

DOCKET

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STATE OF CALIFORNIA

Energy Resources Conservation
And Development Commission

In the Matter of:

Application for Certification
for the Oakley Generating Station

Docket No. 09-AFC-4

Supplemental Testimony for Oakley Generating Station On Hazardous Materials Management

Testimony of Geoff Lesh P.E., and Rick Tyler

INTRODUCTION

During the Commission business meeting of March 9, 2011, the Commission determined that Application for Certification (AFC) power plant licensing proceedings, including the existing Oakley Generating Station (OGS) licensing case, must include an enhanced assessment of the natural gas pipeline supply/availability and safety. To this end, the Presiding Member of the OGS Committee directed that parties address a set of seven questions covering issues of pipeline safety by way of documentary evidence and declarations from qualified individuals. This is Staff's supplemental testimony in response to the Committee's request on the issue risk (commonly referred to as safety).

DESCRIPTION OF CONNECTIONS

The Oakley Generating Station (OGS), a baseload 624 MW gas-fired combined cycle power plant, would be located in the City of Oakley, California on land that used to be occupied by a DuPont Chemical Plant. OGS would require construction of one or two interconnection pipelines to supply natural gas from the PG&E gas transmission system to the project site. PG&E proposes to serve the OGS from Line 303, which passes through the southwest corner of the OGS site as it enters the Antioch Terminal¹ from the south. The tap to Line 303 will be located either in the southwest corner of the OGS site or in the Antioch Terminal. From this tap, natural gas will be delivered to the site via a new 300-foot-long, 6- to 10-inch-diameter pipeline. The pipeline will terminate in a PG&E gas metering yard located inside the OGS, west of the plant switchyard. The

¹ PG&E operates the Antioch Terminal, a major high-pressure natural gas transmission pipeline hub that borders the OGS site.

project owner also may choose to include a secondary natural gas supply to augment gas supply reliability via a new 410-foot long, 6- to 10-inch-diameter pipeline connecting to PG&E's Line 400, which passes through the OGS site and enters the northeast corner of the Antioch Terminal. Construction will be by open trench within a construction corridor width of 100 feet or less. No other alternative routes were evaluated because these routes are the shortest possible and are entirely within the OGS site or Antioch Terminal, thus requiring no additional offsite rights-of-way or utility easements. PG&E will construct, own, and operate these new pipelines.

The connecting pipelines will be constructed of alloyed carbon steel in accordance with the American Petroleum Institute (API) specification for gas pipeline and PG&E standards. The pipe will have factory-applied corrosion-protection coating. Joints will be welded, inspected using x-ray or other non-destructive testing method, and wrapped with a corrosion-protection coating.

ANALYSIS

Staff's CEQA analysis was limited to the new interconnection pipelines up to the point where they tap into the PG&E gas system. The new pipeline(s) that would interconnect OGS to PG&E's gas transmission lines and terminate at the new on-site metering station would be designed, constructed, operated, maintained, managed by PG&E in accordance with 49 Code of Federal Regulation (CFR) 192 and California Public Utilities Commission (CPUC) General Order No. 112. These regulations constitute an existing extensive regulatory program that Staff believes is sufficient to ensure the pipeline would be built and operated in compliance with all laws, ordinances, regulations and standards (LORS), and without significant risk to public safety. This same regulatory program also applies to the existing pipelines Line 303 and Line 400.

Further, in analyzing the proposed connecting pipeline, Staff reviewed the design of the proposed new pipelines to evaluate their risk to public safety. The proposed pipelines, the interconnections to the PG&E pipeline, and the existing pipelines in the immediate vicinity of the interconnection would be located in an area that is unpopulated, with the nearest residences about 1,000 feet southwest from the new line interconnections, and approximately 1,200 feet from the onsite OGS metering station. Other existing and proposed commercial occupancies would also be more than 1,000 feet from the proposed interconnection point. According to 49 CFR 192.903 guidelines, the Potential Impact Radius² (PIR) of a pipeline means the radius of a circle within which the potential failure of a pipeline could have significant impact on people or property. The PIR for a connecting pipeline of the worst-case largest proposed 10-inch diameter connected to Line 400 operating at 975 pounds per square inch gas pressure would be 215 feet. For a 10-inch diameter connecting pipeline connected to Line 303 operating at 720 pounds per square inch gas pressure the PIR would be 185 feet. Significant impacts to public safety would not be expected to occur in this setting even in the event of a complete loss of

² $PIR = 0.69 * (\text{square root of } (p * d^2))$ where 'p' is the Maximum Allowable Operating Pressure (MAOP) in the pipeline segment in pounds per square inch and 'd' is the nominal diameter of the pipeline in inches. '0.69' is the factor for natural gas.

containment of either of the new pipelines, or, the risk would be less than significant. Should a rupture of one of the 36-inch transmission pipelines occur at the point of interconnection with the OGS interconnection pipeline, the PIR would be 667 feet for Line 303 and 776 feet for Line 400. As both of these distances are less than the distance to the nearest residence, the risk would again be less than significant.

