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COMMISSION DECISION

Application For Certification For

KERR McGEE CHEMICAL CORPORATION'S ARGUS COGENERATION EXPANSION PROJECT

Docket No. 86-AFC-1

JANUARY 1988

CALIFORNIA ENERGY COMMISSION

George Deukmejian, Governor

P800-88-001

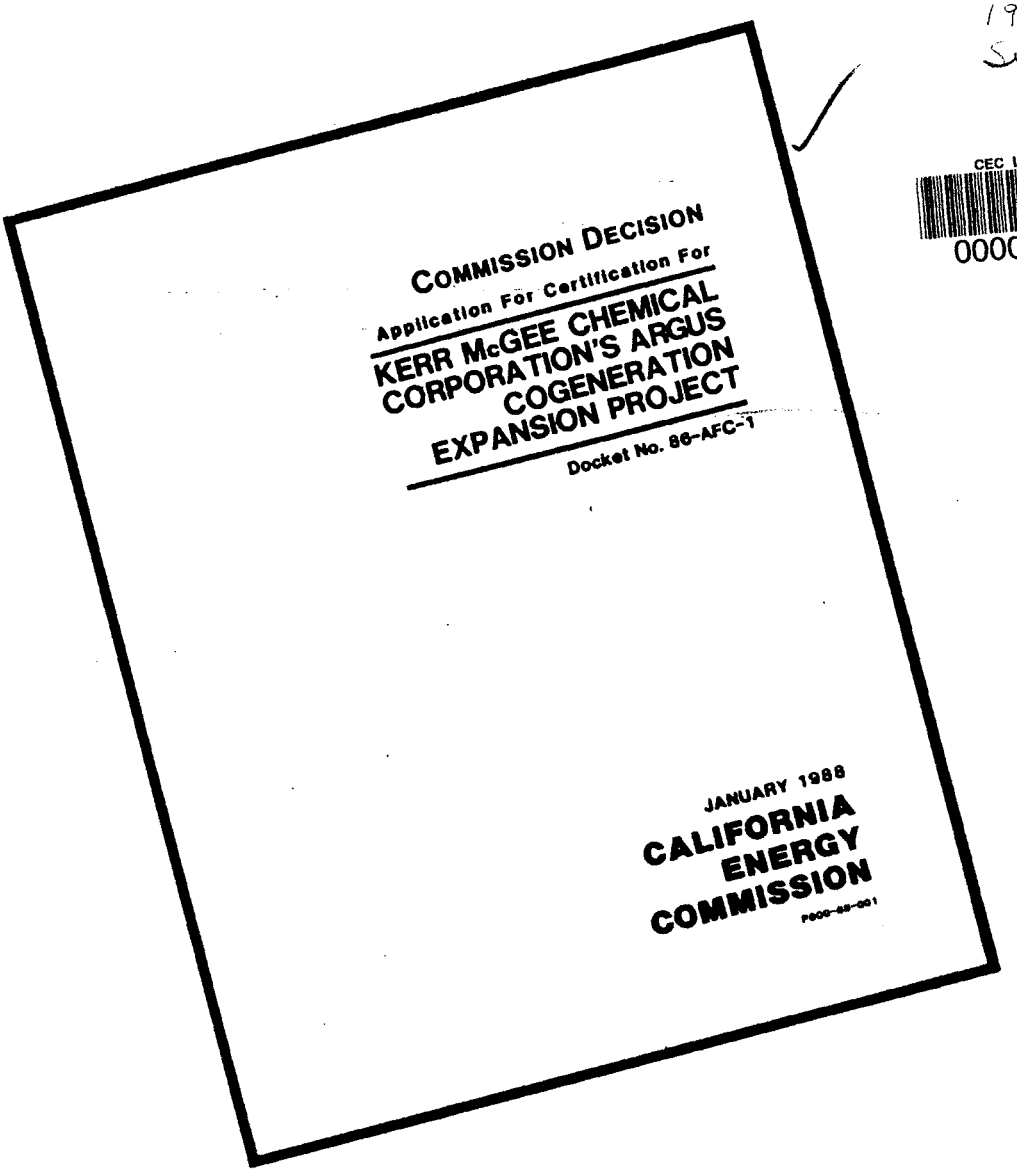


TABLE OF CONTENTS

(TABLE OF CONTENTS, cont.)

