC imposes rigid administrative controls on its employees including inspectors to conduct their monitoring activities objectively and he stated in his personal experience these controls are enforced and are effective. He stated his job was to focus on and to look for changes while not acting too harshly but always objectively. He suggested Dr. Lam's question might also be posed to PG&E's personnel for a description of their perception of the relationship between the resident inspector and plant personnel. Dr. Peck observed his role as resident inspector gives him an opportunity to voice criticism to a large utility both in private and in public. As an inspector he looks for effective management and a questioning attitude on the part of employees to assess the ability of PG&E to operate DCPP plant safely. He commented that if only the NRC is finding issues and not the plant that would be indicative of a problem. Dr. Peterson observed that a critical element of safety assessment must be transparency in that the plant staff must feel free to provide information and Dr. Peck replied that he does not believe that in his role as resident inspector anything has been hidden from him by PG&E or the plant staff or employees. He has immediate access as required by NRC regulations and that access is honored by DCPP. Dr. Peck commented that once the NRC identifies an issue, PG&E is then free to discuss how that issue will be addressed without the NRC present. The NRC will then review the results of PG&E's actions compared to regulatory standards. Dr. Peck reported the NRC has an Allegations Program to facilitate contact between utility employees or members of the public with the NRC and a formal process to respond to the allegations raised. Dr. Budnitz commented the NRC is a large federal agency and he inquired concerning Dr. Peck's, as a resident inspector, ability to take advantage of the large amount of technical expertise possessed by the NRC. Dr. Peck replied that if he has a

question assistance is readily available through NRC Region IV and if Region IV requires assistance same is available through the NRC Office of Nuclear Reactor Regulation and a telephone call is held daily with Region IV to review and discuss technical issues and licensing requests with the Office of Nuclear Reactor Regulation, Division of Reactor Projects. Dr. Peck observed that use of resources is prioritized and based upon the safety significance of an issue. Mr. O'Keefe commented that the resident inspectors represent the 'tip of the spear' in the NRC's review of safety and technical specifications and if the inspectors need assistance the NRC's technical experts will postpone their current activities to assist the inspectors in their mission. In response to Dr. Budnitz inquiry as to how frequently Region IV is required to interact with the NRC's large force of contractors and National Laboratories, Mr. O'Keefe replied this interaction is not a frequent occurrence concerning inspection issues at the regional level as such assistance would be channeled through the Office of Nuclear Reactor Regulation working through the Office of Reactor Resources.

Current inspection trends include the review of DCPP's licensing bases, operability determinations, human performance issues, and preferred offsite power issues. Dr. Peck observed that when an area of encroachment on the licensing basis is suspected, there is a need to go back to the original licensing basis to understand and implement the review. Operability determinations are closely related to the licensing basis and involve evaluation of equipment within the technical specifications which is described as operable but identified as degraded or unavailable and involve an assessment that the equipment can still perform its function and meet safety requirements. Dr. Peck gave examples of the issues involving the steam generators, seismic qualifications and control room operability as issues which have involved operability determinations. In response to Dr. Lam's inquiry about transparency in resolving operability determinations, Dr. Peck stated discussion is held and issues are entered into the plant's Corrective Action Program and non cited criteria do not require a formal response from the plant. He reported PG&E has undertaken its Licensing Basis Verification Project to document and provide tools to preserve the integrity of the licensing basis for DCPP. Examples include evaluation of fire hazard, security modifications, and control room heating, ventilation and air conditioning (HVAC) issues. Human performance issues involve the understanding by personnel of implementing the licensing basis. In response to Drs. Lam and Budnitz, Dr. Peck agreed that past documentation concerning DCPP's licensing basis is not optimal as licensing basis documentation has improved since DCPP began operations and that assumptions can influence how design requirements are reviewed.

Dr. Peck provided an example of an operability determination concerning the preferred source of offsite power which was initiated in 2008 to analyze a condition where a startup transformer was removed with both DCPP units in operation. Offsite power remained available but there was no analysis of the ability of a single startup transformer to handle the load from both units. PG&E asserted a dual unit trip, although this had occurred in the past, was not included as a part of its licensing basis or the FSAR. In reviewing the matter, Dr. Peck discovered that the original licensing basis did not have the statement regarding lack of consideration of a duel unit trip and a change to that effect had been effected as an editorial change. The NRC issued a violation for this in 2008 requiring both startup transformers to be operable to handle loading from both units and PG&E requested review. The item was dispositioned as an open item and was reviewed by the Office of Nuclear Reactor Regulation Electrical Branch. Dr. Peck stated that this was an example of the

Resident Inspection Program relying on Region IV and NRC Headquarters and a consensus has now been reached with PG&E. Drs. Budnitz and Lam observed this is an example of the challenging process and technical issues which the NRC residents deal with and an example where the NRC and the utility did not agree but cooperated to find a solution which was in the best interests of reactor safety.

Dr. Peck reported the NRC continues to compare events to a plant's design basis to determine if additional regulatory action is needed. Other outstanding issues involve seismic issues including an independent NRC evaluation of the Shoreline fault which is nearly completed and the Office of Nuclear Reactor Regulation is preparing to issue a technical basis evaluation on this topic. The NRC issued an order for review of mitigation strategies for beyond design basis events on March 12, 2012. This Order requires reevaluation of seismic and flooding hazards using current standards. The NRC is to evaluate if a plant's design and licensing basis should be updated. Walkdowns will be made with the NRC present, in accordance with guidelines which have been and will be issued, to ensure adequate protection against current design basis hazards and to reevaluate emergency staffing levels and communications to ensure the plant is able to stage and maintain standby equipment. Dr. Peck reported walkdowns were also conducted after the March 11, 2011, accident at the Fukushima Dai-ichi nuclear plant in Japan.

Dr. Peck stated the NRC places a high priority on keeping the public and stakeholders informed. He remarked at www.nrc.gov you can find public meeting dates and transcripts, read NRC testimony, speeches, press releases, and policy decisions, access the agency's electronic reading room to find NRC publications and documents, and report safety concerns. Dr. Peterson commented the DCISC has identified concerns with less than adequate seismic bracing of furniture within DCPP to ensure access to areas of the plant will not be made difficult by being impeded by fallen furniture and that new requirements are expected to include measures to ensure furniture is securely braced.

Assistant Legal Counsel Rathie inquired whether the NRC's Allegations Program afforded confidentiality and whether it was conducted entirely separately from the DCPP Employee Concerns Program (ECP). Dr. Peck replied that while a high degree of identity protection was provided to individuals using the Allegations Program, confidentiality was offered only in extraordinary circumstances. The NRC has the expectation that employees will raise concerns first with their line managers and then with the ECP, however, any employee can come directly to the NRC with his or her concern. The NRC refers some allegations raised with it to PG&E through the ECP for a response which is then followed by a specific review by the NRC.

Dr. Budnitz commented Dr. Peck's presentation was extremely useful and helpful in explaining in a clear way the role of the NRC resident inspectors and the challenges they face. He commented that Dr. Peck will be receiving a new assignment soon and expressed his thanks for his efforts at DCPP. Dr. Lam stated that through Dr. Peck's presentation the public has received assurance that an independent federal officer is onsite at DCPP, as well as at other nuclear power plants, to perform a very important oversight function which significantly contributes to public safety.