Recent pipeline incidents notwithstanding, Staff contends that the current existing regulatory programs applicable to natural gas interconnection and transmission lines protect the public from significant risk. In the absence of evidence that such a program is insufficient to protect the public, CEQA allows a lead agency to rely on such programs. However, the committee has asked if the addition of OGS would have effects on either Line 303 or Line 400. Both transmission pipelines are 36-inches in diameter. PG&E has not indicated that the OGS gas demand would cause significant effects on the gas lines' flow rates and pressures, requiring them to operate outside the current range of normal, safe and prescribed operating procedures. Staff does not believe that the interconnection of the OGS project to either Line 303 or Line 400 would have significant impacts or effects on their operation.

The design and operation of either Line 303 or Line 400 consistent with applicable codes renders potential pressure fluctuations by the proposed project insignificant to the safety of the pipeline. Furthermore, both Line 303 and Line 400 are designed for a Maximum Allowable Operating Pressure (MAOP) and PG&E is required to maintain pressure below this limit. This limit is less than 80 percent of the pressure that would cause the hoop stress in the line to exceed the Specified Minimum Yield Strength of the steel pipe wall. The codes that apply to the design of Line 303 and Line 400 address cyclic loading through specification of pipeline steel grading and requirement for ductility of the steels that can be used. Steels used in manufacturing of pipe used for high pressure natural gas transmission must be tested to ensure both ductility and toughness and it is explicit that this testing renders cyclic loading insignificant in normal pipeline operation and allows design based on yield strength alone to insure safe operation of natural gas pipelines where pressures are maintained below the MAOP.

Staff finds no plausible mechanism for induced damage from the interconnection pipeline to OGS to cause significant impacts, either geological or pressure related, to the gas transmission lines to which they would connect. Staff's analysis indicates that the closest potential High Consequence Area (HCA) along the connected-to gas transmission pipelines from the point of interconnection would be approximately one mile south of the point of interconnection. Staff does not believe that there is any significant risk that effects of the OGS connection would cause impacts at that distance along the gas transmission pipelines.

CONCLUSION

Staff contends that the current existing regulatory programs applicable to natural gas transmission lines protect the public from significant risk from the new pipelines and from the existing pipelines. In the absence of evidence that such a program is insufficient to protect the public, CEQA allows a lead agency to rely on such programs.

Staff has attempted to obtain answers to the questions posed by the Committee. Staff has contacted the applicant, PG&E, and the CPUC but has not yet received any germane information in response. Staff managed to find some limited data through searches of public submittals in CPUC proceedings on the gas transmission lines in question. That information is included in Staff's responses to the Committee's questions:

Staff's Responses to the Committee's Questions

1. What testing has PG&E performed on lines 303 and 400 within the past ten years?

Staff response: Staff is not aware of the testing history of these lines. That being said, the required Pipeline Integrity Management (PIM) Program would require that periodic gas leak inspections, cathodic protection current be characterized, and Direct Assessments (DA) by digging up sections for inspections for external corrosion, or In-Line Inspections (ILI) such as pigging and cameras for internal corrosion be done every five to seven years. Results from the PIM inspections could dictate changes of pipeline operations, including pressure and flow derates, repairs, or changes of inspection frequency or types. Records of these tests and operational changes would be kept by PG&E and audited by CPUC.

2. If PG&E has not performed hydrostatic testing on line 303 or line 400 are there any known plans for such testing to occur and if so, when will this occur?

Staff response: Staff is not aware of the testing history of these lines. Because Staff does not know the initial date of installation of these pipelines, Staff cannot say if they were ever hydrostatically tested. Pipelines permitted by CPUC in California after July 1, 1961 were required to be hydrostatically tested during their commissioning. Both pipelines were installed before 1975. As pipelines age and undergo inspections, sections can require replacement due to damage, corrosion or changes in operational needs. The newly installed sections would be built to the pipeline latest codes in force at the time, and would be hydrostatically tested during their installation. It is likely that at least some sections of the pipelines have been tested and/or replaced.

3. Are there existing known conditions/flaws/defects regarding lines 303 and 400? If so, identify and describe each such condition/flaw/defect.

Staff response: Staff has no *specific* knowledge of existing operating conditions on these lines. Results from inspections, whether done by DA, ILI, or other method, often uncover conditions, flaws, defects, corrosion, etc. These can range in severity, and as some may be time dependent (i.e.: they may increase in severity with time), they are evaluated for severity and likely growth rate, and remedial maintenance plans are prioritized and scheduled to maintain safe operation. This activity is similarly required by the PIM.