PART ONE -- GENERAL

I. PROJECT DESCRIPTION

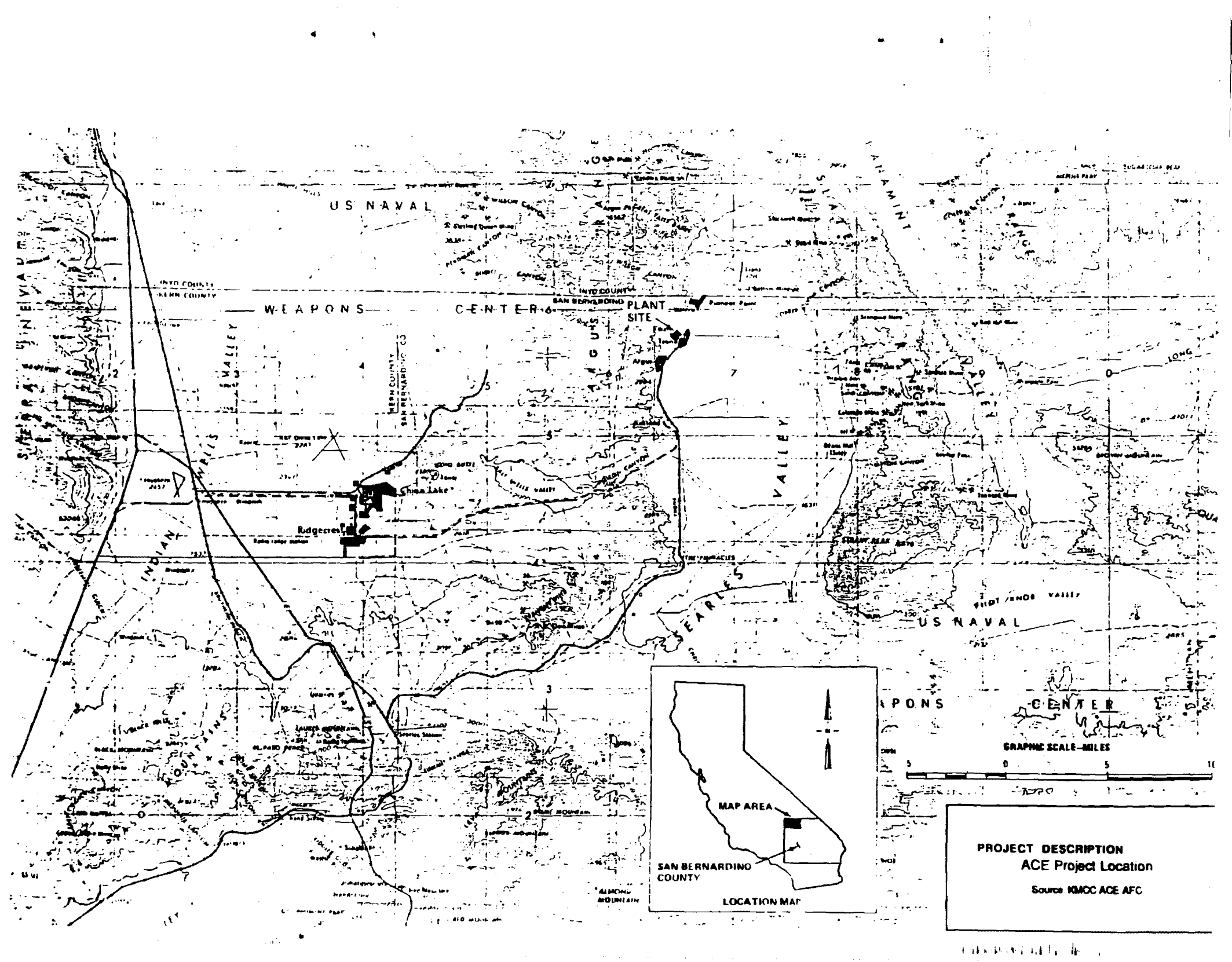
A. The Power Plant and Transmission Line Facility

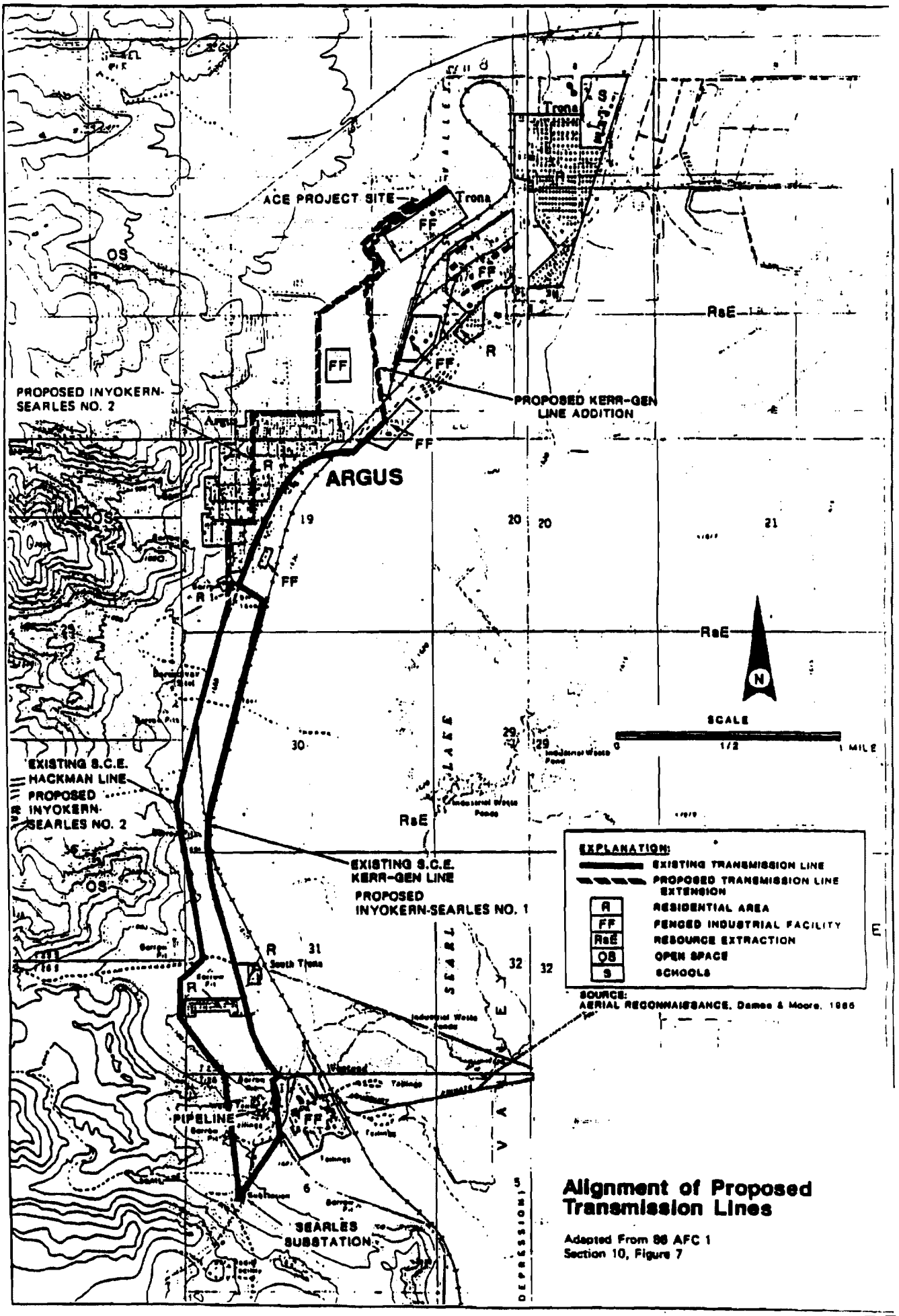
The Kerr-McGee Chemical Corporation (KMCC), a subsidiary of Kerr-McGee Corporation, is the Applicant for the proposed Argus Cogeneration Expansion (ACE) project. The purpose of the ACE project is to demonstrate the technological and economic feasibility of using a circulating fluidized bed (CFB) combustion system to produce an annualized average of 89.9 MW of electricity for sale to Southern California Edison while coproducing an annualized average of 60,000 lbs/hr of process steam for use by the KMCC chemical production plant. The project would be situated at KMCC's Argus-Trona facility, located near Trona in the northwest corner of San Bernardino County.