Dr. Lam requested PG&E's Mr. Jearl Strickland, Director of Nuclear Projects at DCPP, to make the next informational presentation to the DCISC.

Update on the Status of Issues Related to the Events at the Fukushima Dai-ichi Power Plant in Japan following the March 11, 2011 Earthquake and Tsunami; Summary of DCPP Actions Taken to Date and Planned.

Mr. Strickland stated his presentation would focus on aspects of the actions PG&E has taken at DCPP during 2012 as well as on industry and regulatory response, longer term actions, and the scope of the NRC's Near Term Task Force's Tier 1 Recommendations following the March 11, 2011, earthquake and tsunami and the resulting accident at the Fukushima Dai-ichi Nuclear Power Plant (Fukushima) in Japan. He displayed a photo of the Fukushima site and remarked that its ocean water intake structures were approximately 12 feet above sea level, while its power block facilities are 30 feet above sea level. He observed the topography at Fukushima is very flat and the plant was protected by a breakwater structure separating it from the ocean. Mr. Strickland displayed a photo of DCPP and the surrounding site and compared its features to Fukushima. DCPP is located on a mountainous coastline and has its ocean water intake structure located 45 feet above sea level, while the power block facilities and the emergency diesel generators are located 85 feet above sea level. The spent fuel pools at DCPP, located within the Auxiliary Building behind the containment structures, are 115 feet above sea level with the tops of the spent fuel pools being 140 feet above sea level. The dry cask storage facility is located some distance from the plant at 310 feet above sea level.

Mr. Strickland reviewed the Nuclear Strategic Issues Advisory Committee's (NSIAC) initiative which was developed by the chief nuclear officers of all U.S. utilities to assess strategies for beyond design basis events. Mr. Strickland commented many of these events were previously reviewed in context of the NRC's B.5.b order requiring review of security aspects but the NSIAC initiative goes beyond B.5.b to require review of the ability of a plant to provide additional assurance it is able to respond to multiple unit events, including the availability of portable equipment and instrumentation, and the NSIAC initiative employs a "N+1" concept meaning that for two operating units there must be assurance that at least three sets of equipment are available, tested and ready for deployment. Mr. Strickland reported DCPP has accordingly ordered three new communication trailers and two of them will be stationed onsite at the plant, with the other being located in San Luis Obispo as a backup. This will provide DCPP with the full ability to provide a communication command center to communicate both off site and within the power plant.

Mr. Strickland reported and briefly reviewed each of the NRC's Tier 1 Recommendations issued on March 12, 2012, including the following:

- 2.1 Seismic Hazard.
- 2.1 Flooding Hazard.
- 2.3 Seismic Walkdowns.
- 2.3 Flooding Walkdowns.
- 4.2 FLEX.
- 7.1 Spent Fuel Pool Instrumentation.

- 9.3 Emergency Planning Staffing.
- 9.3 Emergency Planning Communication.

Dr. Peterson commented on the need for portable instrumentation following an accident, which was also a requirement of B.5.b, to be able to restore key instrumentation capabilities and Mr. Strickland replied that at present it is a matter of defining what type of portable equipment are battery powered and what type is necessary to provide the appropriate measurements. He stated that B.5.b was focused on the capacity of having one set of equipment for each unit while with the Tier 1 Recommendations and the FLEX strategies plants are now required to look beyond a single unit event and he offered to provide more detail to the DCISC during a future presentation.

Mr. Strickland stated he would only touch in his presentation upon the schedules and timelines and he agreed with Dr. Budnitz' observation that many of these timelines will be difficult for some plants to meet and he commented that DCPP is, in many cases, in as good a position to meet the timelines established by the NRC as any plant in the country. In response to Dr. Lam, Mr. Strickland confirmed FLEX is not an acronym but rather a term used to describe a strategy for a flexible response to providing backup capabilities.

Mr. Strickland reviewed the 2.1 Recommendation concerning flooding evaluations and stated the timeline established by the NRC for completion extends from one to three years depending on the characteristics of a plant site. DCPP is considered to be a dry site as it has no issues with upstream dams or other significant hazards. In response to Dr. Peterson's query, Mr. Strickland agreed that the site characterization could change if DCPP were required by the State of California to install cooling towers at the same elevation as the power block. **Dr. Peterson commented the DCISC needs to monitor issues with respect to safety evaluation of any such possible modifications and the transition that might occur from the elimination of the once-through cooling system now used by DCPP.** Mr. Strickland identified the recharacterization of the DCPP Tsunami Hazard Analysis as a possible component of the flooding evaluation process for the plant and he confirmed Dr. Budnitz' comment that PG&E's Geosciences Department began that process approximately three years ago. DCPP is due to submit its response to the NRC concerning 2.1 Flooding Evaluation on or before March 12, 2015.

Mr. Strickland reported the NRC has issued interim staff guidance for flooding walkdowns and DCPP is considering requesting that it be among the first plants in the U.S. to conduct such a walkdown. Procedures have been developed, training is in progress, and work packages have been developed. Walkdowns are planned in the coming week for the Intake Structure and a report is due to the NRC concerning flooding walkdowns by November 30, 2012.

Mr. Strickland reviewed the progress at DCPP concerning Recommendation 2.1 Seismic Evaluations. Dr. Budnitz reported that he had been a key consultant to the BRC committee which developed the guidance for the seismic evaluation and seismic walkdowns and Mr. Strickland observed the guidance appeared to be very detailed as to how to best evaluate and capture a potential seismic hazard. Mr. Strickland reported that nuclear power plants located in the central and eastern portion of the U.S. have a different rating assigned by the Senior Seismic Hazard Analysis

Committee (SSHAC) Guidelines which enables them to shorten the timeline for evaluation of their seismic hazards. Dr. Budnitz commented that he chaired the SSHAC and that while central and eastern U.S. plants had a Level 2 requirement for regional analysis, the individual plants must review their sites on a more rigorous Level 3 basis. Mr. Strickland reported that DCPP will require three years to complete its SSHAC analysis and has partnered with SONGS and the Palo Verde Nuclear Generating Station in Arizona (Palo Verde) in this effort. Dr. Budnitz observed, and Mr. Strickland agreed, that PG&E was fortunate to be able to continue to call upon Dr. Lloyd Cluff, a well respected seismic expert, in furtherance of its seismic evaluation efforts. DCPP is due to submit its response to Recommendation 2.1 Seismic Hazard Evaluation on or before March 12, 2015. The NRC will then review PG&E's submission for acceptability and to determine if the seismic licensing basis for the plant is met and a review process could then follow.

Mr. Strickland reported regarding Recommendation 2.3 Seismic Walkdowns, the NRC issued interim staff guidance this year and will issue confirmation in July 2012. DCPP has developed a critical component list in excess of 150 components per unit. Mr. Strickland observed the requirements include seismic hazard review of an area within 35 feet of a targeted pieces of equipment and a review, which he termed "two over one," to assess whether non safety-related equipment could potentially interact with safety-related equipment. Quality of construction and maintenance over the life of the plant will also be assessed. In response to Dr. Peterson's inquiry whether the assessment includes review of potential personnel safety hazards which could block access to safety-related equipment, Mr. Strickland confirmed that the assessment of such hazards was a part of this process as well as a part of the FLEX strategies. Dr. Budnitz reported the NRC resident inspectors will be a part of the walkdown team to provide a level of outside assurance and Mr. Strickland agreed this was an important component. He reported that DCPP has again partnered with SONGS and Palo Verde in this effort. Mr. Strickland observed the seismic walkdown team completed its training last week. A report is due to be completed and provided to the NRC by November 30, 2012. Mr. Strickland stated he was grateful that PG&E has placed a high priority on the efforts being undertaken by the organization he leads at DCPP and has provided him with the opportunity to assemble the site staff necessary to appropriately address each of the NRC Tier 1 Recommendations.