4. What is the maximum operating pressure (MOP) and maximum allowable operating pressure (MAOP) on line 303 and on line 400? Has the MAOP on either line been reduced as a result of any degradations of the line?

Staff response:	Line:	Line 303	Line 400
	Diameter:	36 inches	36 inches
	MOP:	720 psi*	975 psi
	MAOP:	720 psi	975 psi
	MAOP reductions:	unknown	unknown

* pounds per square inch pressure
(Source: PG&E filing with CPUC on March 15, 2011)

When pipeline inspection tests find defects, flaws, or damage in a section of pipeline, the impact of those defects on the safe maximum operating pressure of the pipeline is evaluated (using proven and approved computer codes for complex situations). Operating pressures may be temporarily adjusted downward to maintain a safe operating pressure safety margin in that section of pipeline, until such time that defects have been repaired. Once repairs are made, operating pressure can be restored, but can still never exceed the pre-existing MAOP.

5. To what extent (stated in numbers) would addition of OGS increase the pressure on line 303 and on line 400? Explain whether, and how, these increases are in conformance with applicable laws, ordinances, regulations, and standards.

Staff response: Staff has no *specific* knowledge of existing operating conditions on these lines. The OGS, because of its small connecting pipeline size (6 to 10 inch diameter) relative to the 36 inch diameter of the transmission pipeline it connects to, would consume a small portion of the transmission line's capacity. Staff's estimates are that OGS would use less than 8 percent of the transmission line's capacity. The pipeline operator would manage this new demand through their pressure control and compressor system so existing gas customers would not be adversely affected and so the pressure at any point on the transmission pipeline would not exceed its safe MAOP. The transmission line operation would remain in compliance with LORS.

6. Will increased gas pressure affect/exacerbate existing conditions on line 303 or line 400? If so, explain the response.

Staff response: Staff has no *specific* knowledge of existing conditions on these lines. Further, staff has no information that suggests that existing conditions or pressures are out of conformance with expect or required operating parameters such that the addition of OGS would exacerbate, or worsen, them.

7. Given that OGS might have numerous startups/shutdowns and ramping up and down over the course of any given year in response to various dispatch orders, would line 303 or line 400 be adversely affected by corresponding pressure changes?

Staff response: Staff has no *specific* knowledge of existing operating conditions on these lines. The codes that apply to the design of Line 303 and Line 400 address cyclic loading through specification of pipeline steel grading and requirement for ductility of the steels that can be used. Steels used in manufacturing of pipe used for high pressure natural gas transmission must be tested to ensure both ductility and toughness and it is explicit that this testing renders cyclic loading insignificant in normal pipeline operation and allows design based on yield strength alone to insure safe operation of natural gas pipelines where pressures are maintained below the MAOP.

DATED: March 18, 2011

Respectfully submitted,



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DECLARATION OF Geoffrey Lesh

I, **Geoffrey Lesh** declare as follows:

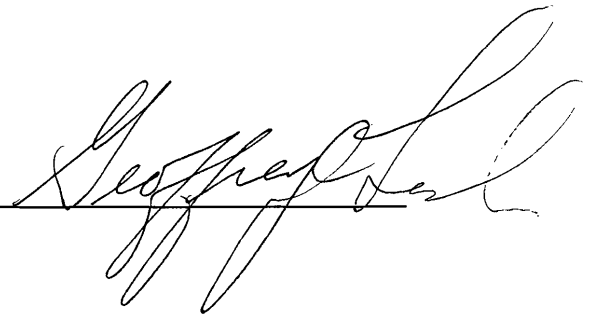
1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Siting, Transmission and Environmental Protection Division as a **Mechanical Engineer**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff supplemental testimony on the **Hazardous Materials Management Section** for the **Oakley Generating Station Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____

March 17, 2011

Signed: _____



At: _____

Sacramento, California



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**APPLICATION FOR CERTIFICATION
FOR THE *OAKLEY GENERATING STATION***

**Docket No. 09-AFC-4
PROOF OF SERVICE
(Revised 3/3/2011)**

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DECLARATION OF SERVICE

I, Janet Preis, declare that on March 18, 2011, I served and filed copies of the attached Supplemental Testimony for Oakley Generating Station on Hazardous Materials Management, dated March 18, 2011. The original document filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

<http://www.energy.ca.gov/sitingcases/oakley/index.html>].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

- ☒ sent electronically to all email addresses on the Proof of Service list;
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☒ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses NOT marked "email preferred."

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- ☒ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (*preferred method*);

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CALIFORNIA ENERGY COMMISSION

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1516 Ninth Street, MS-4
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I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

/s/ Janet Preis