The major elements of the proposed facility are the circulating fluidized bed boiler, an automatic extraction steam turbine generator, and ancillary support equipment. The CFB boiler will be coal-fired, and natural gas may be used as start-up and back-up fuel. Air quality impacts will be minimized with limestone injection, non-catalytic ammonia injection, and bag house filtration of the flue gas. Power from the electrical system will be delivered to the SCE transmission system at 115 kV via a "hardwired tap" outside of the Searles substation. Parallel 115 kV transmission lines will extend from the "tap"

point to the ACE switchyard, one along the existing Kerr-Gen distribution line and the second replacing the existing Hackman line.

A water pipeline will be constructed from the plant site to a well field near Valley Wells approximately 7.8 miles to the northeast. Two new wells will be constructed, and two 20-inch pipelines will replace an existing 20-inch pipeline.

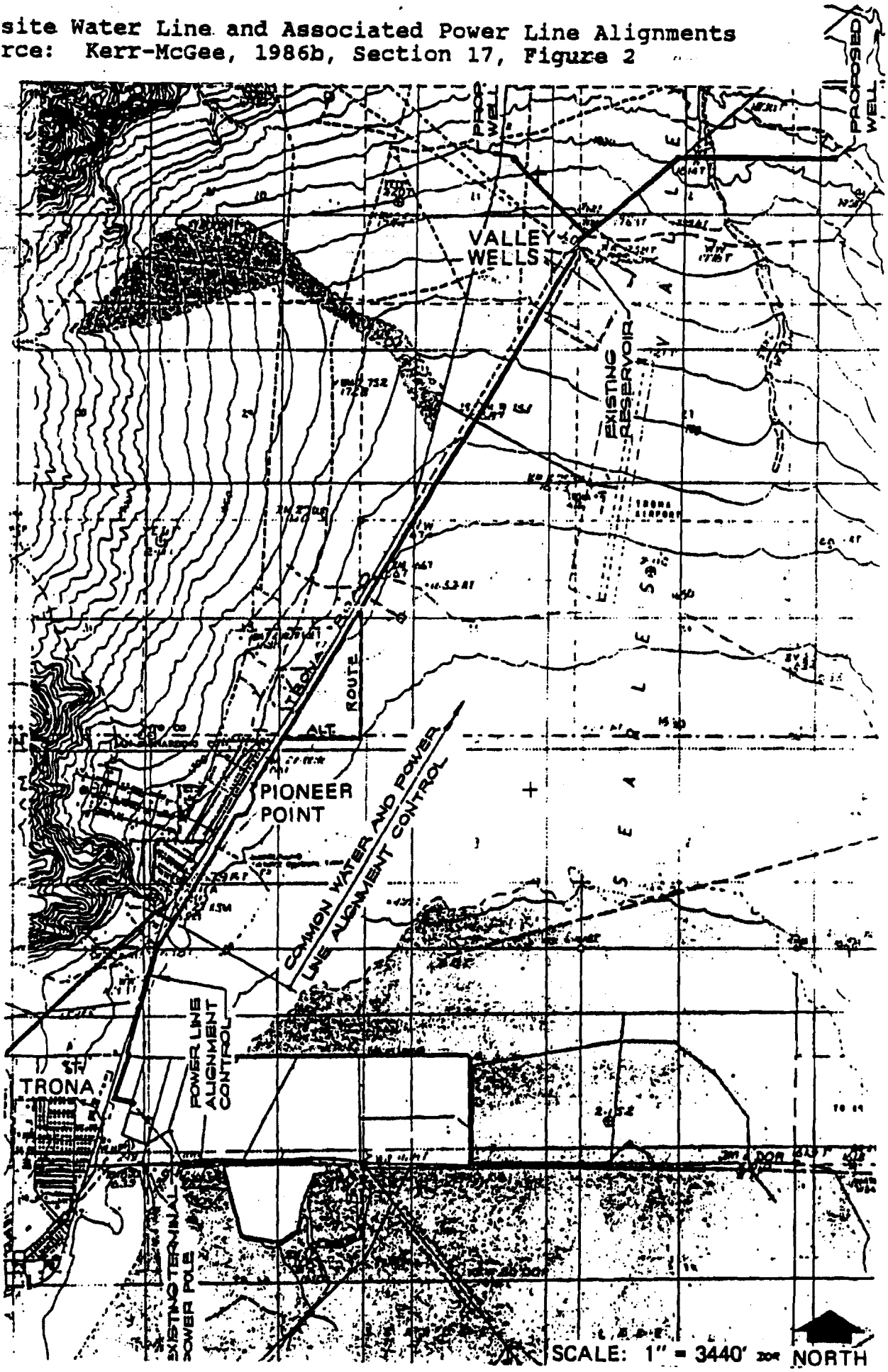

US NAVAL
WEAPONS CENTER
PLANT SITE
China Lake
Ridgecrest
SAN BERNARDINO COUNTY
MAP AREA
SAN BERNARDINO COUNTY
LOCATION MAP
GRAPHIC SCALE—MILES
PROJECT DESCRIPTION
ACE Project Location
Source KMCC ACE AFC



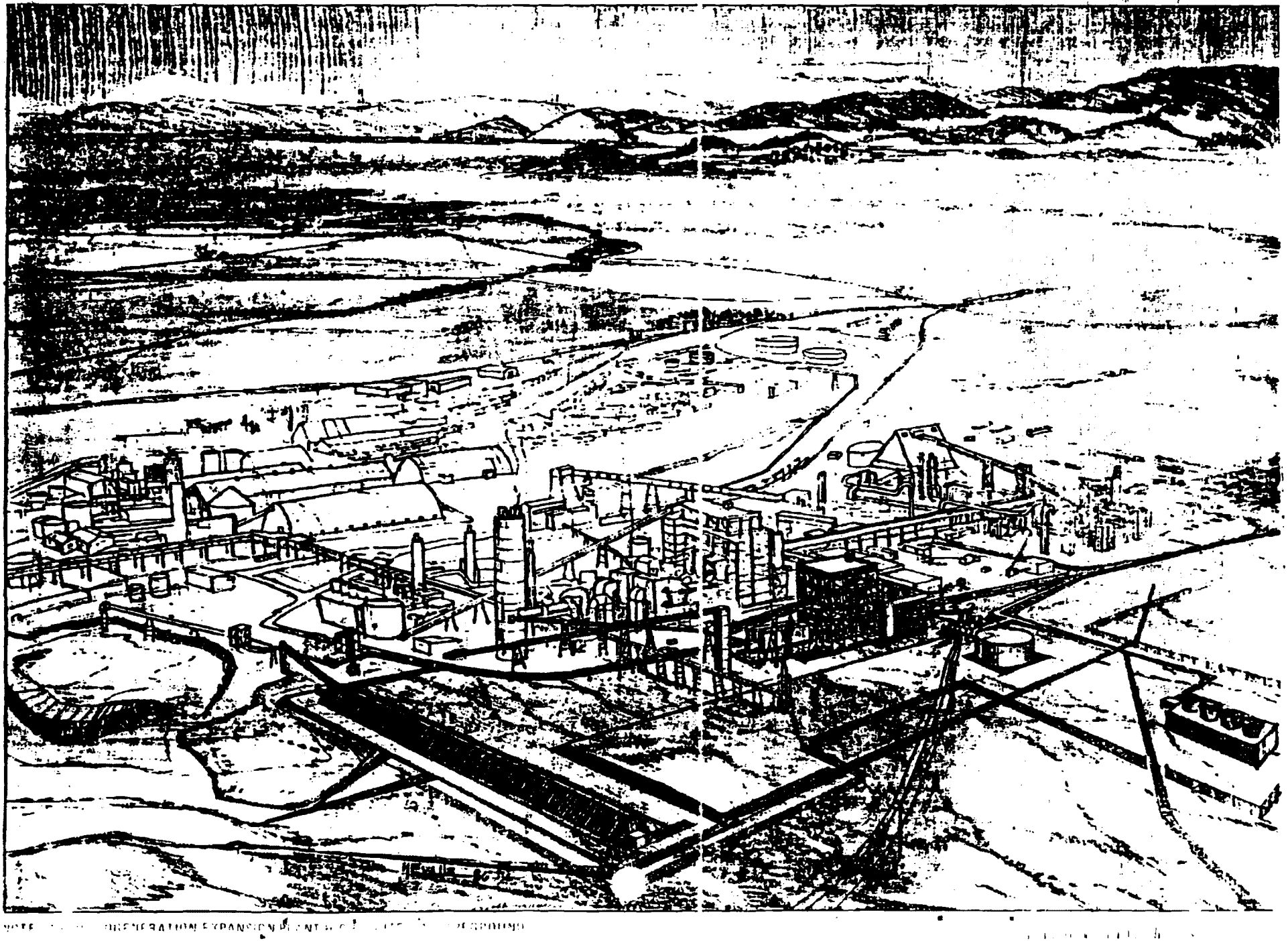
Alignment of Proposed Transmission Lines