Mr. Strickland reviewed the efforts to review the use and the need for FLEX equipment, with final interim staff guidance from the NRC expected to be issued in August 2012. DCPP has taken action to identify the number of B.5.b types of equipment on which redundancy needs to be provided and which needs to be spread throughout the plant. The next step will be to undertake a gap analysis to identify areas where the appropriate type of equipment may not be available to provide both power and fluid sources under beyond design basis conditions. DCPP is working with its STARS partners in this effort and with Westinghouse. He stated these efforts may include design features to be able to put new pumps in place and new power sources which, while essentially anchored within the plant, are not connected to the plant systems in order that they would be available after a postulated event. **Dr. Peterson commented that an item should be generated for follow up by the Committee to review during future fact-finding how challenging it would be for plant operators to implement these actions in the event of a beyond design basis event and he commented it would be useful to see a demonstration of training and to review how equipment**

and portable instrumentation might be connected, as well as for the Committee to conduct its own walkdowns to see the locations where personnel would need to be to make connections and to acquire a realistic understanding of how challenging those activities may be. Mr. Strickland replied DCPP has assembled a very detailed presentation for Westinghouse concerning FLEX strategies which the Committee might find of interest.

Dr. Peterson observed that despite having essentially no training, inadequate equipment, and poor leadership the operators at Fukushima performed heroically and managed to bring the reactors under control albeit with a substantive release of radioactive material into the environment and they observed that never again should plant operators be faced with that situation. Dr. Peterson observed and Mr. Strickland agreed the consequences of Fukushima could have been much less if there had been even a moderate amount of adequate preparation for those events. Mr. Strickland stated he accepted the position of Director of Nuclear Projects at DCPP only after having been assured by PG&E's Chief Nuclear Officer that he would have financial and personnel resources to appropriately address the issues and he remarked he has received whatever he and his organization have needed from the DCPP directors. Dr. Peterson remarked, and Mr. Strickland concurred, that as Cal Poly has a shake table available it might be useful to have DCPP operators experience the effect of a Hosgri design basis earthquake ground motion by using the Cal Poly shake table. Dr. Peterson observed that there must be assurance that operators will have sufficient and adequate training and all the resources they need, together with appropriate leadership and decision making which, he observed, in the U.S. is delegated much more to the plant level than was the case in Japan where decisions were often delayed and may have resulted in two of the hydrogen explosions which occurred at Fukushima given that venting of containments could have, with better and more timely decision making, occurred earlier and thereby prevented the explosions.

Mr. Strickland reviewed with the Committee his assessment for the use of a hardened structure located at the end of the U-1 Auxiliary Building, which previously served as the location of a package boiler, which may be a suitable primary site to locate at least a portion of the equipment dedicated to effecting FLEX strategies, with other secondary locations elsewhere around the plant site. He confirmed Dr. Budnitz' observation that because of its isolated location, DCPP may already have more equipment onsite than other nuclear power plants and Mr. Strickland observed that DCPP is reviewing FLEX strategies from a global perspective to assess the effect of loss of local infrastructure and the resulting impact on the ability to move equipment within the power plant and also outside within the plant site. Mr. Strickland confirmed, in response to Dr. Budnitz' question, that during the evacuation of Avila Beach following the tsunami warning of March 11, 2011, DCPP personnel were brought to the plant using the north access road which although unpaved is passable for normal vehicles for most of the year.

Mr. Strickland reviewed Recommendation 7.1 Spent Fuel Pool Instrumentation and stated key points include interim staff guidance to be issued in August 2012. DCPP will again partner with STARS and be developing a contract with Westinghouse for Westinghouse to provide the appropriate level indication in the spent fuel pools. DCPP is looking to have fixed equipment that is redundant so that results would display at remote locations including the control room to prevent operators from having to enter the Fuel Handling Building to be able to validate spent fuel pool levels. **Dr. Peterson remarked he was quoted in the Minutes of a previous DCISC public meeting as**

having recommended bubblers for measuring spent fuel pool levels but he clarified that he did not have a specific recommendation or solution but he believed the emphasis should rather be on the functional capabilities, diversity, and redundancy and he stated the Committee will look forward to reviewing the implementation of new capabilities to measure spent fuel pool levels with PG&E. Dr. Peterson commented that not having knowledge of whether there was enough water in the Fukushima spent fuel pools severely misdirected attention away from activities which, in the circumstances, would have been more productive and not having that information was an important gap in the Fukushima's design. Mr. Strickland reported full implementation of 7.1 Spent Fuel Pool Instrumentation will not be until 2015 or 2016.

Mr. Strickland reported on Recommendation 9.3 Emergency Planning, Communication and Staffing and stated the final interim staff guidance is still being developed and would not be issued until August 2012. DCPP has made its 60-day near term response to this recommendation and it has been accepted by the NRC. He stated that under the Emergency Planning Rule, a separate rule, DCPP is required to have alternate interim facilities for its Technical Support Center (TSC) and Operational Support Center (OSC) functions.

Mr. Strickland displayed a graph showing the steps required for each of the different phases of complying with the 9.3 Staffing Alternative Approach Timeline and stated his organization is working the Emergency Planning organization to understand the scope of the work required and is proceeding to completion.

Summarizing his presentation, Mr. Strickland remarked on the importance of the dedicated team aspect of the effort. He stated PG&E made the decision to be able to establish a dedicated team with appropriate resources in place to adequately address the matters he discussed during his presentation. The team has a good understanding of what is required under Tier 1 and is actively involved in monitoring what the requirements for Tier 2 and Tier 3 may be as they are developed. Mr. Strickland stated that near term there is a lot of work to be done which will be completed during 2012. There are many aspects for FLEX strategies and seismic re evaluation which will not be completed until 2017-2018. Dr. Budnitz observed there are some plants that have almost no seismic information and are starting from scratch and it may be extremely difficult for those plants to complete their seismic walkdowns by November 2012. Dr. Budnitz observed DCPP has started this process having had one of the best seismic probabilistic risk assessments ever performed and while that assessment required updating, DCPP is in as good a position as any plant in the U.S. and should be commended. Mr. Strickland agreed and stated DCPP has created three walkdown teams for seismic which include civil structural experts as well as senior reactor operators to provide the immediate ability to assess operability. Dr. Lam commented he found Mr. Strickland's technical and management expertise to be most impressive from the time Dr. Lam sat on the Atomic Safety Licensing Board during public hearings on dry cask storage and he stated PG&E and DCPP are fortunate to have Mr. Strickland's experience to call upon.

XX. Adjourn Evening Meeting

The Chair commented the Committee has scheduled a public tour of DCPP for the following morning which has been fully subscribed by prior reservation. Assistant Legal Counsel Rathie

provided the address for the PG&E Energy Education Center where the tour will assemble and reported there is an interactive map of the location on the Committee's website. Dr. Lam remarked the Committee would again convene at the Avila Lighthouse Suites the following day at 1:00 p.m. to receive further informational presentations from PG&E and comments and communications from members of the public. The evening meeting of the DCISC was then adjourned by the Chair at 7:27 p.m.

Public Tour of Diablo Canyon Nuclear Power Plant

The three members of the DCISC accompanied by 29 members of the public, a PG&E tour guide and the Committee's consultants conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The members of the public responded to the DCISC advertisement concerning the public tour placed in a local area newspaper and on the DCISC's website. The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and a short presentation on the background and role of the Committee. PG&E representatives provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage, and plant security. PG&E discussed how the plant's cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

After entering the plant through the Avila gate, the members of the public were then divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Control Room Simulator facility and the lobby of the Security Building for a demonstration of screening of personnel entering the protected areas of the plant and viewed the ocean water Intake and Outfall facilities where DCPP pulls in and expels seawater used for cooling. The bus then drove by the site of the Independent Spent Fuel Storage Installation (ISFSI) for a description of its purpose and features and then stopped at the plant overlook site where the group received a briefing from PG&E representatives on the various external features and buildings. During the tour there was a problem communicating with the tour bus driver which caused delay in departing from the plant site and resulted in the participants having to walk longer distances than is normally the case on the Committee's public tours. **The issues which resulted in the delay will be reviewed with PG&E representatives prior to the public tour expected to be held during the October 2012 public meeting.**

Questions and Comments From the Public

During the ride back to the Energy Education Center the members of the public took the opportunity to ask questions of Committee members and consultants.

Conclude Public Tour

XXI. Reconvene For Afternoon Meeting

The June 20, 2012, afternoon public meeting of the Diablo Canyon Independent Safety Committee was called to order by its Chair, Dr. Peter Lam, at 1:18 p.m. The Chair apologized to the members of the public present for the delayed start of this session of the public meeting which was

caused by the members' late return from the morning tour of DCPP.

XXII. Committee Member Comments

There were no comments from Committee members at this time.

XXIII Public Comments and Communication

The Chair invited any comments from members of the public.

Ms. Sherry Lewis stated that unexpected things happen such as those the Committee experienced during its public tour that morning and mistakes will always happen. She observed that the problem of having no suitable solution to the problem of the storage of nuclear waste leads her to the conclusion that plans should be put in place to store what waste has already been produced and not to produce more as there is no adequate solution for this lethal waste and it is not obvious that any such solution will ever be found.

Mr. Ken Thompson of the Avila Valley Advisory Council was recognized. Mr. Thompson stated that in response to comments made by Ms. Linda Seeley yesterday he would like to see the DCISC put information received from PG&E on emergency evacuation and preparedness on the Committee's website or otherwise inform the public on where to obtain that information.

Ms. Linda Seeley stated that following her comments earlier during this public meeting she called the County Office of Emergency Services and was told to contact the San Luis Obispo Visitors Bureau regarding her concerns about signage and information to the public concerning emergency preparedness. However, the response from the Visitors Bureau was that this was not part of the Visitors Bureau's job. She stated she has also made a call to DCPP and is awaiting a further response from the County Office of Emergency Services and she promised to report to the Committee at its next public meeting on the responses she receives.

Mr. David Weisman identified himself as a member of the Alliance for Nuclear Responsibility and remarked that miscommunication issues such as those experienced by the Committee members this morning during the tour will always happen. He stated that PG&E was required to provide its response to the NRC's Near Term Task Force Recommendation 9.3 stemming from the accident at Fukushima which would include identifying procedures to notify augmented staff in the event of an emergency at DCPP. He observed that PG&E has submitted a License Amendment Request (LAR) to extend the operating licenses for both units and while funding is tentative for this, PG&E is required to analyze three design basis earthquakes for the site. Mr. Weisman commented the PG&E Long Term Seismic Program (LTSP) identifies the Hosgri Fault as the bounding fault and PG&E claims that new seismic information is only required to be analyzed under the LTSP. Mr. Weisman stated his belief that the NRC is not in concurrence with PG&E on this matter and this is a critical issue. He read from a communication from the NRC Region IV office to PG&E. Mr. Weisman observed that it was his belief the NRC has concluded the LTSP is not adequate for purposes of the NRC's analysis and he commented that not all the data regarding the Shoreline Fault have been analyzed and he queried when PG&E will complete that analysis of the design basis and double design basis earthquakes. Mr. Weisman stated that the 50.54(f) letter relies heavily on probabilistic

risk analysis without acknowledging the internal flaws in the use of that methodology.

Mr. Ron Alsop, Manager of the County's Office of Emergency Services was recognized. Mr. Alsop stated Ms. Seeley should have received a more informative response when she contacted his office. He observed, regarding a decision to stockpile quantities of potassium iodide (KI) for use following a radiological event, that decision not to stockpile KI was made by the local school districts. He reported KI has been distributed in advance only to emergency responders such as members of the California Highway Patrol (CHP). Mr. Alsop reported that the local school districts also determine their actions and procedures in response to plant events and have determined to evacuate local schools in response to a declaration of an alert by DCPP. He stated that emergency preparedness information has been distributed to local area lodging establishments and is available on a calendar distributed locally by PG&E. Concerning signage on evacuation routes Mr. Alsop remarked that the primary routes are posted, however, there are other routes which might be considered for use depending on an event. The CHP has established traffic control points for evacuation planning purposes, with 26 such points located within Avila Valley. He stated information concerning the emergency alert and response system is available and evacuation times are being reevaluated and updated. He observed that information for an actual event would be dependent on many factors and the Office of Emergency Services has done contingency planning. In response to Dr. Peterson's observation that not all alert declarations, such as a past alert in response to a recent release of carbon dioxide inside DCPP, are likely to develop into situations where evacuations might be necessary, Mr. Alsop replied that the decision to evacuate is up to each local school district. During the tsunami alert following the March 11, 2011 earthquake in Japan, although the County closed the local beaches, the Port San Luis authorities made a decision not to follow their operating procedures. He stated his Office of Emergency Services provides advice to school districts regarding emergency response and continues to work with the school districts on these issues. Dr. Peterson stated he was encouraged that some degree of flexibility exists. In response to Consultant Linnen's question on how a determination is made as to which evacuation route to use, Mr. Alsop replied that his office would rely on the CHP and has participated in drills which postulate that insufficient resources would be available to allow for all alternate evacuation routes to be considered. Dr. Lam commented that following the earthquake in August 2011, cell phone communication was disrupted in the Washington, D.C. area for a considerable period of time. Mr. Alsop replied he has participated in a critique of the August 2011 earthquake's affect on the nuclear plant located in North Anna, Virginia and reported that while cell phones did not work there was a capacity to send text messages. He reported that portable radios are available to local government as are different satellite phones serviced by different providers and these resources are being reviewed. The Office of Emergency Services also has a separate channel of communication directly with DCPP and, in response to Dr. Lam's inquiry, he confirmed he is confident that in the event of an emergency local responders would retain the ability to communicate with DCPP.