Adapted From 86 AFC 1
Section 10, Figure 7

Offsite Water Line and Associated Power Line Alignments
Source: Kerr-McGee, 1986b, Section 17, Figure 2



Artist's Rendering of Existing and Proposed KMCC Facilities.
Source: Kerr-McGee, 1986a, Section 4, Figure 4.1-4



II. PROCEEDINGS TO DATE

The Applicant submitted the Application for Certification (AFC) for the ACE project on January 29, 1986. The AFC was deemed filed as of June 11, 1986, following Applicant's submission of additional data to complete its filing.

On July 28, 1986, the Committee conducted a public conference regarding, among other issues, the applicable criteria for determining demonstration project status under Public Resources Code 25540.6 (e). The Committee conducted an Informational Hearing and Site Visit on August 15, 1986. On August 27, 1986, the Committee issued an Order granting the ACE project demonstration status.

Staff made its Preliminary Staff Assessment (PSA) available on January 12, 1987. A supplement to the PSA (on the topics of Transmission Line Engineering and Transmission System Evaluation) was submitted on March 3, 1987. The Final Staff Assessment (FSA) was filed March 17, 1987.

The Committee held a prehearing conference to schedule evidentiary hearings and witnesses on March 6, 1987, and conducted an evidentiary hearing on uncontested matters June 1, 1987.

On August 10, 1987, the San Bernardino County Air Pollution Control District (SBCAPCD) issued its Determination of Compliance. Staff submitted an amendment to the March FSA on August 24, 1987.

Based upon these submittals, the Committee conducted a second Prehearing Conference on September 10, 1987 to identify remaining subject areas. At the evidentiary hearing on September 24, 1987, all evidence was taken in the form of documentary evidence supported by declarations of the authoring witnesses. The findings and conclusions are based upon that evidence.

The Committee issued the Presiding Member's Report (PMR) on October 29, 1987. The period for providing written comments on the PMR expired December 14, 1987. The Committee issued the Proposed Decision on December 22, 1987, which was adopted by the full Commission on January 6, 1988.

III. CONFORMITY TO THE DEMAND FORECAST

KMCC filed its Application for Certification (AFC) pursuant to Public Resources Code section 25540.6(e), which exempts demonstration facilities from the need to demonstrate conformity with the adopted forecast. KMCC contended that this project will demonstrate the performance of a large coal-fired facility with a circulating-fluidized-bed technology combined with noncatalytic ammonia injection to control oxides of nitrogen (NO_x) emissions. Because a project of this type and size with this pollution control system has not been commercially demonstrated in California, KMCC argued that it qualifies as a demonstration facility and the AFC should be reviewed under Public Resources Code section 25540.6(e). Pursuant to the terms of Public Resources Code section 25540.6(e) the requirement for an affirmative finding of conformity to the demand forecast (Pub. Resources Code, § 25524) does not apply. Public Resources Code section 25540.6(e) provides:

> Notwithstanding any other provisions of law, if a person proposes any of the following, no notice of intention shall be required, and the commission shall issue its final decision on the application, as specified in Section 25523, within 12 months after the filing of the application for certification of such powerplant and related facility or facilities, or at such later time as is mutually agreed by the commission and the applicant:
>
> . . .
>
> (e) A thermal powerplant designed to develop or demonstrate technologies which have not previously been built or operated on a commercial scale. Such research, development, or commercial demonstration project may include, but not be limited to, use of renewable or alternative fuels, improvements in energy conversion efficiency, or use of advanced pollution control systems. Such facility may not exceed 300 megawatts unless the commission, by regulation, authorizes a greater capacity. The provisions of Section 25524 shall not apply to any such powerplant and related facility or facilities.

On July 28, the Committee conducted a conference on the Applicant's request for an RD&D exemption from demand conformance. The Committee granted Applicant's motion at the conclusion of the hearing based on the terms of the Fifth Electricity Report which permitted the exemption for facilities not listed as commercially available in Appendix 7.4 thereof. On August 27, the Committee issued an Order granting the ACE project an exemption from the demand conformance provisions of Public Resources Code section 25524 as a demonstration project under Public Resources Code section 25540.6(e).

Providing the project is not altered to affect the Conditions of Certification below, no need analysis is required when the status of the project changes from its demonstration phase to commercial operation.

CONDITIONS OF CERTIFICATION

1. The project's primary fuel shall be coal with only minor amounts of natural gas used for start-up and flame stabilization purposes. However, other fuels such as coke and natural gas may be used in conjunction with coal for demonstration purposes.