Ms. Jane Swanson was recognized by the Chair to address remarks to the Committee. Ms. Swanson stated she participated in an emergency planning drill held in Santa Maria, California and was assigned to play a role as a person evacuated to an intake station. She commented the volunteers playing the role of intake personnel did not have any idea of the levels or thresholds of radiation exposure for adults or children which would dictate differing treatment regimes. She observed the

computer system which was available to record contact information did not work properly and she was asked to record her contact information on a piece of paper. In her role as an agitated evacuee she was sent to counseling and received information on deep breathing techniques. Ms. Swanson stated her experience led her to conclude serious defects and inadequacies exist in emergency preparedness and there are many students in the local area who are totally unprepared and don't realize there is a nuclear plant in the area. In response to Mr. Linnen's question concerning whether those in charge of the drill were made aware of Ms. Swanson's concerns at the time of the drill, she stated that was not the case and she received an email later from the Red Cross inquiring about her experience. Ms. Swanson stated that the people involved in managing drills need to be able to answer the most basic questions which will certainly be asked of them in a real emergency.

Ms. Linda Seeley was recognized and posed several questions. She inquired why the decision concerning stockpiling a supply of KI was left to the school districts and whether there were a sufficient number of buses available to evacuate school children. She observed that visitors would not be made aware of emergency planning information on the calendars distributed by PG&E or by the information provided concerning the siren tests in the area and how would people know which channels on radio or television to receive information? She wondered how the presence of sufficient numbers of CHP officers might be assured and she commented that signs could be posted along every possible evacuation route. She observed that there are 28,000 college students in the local area and not to provide them with public education is a disservice as many families might not send their sons and daughters to the area for an education if they realized there was a nuclear plant in the vicinity. Ms. Seeley stated it was her opinion that there was a reason that information about emergency planning for DCPP was not more prominently featured within the local communities.

Dr. Budnitz replied to Mr. Weisman's comments by stating the NRC has received PG&E's response to Recommendation 9.3 from the Fukushima events and is in the process of reviewing that response. The DCISC will also review PG&E's response and follow this matter closely. Dr. Budnitz stated Mr. Weisman's comments concerning the methodology used for probabilistic analyses were, in his professional judgment, incorrect. He stated that probabilistic calculations and analyses have proven to be correct and have been widely reviewed and endorsed for purposes of seismic analysis and the methodology has not been found erroneous. He observed the seismic probabilistic risk analysis has been accepted by the American National Standards Institute. He acknowledged that analysis done poorly will yield incorrect answers but the methodology is robust. Dr. Budnitz observed the original seismic probabilistic risk analysis for DCPP was, at the time, one of the best available but that now PG&E is making further efforts to improve it and these efforts will be reviewed by others. He commented that until the onshore and offshore investigations are completed, there will not be a full set of data and the NRC recognizes this. Dr. Budnitz stated there is no bottom-line end point to seismic analysis as new earthquakes happen all the time all over the planet. Dr. Lam remarked, with deference to Dr. Budnitz, that whenever he has made inquiry regarding when, where and how strong an earthquake might be, he is told that information cannot be predicted and while probabilistic analysis is scientifically defensible it is not capable of prediction.

Dr. Peterson commented it was useful to learn about emergency preparedness and response. He observed the Hayward Fault cuts through the U.C. Berkeley campus where he and Dr. Budnitz both

work and the University of California and local and state government have made major efforts to make improvements and improve access but a significant earthquake on the Hayward Fault may be expected to have catastrophic consequences but he stated that it is good that in the U.S. people are thinking about and planning for these types of events and he expressed his admiration for all who work in that field.

Dr. Lam expressed his appreciation to the members of the public who took time to attend the Committee's public meeting and to make comments and address concerns to the Committee. Dr. Lam welcomed Senior Vice President and Chief Nuclear Officer Mr. Edward Halpin to the public meeting and remarked that Mr. Halpin is the most senior member of the DCPP management team. Mr. Halpin thanked Dr. Lam for his introduction and stated that his objective is the safety of the station and the general public and he is looking forward to the challenges of his position.

XXIV. Information Items Before the Committee

Dr. Lam requested DCPP Manager of Emergency Planning, Mr. Michael Ginn, to continue with the next informational presentations requested by the Committee for this public meeting.

DCPP/PG&E Interface with Local Counties, Agencies and Organizations with Respect to Emergency Planning and Preparedness Activities.

Mr. Ginn stated he was pleased with the interest and questions posed earlier in the meeting by members of the public and would be available after his presentation to answer questions. He stated that, as well as his role with PG&E in emergency planning, he also he also has a role as a father with a wife and son who reside in Avila Beach. He remarked he volunteers as a firefighter and is on the Board of the local Red Cross organization in San Luis Obispo. He thanked Mr. Alsop for his comments concerning the distribution of KI and remarked the school district decisions were well researched and included input from the County Health Department and were, at least partially, based on a need not to delay evacuations. He commented the County has a pre distribution program for KI available. Concerning awareness by the Cal Poly students, Mr. Ginn commented that a large number of Cal Poly engineering students work at DCPP and PG&E has conducted outreach to both Cal Poly and Cuesta College, as well as other schools in the area and has consulted with Cal Poly on curricula for a master's program in Homeland Security. He reported that journalism students from the local colleges serve as mock media members during emergency preparedness drills.

Mr. Ginn stated he met with DCISC representatives during a fact-finding visit in April 2012 and reviewed the role of emergency preparedness and the requirements in the Code of Federal Regulations (CFR) which govern and mandate that emergency preparedness programs be designed with input from local, state and federal agencies. PG&E has coordinated with local, state and federal offsite response organizations and this coordination has included many focus areas such as public education and information, emergency facilities and equipment, training, drills and exercises, and planning support and agreements.

Concerning public education and information Mr. Ginn stated the emergency preparedness monthly

calendar efforts include a photo contest for the 2013 calendar and the calendar represents a tool which provides retention of all materials related to emergency preparedness. The telephone book and local visitor's guides also provide information which is prominently displayed including maps showing evacuation routes. PG&E has distributed emergency information brochures to the Visitors Bureau and the Chambers of Commerce in the area and frequently checks to make sure the material is on hand. The annual siren tests, with the next test scheduled for Saturday, August 25, 2012, at 1200 and 1230 hours, also provides a venue for outreach to the local community through the use of posters, local advertisements and reminders. The internet and websites and telephone information lines including www.calema.ca.gov, and www.pge.com and 1-800-333-4964 or 805-543-2444 are also available to members of the public interested in emergency planning. Spanish language brochures and special needs advisements are available. **In response to Dr. Peterson's inquiry Mr. Ginn confirmed PG&E is reviewing the use of social media in its emergency planning efforts and Dr. Peterson commented this is an important area which the DCISC will be reviewing.** Mr. Ginn displayed photos of a postcard used to convey information about the local emergency alert system.

Mr. Ginn reviewed with the Committee the reasons why people don't prepare for an emergency. He stated DCPP's efforts to educate members of the public include information on the need to have a plan and to be prepared by encouraging discussion concerning different types of emergencies and the applicability of planning to where you live, work and play. He reviewed the suggestions and explanations of what to do for each including: picking two places to meet, one right outside your home and one outside your neighborhood; designating an out-of-area contact; having a kit and checking it each year; preparing a 'Go Bag' for each person in your family; and preparing a 72-Hour emergency kit and supplies for the home.

Mr. Ginn reviewed the emergency facilities & equipment and the co-located resources which are available at each including:

- Emergency Operations Facility (EOF).
- Emergency Operations Center (EOC).
- Joint Information Center (JIC).
- Unified Dose Assessment Center (UDAC).
- State Operations Center (SOC).