   Verification: KMCC shall specify in its annual compliance report the amounts of each fuel used.

2. Power from the facility shall be sold to SCE, pursuant to terms of the existing power purchase agreement.

   Verification: KMCC shall submit to the CEC Compliance Project Manager a copy of the final power purchase agreement prior to the start of operation. KMCC shall also submit to the CEC Compliance Project Manager a copy of any future amendments to the power purchase agreement, including attestations of changes in project ownership.

3. KMCC, or any successors in interest, shall immediately notify the CEC Compliance Project Manager of any planned changes in the power purchase agreement, design and/or operating characteristics, fuel type and cogeneration status of the ACE project as proposed and considered during these proceedings, and shall obtain approval from the Commission before

making any such alteration. The CEC Compliance Project Manager will notify the Siting and Regulatory Procedures Committee and interested agencies or parties of the proposed change.

Verification: KMCC, or any successors in interest, shall immediately notify, in writing, the CEC Compliance Project Manager of any planned alterations in the sales, design, and/or operating characteristics of the ACE project as proposed and considered during these proceedings.

PART TWO -- THE POWER PLANT

I. ENVIRONMENTAL ANALYSIS

The Warren-Alquist Act and the California Environmental Quality Act (Pub. Resources Code, §§ 25000 et. seq. and 21000, et. seq., respectively) require an assessment of the nature and degree of environmental impacts caused by a proposed project, and require the permitting agency to evaluate the adequacy of measures proposed to lessen or avoid such impacts. The following subparts summarize the evidence presented on impacts to the natural and human environments. Since the subject matters hereunder are inter-related, the discussions, findings, and conditions must be considered an entirety, the specific elements of which may cross over into related areas.

A. Air Quality

Air quality impacts are one of the major environmental issues related to the proposed ACE project. Impacts are determined to be significant if project emissions will result in a violation of any local, state, or federal ambient air quality standard, or add to an existing violation.

The proposed project will be located in the Searles Valley in the northwest corner of San Bernardino County, within the jurisdiction of the San Bernardino County Air Pollution Control District (SBCAPCD). Ambient air quality data collected at three KMCC stations and an SBCAPCD monitoring station indicate the area is in violation of state 24-hour and annual TSP, 1-hour NO_2, H_2S, PM_{10} and sulfate standards (August FSA 16-6-7, 16-11). The existing KMCC facilities are the only significant air pollutant sources in the area, and are the major contributors to the ambient pollutant levels (August FSA 16-11, 16-36).

Operation of the ACE project will result in pollutant emissions from the project boiler stack, cooling tower, and fugitive emissions from coal, lime and ash handling facilities. Project emissions will contribute to the ambient TSP, PM_{10} and SO_4 levels, which already exceed state standards. The project's incremental impact for NO_2 will result in the exceedance of the state 1-hour NO_2 standard in elevated terrain (August FSA 16-24, 16-27, 16-30, 16-34, 16-49).

In September 1987, the SBCAPCD issued a revised final Determination of Compliance (DOC) for the ACE project containing permit conditions to assure the proposed project will be constructed and operated in compliance with District rules and regulations. These conditions are incorporated as Conditions of Certification 11 through 56, below.

KMCC will mitigate project air quality impacts by incorporating air pollution control equipment that will minimize operation emissions (August FSA 16-36-39). In addition, KMCC will reduce emissions from its existing sources at its Argus, Trona and Westend facilities by the use of more efficient emission controls or by shutting them down. (August FSA 16-38-49). The result is that there will be a net reduction in total emissions from the facilities operated by KMCC after the project is built. Although mitigation measures for the control of NO_x will not yet be in place during the initial ACE boiler start-up, the temporary NO_x increase during the shakedown period (when the systems will be tested for reliability) is outweighed by the long-term, slight net emissions benefit in the Searles Valley (August FSA 16-50 - 51).

FINDINGS

Based upon the evidence of record, the Committee finds:

1. If operated according to the Conditions of Certification, below, the ACE project will comply with the Determination of Compliance and the standards, ordinances and laws set forth in the "Air Quality" section of Appendix A of this Report.

2. If operated according to the Determination of Compliance and the Conditions of Certification, below, the ACE project will result in a net emissions decrease for NO_x, SO_2, NMHC, TSP, SO_4 and PM_{10}.

CONDITIONS OF CERTIFICATION

Requirements 1 through 3 are CEC staff conditions while requirements 11 through 56 are SBCAPCD conditions included in the DOC. (Note: There are no conditions 4-11).

1. Before implementing any major changes in the (1) the basic pollutant generating equipment as described in ACE permit units 1 through 7 of the SBCAPCD's DOC, (2) Air Emissions Control System (AECS), (3) Emissions Monitoring System (EMS), (4) the Computer Control System (CCS), or (5) the emission offsets of Conditions 41, 48, 52, 53, 55, and 56, Kerr-McGee Chemical Corporation (KMCC) shall submit the proposed change to the SBCAPCD and Compliance Project Manager for approval. Examples of major changes are the use of an alternative AECS, EMS, or CCS, or a major change to the emissions offset package.

   Verification: 60 days before implementing any major change identified above, KMCC shall submit to the SBCAPCD and the Compliance Project Manager the design details of the proposed change and a discussion of the potential change in air emissions from the project or the changes to the proposed offsets for the project. KMCC shall receive written approval from the Compliance Project Manager prior to implementing any major change.