He remarked that DCPP is unique in the nuclear industry in having all agencies being collocated for face-to-face communications at the EOF, EOC, JIC and UDAC and he stated all these have dedicated emergency back-up power supplies. He reported that PG&E maintains an office at the SOC in Sacramento California.

Mr. Ginn stated concerning emergency facilities and equipment that dedicated emergency response equipment and procedures include:

- Mobile trailers, satellite phones, radios, pagers, wireless priority.
- Vehicles, kits, portal monitors, dosimeters, survey instruments.

- Emergency plans, procedures, drawings, graphics & displays.
- Computer systems, video conference, and large screen monitors.
- Logistics supplies, food and water.

In response to Dr. Peterson's question, Mr. Ginn confirmed DCPP has mutual aid agreements in place with law enforcement and fire agencies and also has plans in place to share resources with its partners in the STARS joint utility alliance of nuclear power plant operators. DCPP has also benefited from the experiences of PG&E's electric and gas distribution organizations and Mr. Ginn observed the emergency planning zone around DCPP is twice as large as at other nuclear power plants and this provides defense in depth. In response to Dr. Peterson's observation that during the 1990 Oakland California hills fire many responders were unable to communicate with the city, Mr. Ginn observed that training and drills are used to validate the ability to communicate and these drills and exercises are evaluated by the Federal Emergency Management Agency (FEMA). He reported that during a recent hostile action drill, the command post where all involved agencies were present included a mobile communications trailer provided by the County which functioned to combine radio frequencies to ensure communication between the various agencies remained available.

All equipment is tested and inventoried each quarter.

Regarding training, drills and exercises, Mr. Ginn reported as follows.

- Training includes:
  - Emergency response agency specific training.
  - Over 5,500 hours of classroom training provided in 2011.
  - Cities, schools, fire departments, law enforcement agencies.
  - Introduction provided to DCPP.
  - Onsite training and facility orientation.
- Drills & Exercises includes:
  - NRC & FEMA evaluated exercises.
  - Full scope & table top drills;
    - Fire, emergency medical services and hospital drills,
    - Public Reception Center drills,
    - Communications tests and unannounced, off-hours drills.

Mr. Ginn stated training efforts are focused on a response to all hazards and include coordination with and input from local cities and agencies to incorporate their concerns and issues into training scenarios. He remarked that DCPP has worked extensively with Cuesta College to assist Cuesta in

setting up its own Emergency Operations Facility. In response to Dr. Lam, Mr. Ginn stated he would consider Ms. Swanson's remarks about her experiences during a training exercise.

In concluding his presentation, Mr. Ginn reported on planning support and the agreements in place and stated that funding and planning support provide approximately $3 million annually to local and state preparedness funds and assists local jurisdictions with planning and equipment purchases and to develop focused local area scenarios to test responders. DCPP partners in outreach for preparedness symposiums and events. DCPP has letters of agreement with multiple organizations and agencies including onsite response to hostile action and has provided funding for beyond preparedness services to providers of private ambulance and hospital services, transportation services, and reception center services. In concluding his presentation, Mr. Ginn remarked that he understands the importance and the interest in emergency planning and appreciates the feedback received today.

Following Mr. Ginn's presentation, Ms. Sherry Lewis of MFP was recognized. Ms. Lewis inquired about the function of the UDAC and the hours of training provided to local responders and organizations.

Mr. Larry Kallenberger was recognized following Ms. Lewis remarks. Mr. Kallenberger stated he moved to the local area two years ago from Colorado where he worked for twenty years in state and local government including for the Governor of Colorado as the head of the Department of Local Affairs which included the Division of Emergency Management which was involved with a number of diverse issues including assessment of tailings from uranium mining activities and the transportation of nuclear waste through the state. He observed that in an emergency nothing happens according to the plan and the only persons with any immediate control are the first responders. He stated there was no solution to this situation but it is unwise to accept assurances that things will proceed according to plans which are inorganic in nature. He advised that it was important to not pay too much attention to the details of a plan but rather to put yourself in the position of the people you are trying to help. Dr. Budnitz concurred and observed that General Eisenhower had observed with reference to the World War II invasion of Normandy that "plans are useless but planning is everything."

Mr. Ginn, in response to Ms. Lewis, replied that the facilities co-located at the UDAC are key to providing a computer assisted, independent, and unified assessment of meteorological and radiological consequences of an event and provide the ability to assess a considerable amount of expertise from diverse inputs. He confirmed that the hours of training provided to members of the local community and response organizations represent hours of classroom training for which PG&E reimburses some of the participants. Mr. Ginn commented that Mr. Kallenberger had provided excellent advice and that sometimes the most valuable tool for an emergency response planner is the personal relationships built over time. Mr. Ginn remarked that often the best prepared communities with respect to emergency planning have a nuclear power plant in the vicinity.

Dr. Lam requested the Director of Outage Management at DCPP, Mr. Tim King to make the final informational presentation to the Committee for this public meeting.

Presentation on the Results of the Seventeenth Refueling Outage for Unit 1 (1R17).

Mr. King reviewed and discussed with the Committee the major scope items addressed during refueling outage 1R17 on the primary side, the system containing the reactor system coolant:

- Surveillance Test Procedure (STP) M-13F/G/H and M-15 at the start of the outage.
- Pressurizer Safety Valve Replacement.
- Pressurizer Heater Sleeve Inspection.
- Reactor Coolant Pump #1 Seal Return Flow Transmitter Replacement.
- Centrifugal Charging Pump 1-3 BA Leak Repair.
- Core Exit Thermocouples Replacement.
- Reactor Vessel Level Indicating System Cap Fill.
- Internals Lift Fixture 10-year Inspection.
- In Service Inspection (ISI) of the Reactor Vessel.

Mr. King stated the pressurizer heater sleeve inspection was performed as a result of operating experience received from other stations where degradation has been found to this Reactor Coolant System boundary and he reported that no degradation was found at DCPP. The core exit thermocouples replacement was undertaken due to aging and refueling outage1R17 was the first of a series of outages where this work will be performed. The reactor vessel in service inspection included an ongoing inspection of welds under the vessel and on the hot leg.

Mr. King reviewed and discussed the major scope items addressed during 1R17 on the secondary side, the system of piping wherein steam is produced and sent to the turbine:

- Exciter Rotor Replacement.
- Acid /Caustic Skid Replacement.
- Steam Generator (SG) Sludge Lance and Foreign Object Search & Retrieval (FOSAR).
- H2DP Motor.
- Outfall Tunnel Inspections & Repairs.
- ASW 1-2 pump/motor swap
- Turbine Driven AFW Pump Turbine Shaft Replacement.
- West Side Saltwater Outlet Expansion Joint.

He reported the acid/caustic skid replacement was undertaken for industrial safety reasons due to degraded piping while sludge lancing and FOSAR for the steam generators will be performed during every outage while eddy current testing will only be performed every third outage.

During refueling outage 1R17 the major scope items for electrical components were reported and

reviewed by Mr. King as including:

- Vital Battery 1-2 Replacement.
- Vital Battery 1-3 Replaced 3 Cells.
- Main Bank and Start-Up Bank Maintenance.
- Dissolved Gas Analyzer for Main Bank Transformers.
- 480v Bucket Replacements Bus 2F.
- Bus F Maintenance.
- 230kv Switches Re Silicon.
- 4KV Cable Replacement

Vital Battery 1-2 was replaced as part of regular preventive maintenance while the three cells replaced on Vital Battery 1-3 were replaced as part of the ongoing program to monitor and make replacement early if indicated. The 4kV cable replacement included replacement of the last non vital cable and this project, involving a system which could initiate a reactor trip, is now complete.