2. KMCC shall obtain from the U.S. Environmental Protection Agency (EPA) a Prevention of Significant Deterioration (PSD) permit or exemption.

   Verification: Within 30 days of receipt of the PSD permit or PSD exemption notification from the EPA, KMCC shall submit a copy of the PSD permit or exemption notification to the Compliance Project Manager.

3. All areas disturbed by construction in the immediate vicinity, and under KMCC's responsibility during the construction phase, shall be properly and routinely treated for dust control by water application or paving to comply with the requirements of SBCAPCD Nuisance Rule 402 and Fugitive Dust Rule 403.

   Verification: 30 days prior to the commencement of construction, KMCC shall notify the SBCAPCD and the Compliance Project Manager of the date of commencement of construction of the ACE Project. KMCC shall make the construction site available to the SBCAPCD and the CEC staff for inspection and monitoring. If any dust suppressant other than water is proposed, KMCC shall obtain approval from the SBCAPCD.

11. The Argus Cogeneration Expansion (ACE) Project must meet the requirements of all of the Rules and Regulations of the San Bernardino County Air Pollution Control District and the laws and codes of the United States Environmental Protection Agency and California Air Resources Board. Operation of this equipment must be conducted in compliance with all data and specifications submitted with the application under which these conditions are issued unless otherwise noted below. The proposed project includes the construction and operation of the ACE facility and the

contemporaneous modification or shutdown of existing facilities such that the net emissions increase (except for CO) is less than New Source Review (NSR) threshold levels defined in SBCAPCD Regulation XIII. The emission rates shall be based on averaging periods as indicated in the specific permit conditions. (DOC General Permit Conditions 1 and 2)

Verification: In the Annual Compliance Report, KMCC shall provide the Compliance Project Manager with copies of all reports related to the ACE project submitted to the SBCAPCD and copies of all notices related to the ACE project received from the SBCAPCD. The SBCAPCD and the CEC staff will, at the request of either party, meet to review the status of project compliance. The CEC staff shall be allowed to review the SBCAPCD's enforcement and project files except for "trade secrets" which will be managed as set forth in SBCAPCD rules.

12. KMCC shall report to the SBCAPCD any reduction of power output during the initial startup period of the ACE boiler and associated equipment. The initial startup period is the completion of 15 consecutive days of operation of the ACE boiler at 90 percent capacity or greater. Progress toward the achievement of 90 percent capacity will be monitored by the SBCAPCD and the CEC Staff to assure that unwarranted delays do not occur. Any failures of output reductions to a level below 90 percent capacity during the 15 day period must be reported to the SBCAPCD within four hours and fully documented within 48 hours. The effect of such actions (either prior to or during the 15 day period) on the initial startup date will be determined by the SBCAPCD and the CEC Staff. (DOC General Permit Condition 3)

    Verification: During the 15 day initial startup period, KMCC shall report any failures or electrical output reductions to a level below 90 percent capacity to the SBCAPCD within four hours and shall submit full documentation of the failure or power reduction within 48 hours. Such reports shall be submitted to the Compliance Project Manager in the Quarterly Compliance Reports.

13. KMCC shall not exceed at any time subsequent to initial startup, the air pollutant threshold levels, except as allowed by the schedule for completion of the retrofit of the Argus boilers Nos. 25 and 26 as defined in the permit conditions pertaining to same. This requires that all modifications or shutdowns specified in the permits discussed herein shall be in place and verified by compliance tests as required prior to the actual light off (i.e., the first actual firing of the ACE boiler on any fuel), except for the retrofit of the Argus boilers Nos. 25 and 26 for increased NOx control. If the assumed emission rates (i.e., permit emission limits incorporated herein) contained in the SBCAPCD's Determination of Compliance analysis and the CEC staff's analysis are shown to be exceeded during the initial compliance testing of the ACE boiler or of the existing facilities which have been modified contemporaneous (i.e. as per retrofit schedules specified herein) with the ACE boiler initial startup, KMCC shall submit a revised analysis demonstrating compliance with the overall emission reductions which form the basis of this analysis within 50 lbs/day for any air contaminant

except for particulate sulfate which shall not change by more than 12 lbs/day. Changes to the permit emission limits must be approved, in writing, by the SBCAPCD Executive Officer and the Compliance Project Manager based on this revised analysis. (DOC General Permit Condition 3)

Verification: If the emission rates are exceeded at the time of the initial compliance testing, KMCC shall submit within 60 days a revised compliance plan to the SBCAPCD and the Compliance Project Manager. That plan shall demonstrate compliance with the overall emission reductions requirements for any part of the ACE project or the existing modified facilities associated with the ACE project that exceed, as a result of compliance source testing, the pollutant threshold levels set forth in the following conditions. Amendments to the permit emission limits consistent with the new plan (analysis) must be approved, in writing, by the SBCAPCD and Compliance Project Manager on this revised analysis.

14. Emission reductions claimed under this application and submitted with the application under which the permits implementing such emissions reductions are issued cannot be claimed for emission reduction credits against future projects. (DOC General Permit Condition 4)

    Verification: Concurrent with submittal of Application for Authorities to Construct to the SBCAPCD that include a modification to the emissions of air contaminants from SBCAPCD permits B000554, B000555, B001916, B001920, B001921, B001922, B001923, B001924, B001926, B000223, B000224, B000225, B000226, B000235 or B001766, KMCC shall include copies of those Authorities to Construct to the Compliance Project Manager.