Major scope projects undertaken for the first time during 1R17 included:

- Polar Crane upgrade – to provide more reliable, improved controls.
- Acid/Caustic Skid replacement – to eliminate potential industrial safety hazards
- Control System replacement – a unique project in the U.S. to address obsolete equipment and to prevent failure that could result in a reactor trip.

The upgrades to the Polar Crane were made to enhance its reliability in a commercial sense as it is required to move large, heavy objects within containment. Mr. King stated the Process Control System replacement was an ambitious project and the most important of the first time projects as it affects approximately 250 controls and indications of which one third are safety-related. Dr. Peterson remarked the Committee's fact-finding team observed the replacement project which included extensive wiring and wire splicing and found the work to be impressive. Mr. King reported DCPP rented a warehouse offsite to use to construct and test the components of the new Process Control System which, in response to Mr. Wardell's question, he described as a redundant system related to reliability and safety which functions to provide input to the Eagle 21 System.

Mr. King described the application of lessons learned to the first time projects during refueling outage 1R17 as including many of the same lessons learned program used for Steam Generator Replacement Project and actions developed to improve implementation. He reported that prior to the next outage the Chief Nuclear Officer will conduct a vendor leadership forum to bring in key contractors to participate in a round table with station leadership.

In response to Dr. Peterson's question, Mr. King stated that DCPP employed a vacuum refill system for the reactor vessel cavity during 1R17 which gets air out of the U-tubes and does not require the

12kV motors to cycle on and off.

Mr. King reviewed the refueling outage1R17 goals as compared to performance as follows:

Performance Goals	Goal	Actual
Recordable & Disabling Injuries	0/0	1/0
Nuclear Safety Events	0	0
Human Performance Events	0	2
Outage Duration (days)	<40	55 d
Dose Goal (Rem)	<50	41.7
Significant Foreign Material Events	0	0
Security Loggable Events	10	7
Cost	< $43.6m	TBD
Power Ascension (days)	< 5	TBD
Reliable Run at 100% (days)	> 90	TBD

He directed the Committee's particular attention to the one recordable injury experienced and to the dose achieved during refueling outage 1R17 which represents the best ever for a U-1 refueling outage which he attributed in part to good chemistry controls and worker practices.

Mr. King discussed and reviewed some of the challenges during refueling outage 1R17 including to human performance. Human Error resulted in loss of the second channel of low temperature overpressure protection for nine minutes when an instrument panel was mistakenly de energized with a second panel having been previously de energized and he stated that additional peer checking was required as a result of this event. Fuel movement in the Spent Fuel Pool near the drained transfer canal resulted in a momentary high exposure to fuel handlers while the fuel handling team was attempting to place a fuel assembly near the canal wall. The high radiation dose monitor activated and the activity, which resulted in a negligible dose, was terminated. Mr. King reported DCPP is taking all necessary actions to prevent recurrence of this event and to review the application of the lessons learned to other areas within the plant. In both the foregoing cases Mr. King reported a Significance Level 1 Apparent Cause Evaluation (ACE) is being performed for corrective actions prior to next outage. In response to Dr. Peterson's question, Mr. King stated a Significance Level 1 ACE is performed for an event the plant never wants to happen again and a Significance Level 2 ACE as performed for an event for which the plant seeks reasonable assurance will never happen again.

Mr. King reported that during 1R17 there was an intrusion by salp, a jellyfish like sea creature, at Intake Structure which had the potential to impact Auxiliary Saltwater System cooling and resulted in U-2 power being ramped down and a delay in the reduction of Reactor Coolant System inventory for U-1 to maintain defense in depth.

In concluding his presentation, Mr. King reviewed the successes during refueling outage 1R17 as including, in the area of nuclear safety, no decay heat removal challenges and the lowest radiation

dose for a U-1 Outage. There were seven security-related loggable events which was better performance than the goal set of not more than ten. All defense in depth equipment operated well and planned system health work was completed and included 45 system health improvements. In response to Dr. Lam's inquiry regarding nuclear safety risk assessment and use of available software to assess the risk of removing equipment from service, Mr. King replied that the Outage Safety Plan and the Outage Safety Schedule are created before the actual outage schedule to ensure defense in depth is maintained for decay heat removal and only if a point is reached with different component challenges is a PRA analysis completed for equipment removal. He confirmed Dr. Lam's observation that during refueling the plant is in a vulnerable state and he reported that DCPP performs unannounced drills during each outage to test procedures for containment closure, which must be accomplished within the time-to-boil, and during refueling outage 1R17 the day shift achieved containment closure within nine minutes while the night shift achieved it in eleven minutes. Dr. Lam commented that superior outage management and risk management is an indicator of a focus on reactor safety. **Dr. Peterson commented that he would welcome an opportunity to observe a drill where the equipment hatch is closed during a future outage.** Mr. King commented DCPP benefits significantly from the number of people who reside in the local community who return to DCPP for work during refueling outages. Dr. Peterson observed there are a relatively small number of actions with the element of timeliness required by containment closure requirements and he commented the FLEX strategies being developed in response to the accident at Fukushima will have a need for timely actions and the containment closure procedures may provide a good rehearsal for FLEX initiating measures.

Dr. Lam thanked Mr. King for his presentation.

Ms. Sherry Lewis of Mothers for Peace was recognized. Ms. Lewis inquired whether either or both of the workers who received a radiation dose when moving the fuel assembly was still working and whether the dose resulted in either worker exceeding his or her limit or required a job change. Mr. King replied that the workers were under contract as fuel handlers and received doses of less than 20 millirem albeit from an exposure to a 2.4 rem per hour field. The monitor on the fuel handling crane alerted the workers to the situation. The workers have since gone on to work at another nuclear plant. In response to Ms. Lewis question, Dr. Lam and Mr. Wardell reported that the dose received by a nuclear worker is limited and is carefully monitored by the NRC using a national record keeping system which is accessible to and used by all U.S. nuclear facilities.

This concluded the informational presentations requested by the Committee from PG&E for this public meeting.

XXV. Concluding Remarks and Discussion By Committee Members Of Future DCISC Activities

Dr. Peterson reiterated his personal gratitude and thanks to all those professionals who chose to spend their careers in the field of emergency response and emergency planning. He observed society is better off for its investment in emergency response work. Assistant Legal Counsel Rathie observed for the record that while Dr. Budnitz was required by his schedule to leave the meeting at

3:07 p.m. the meeting continued with a quorum of the membership present.

Dr. Lam thanked all the members of the public who participated in the public meeting and he stated their participation is an essential element of a successful DCISC public meeting. Dr. Lam also expressed the thanks of the Committee to Senior Vice President and Chief Nuclear Officer Halpin for his attendance and comments. Dr. Lam expressed the appreciation of the Committee to Mr. Pete Bedesem for his able assistance to the Committee at its public meetings and during fact-finding visits. Finally, Dr. Lam expressed thanks to the crew from AGP Video who provided audio and visual recording services for this public meeting.

XXVI. Adjournment of Sixty-sixth Public Meeting

There being no further business, the sixty-sixth public meeting of the Diablo Canyon Independent Safety Committee was adjourned by its Chair, Dr. Peter Lam, at 3:35 p.m.

22nd Annual Report, Volume 1, Section 1.2.1, Appointment of Committee Member Robert J. Budnitz

On October 10, 2007, Robert J. Budnitz, Ph.D., was appointed by California Attorney General Edmund G. Brown Jr. to a term on the Committee expiring June 30, 2010. On April 15, 2010, the Attorney General announced the reappointment of Dr. Budnitz to a second three year term on the Committee commencing July 1, 2010 through June 30, 2013.

Dr. Robert J. Budnitz has been involved with nuclear-reactor safety and radioactive-waste safety for many years. He is on the scientific staff at the University of California's Lawrence Berkeley National Laboratory, where he works on nuclear power safety and security and radioactive-waste management. From 2002 to 2007 he was at UC's Lawrence Livermore National Laboratory, during which period he worked on a two-year special assignment (late 2002 to late 2004) in Washington to assist the Director of the Department of Energy's (DOE's) Office of Civilian Radioactive Waste Management to develop a new Science & Technology Program. Prior to joining LLNL in 2002, he ran a one-person consulting practice in Berkeley CA for over two decades. In 1978-1980, he was a senior officer on the staff of the U.S. Nuclear Regulatory Commission, serving as Deputy Director and then Director of the NRC Office of Nuclear Regulatory Research. In this two-year period, Dr. Budnitz was responsible for formulating and guiding the large NRC research program that constituted over $200 million/year at that time. His responsibilities included assuring that all major areas of reactor-safety research, waste-management research, and fuel-cycle-safety research necessary to serve the mission of NRC were adequately supported. From 1967-1978, he was on the staff of the Lawrence Berkeley National Laboratory, serving in 1975-1978 as Associate Director of LBL and Head of LBNL's Energy & Environment Division. During this period, the programs under his direction were in a large mix of diverse areas relevant to DOE, including energy-efficiency, deep-geologic radioactive waste disposal, solar energy, geothermal energy, fusion energy, transportation technology, chemical-engineering for alternate fuels, environmental instrumentation, air-pollution phenomena, and energy policy analysis. He earned a Ph.D. in experimental physics from Harvard in 1968.

22nd Annual Report, Volume 1, Section 1.2.2, Appointment of Committee Member Peter Lam

On June 3, 2009, Peter Lam Ph.D. was appointed by Chair Karen Douglas J.D. of the California Energy Commission (CEC) to a three year term on the Committee commencing July 1, 2009 and ending on June 30, 2012.

Dr. Peter Lam, Administrative Judge Emeritus of the U.S. Nuclear Regulatory Commission, is an international authority on nuclear reactor operating experience, and a leading expert of nuclear reactor safety and risk assessment. Dr. Lam is now the principal of EMM International, a consulting company with a group of experts in the nuclear industry. In his 18 years of public service as an Administrative Judge, Dr. Lam has presided over numerous public proceedings to decide technical issues of national and international significance involving the use of nuclear energy and materials. Judge Lam's jurisdiction covered all 104 nuclear power plants, some 21,000 medical and material licensees, and nuclear waste storage in the United States. The ultimate resolution of these significant technical issues has contributed to the enhancement of nuclear reactor safety.

Prior to his judicial appointment 18 years ago, Dr. Lam had extensive technical and managerial experience in the nuclear energy business over a period of 20 years. He was a nuclear engineer at General Electric Company, participating in the design and analysis of BWR advanced fuels. Dr. Lam served as a program manager at Argonne National Laboratory, managing the research and development of advanced fast reactor metal fuels. He was a manager at Science Applications, Inc., and a consultant at NUS Corporation, both major consulting firms in the nuclear industry. Dr. Lam's responsibilities there involved the management of probabilistic risk assessments of operating nuclear reactors. He managed a group of technical specialists in the U.S. Nuclear Regulatory Commission in the analysis and evaluation of nuclear reactor operating experience. Dr. Lam was also a visiting faculty member at California State University at San Jose, and at George Washington University.

Dr. Lam has published 71 technical papers and reports in national and international journals and in proprietary company publications, which focus on major issues in nuclear transport theory, nuclear reactor fuel design, nuclear reactor operating experience, and nuclear reactor safety. Judge Lam has also issued over 110 published judicial decisions related to some 50 cases of litigation. These judicial decisions resolve a wide range of technical and legal issues regarding nuclear reactor safety, nuclear waste disposal, and other civilian use of nuclear technology.

Dr. Lam has presented lectures at the International Atomic Energy Agency (IAEA) international conferences in Austria, Korea, and Spain, on significant results in comprehensive analyses of nuclear reactor operating experience. He has chaired an IAEA working group to develop a technical treatise for the analysis and evaluation of operating experience of the world's nuclear reactors.

These activities contribute to the international exchange of important information to improve nuclear reactor safety.

Dr. Lam earned a Ph.D. and a M.S., both in nuclear engineering, from Stanford University in 1971, and 1968, respectively. He earned a B.S., in mechanical engineering, from Oregon State University in 1967. His 4-year undergraduate study at Oregon State University and his 4-year graduate study at Stanford University were fully funded by eight consecutive scholarships and fellowships.

Dr. Lam served as Vice-Chair for this report period, July 1, 2011 – June 30, 2012.

22nd Annual Report, Volume 1, Section 1.2.3, Appointment of Committee Member Per F. Peterson

On July 9, 2008, California Governor Arnold Schwarzenegger announced the appointment of Per F. Peterson, Ph.D., PE, to a three year term on the Committee through June 30, 2011. On March 22, 2012, Governor Edmund G. Brown Jr. announced Professor Peterson's reappointment for a term on the Committee commencing July 1, 2011 through June 30, 2014. Prof. Peterson previously served as a Committee member from September 2, 2004, through October 9, 2007.

Per F. Peterson is a Professor and Chair of the Department of Nuclear Engineering at the University of California, Berkeley. He received his BS in Mechanical Engineering at the University of Nevada, Reno, in 1982. After working at Bechtel on high-level radioactive waste processing from 1982 to 1985, he received a MS degree in Mechanical Engineering at the University of California, Berkeley in 1986 and a Ph.D. in 1988. He was a JSPS Fellow at the Tokyo Institute of Technology from 1989 to 1990 and a National Science Foundation Presidential Young Investigator from 1990 to 1995. He is past chairman of the Thermal Hydraulics Division (1996-1997) and a Fellow (2002) of the American Nuclear Society, a recipient of the Fusion Power Associates Excellence in Fusion Engineering Award (1999), and has served as editor for three technical journals.

Prof. Peterson's work focuses on problems in energy and environmental systems, including passive reactor safety systems, inertial fusion energy, and nuclear materials management. His research interests focus on thermal hydraulics, scaling, heat and mass transfer, fluid dynamics, and phase change. He is author of over 95 archival journal articles and over 110 conference publications on these topics.

On January 29, 2010, U.S. Department of Energy Secretary Dr. Stephen Chu announced Dr. Peterson's appointment as a Member of the Blue Ribbon Commission on America's Nuclear Future, established by President Obama to provide recommendations for developing a solution to managing the Nation's used nuclear fuel and nuclear waste.

Dr. Peterson served as DCISC Vice-Chair for this report period, July 1, 2011 – June 30, 2012.