15. Since air pollution regulatory agencies are considering new toxic substance controls on a continuing basis, such new regulations, as required by federal or State laws or regulations or as adopted by the San Bernardino County Air Pollution Control Board in the future, shall be incorporated as conditions to all the affected permits herein, and compliance tests shall be required. KMCC shall submit a test plan to demonstrate compliance, based on SBCAPCD recommended methodologies or as revised by KMCC, for SBCAPCD approval. (DOC General Permit Condition 5)

    Verification: KMCC shall submit the above plan to the SBCAPCD and the Compliance Project Manager, concurrent with the first required submission to any governmental agency and within the time specified in any new toxic substance control regulations. This plan is subject to SBCAPCD approval based on SBCAPCD recommended methodologies or as revised by KMCC and approved by the SBCAPCD.

16. For a period of one year following initial startup, and the completion of all modifications to the Argus 25 and 26 boilers specified in Condition 42, KMCC shall continue ambient air quality monitoring at the current ACE-2 and ACE-3 stations and meteorological measurements at 10 meters and 100 meters at the current ACE-4 station. The particulate measurements shall include PM10 and sulfate determinations. Particulate monitoring (TSP and PM10) shall be continued during construction of the ACE project. (DOC General Permit Conditions 8 and 9)

Verification: KMCC shall submit to the SBCAPCD the ACE-2, ACE-3 and ACE-4 data summary reports 15 days after the end of each month. KMCC shall submit to the Compliance Project Manager the ACE-2, ACE-3 and ACE-4 data summary reports in the quarterly reports.

17. The ACE steam generation system (SBCAPCD Permit ACE-1) shall be fired only with coal and high-carbon fly ash from the Argus boilers Nos. 25 and 26. For the coal, the total sulfur content shall not exceed 0.9 percent by weight and the fuel nitrogen shall not exceed 2.0 percent by weight. Natural gas may be fired during startup and for stabilization. Also, natural gas may be fired in emergencies caused by coal shortages.

The maximum firing rate shall be 1108 MMBtu/hr (i.e. 100 percent capacity); provided, however, that the maximum firing rate may be increased upon demonstration to the Executive Officer, through compliance tests, that the requirements of Condition 19 are still met. (DOC Permit Unit ACE-1 Condition 2)

Verification: KMCC shall maintain a fuel purchase and consumption log on-site for inspection by SBCAPCD, CARB and CEC staff. The log shall contain records of the daily fuel consumed, which may be calculated from daily steam production records and a monthly fuel analyses of the sulfur and fixed nitrogen contents based on fuel samples either composited "on delivery" or "as fired." If KMCC changes the fuel sampling method from "on delivery" to "as fired" or vice-versa, KMCC shall provide the log records based on both methods for a period of one month following any such change. The fuel log records shall be maintained for a period of at least two years and made available to SBCAPCD and CEC staff personnel upon request within 10 days. KMCC shall submit the fuel log records to the SBCAPCD on a monthly basis. KMCC shall submit the fuel log records to the Compliance Project Manager with the Annual Compliance Report.

18. The SBCAPCD will consider the firing of other fuels and the injection of materials other than limestone for SO2 control for short periods consistent with the KMCC Demonstration Plan submitted (dated December 15, 1986) to the CEC. To do this KMCC shall submit to the SBCAPCD, 90 days prior to testing, a detailed test plan including fuel properties and operational scenarios: a review of the implementation plan for in-stack monitoring requirements (Rule 218); an ambient air quality monitoring program; a detailed air modeling assessment of the impacts of combusting the alternate fuel on ambient air quality, calculation of anticipated emissions during startup/restart, full load, and shutdown conditions; and a demonstration of the basis for expecting that the ACE boiler will meet the emission limits shown in Condition 19. The test burn shall commence only after written approval by the SBCAPCD and written approval by the Compliance Project Manager is received. Approval implies the modification of permit conditions for the test period only; however, should any District, State or federal rule or regulation for emission limits or ambient air standards be exceeded, the test shall be terminated or appropriate emissions be offset immediately onsite. If KMCC plans to continue the test burn beyond the intended burn period, KMCC shall submit a new plan for SBCAPCD and CEC Staff approval.

a. To determine whether ambient air quality standards are being violated, KMCC shall monitor the real time gaseous pollutant measurements recorded at the ACE-2 and ACE-3 stations every three hours during the test period.

b. Emission limits contained in SBCAPCD regulations can be exceeded only upon issuance of a Variance by the SBCAPCD Hearing Board in accordance with the provisions of Sections 42350, et seq. of the California Health and Safety Code.

(DOC Permit Unit ACE-1 Condition 2)

Verification: KMCC shall submit to the SBCAPCD and the Compliance Project Manager 90 days prior to testing, the above described test plan. The test burn shall commence only after written approval by both the SBCAPCD and the Compliance Project Manager.

19. The ACE steam generation system shall not be operated unless all pollution control systems are operational and in use to the extent required to meet SBCAPCD rules and regulations and ACE boiler permit conditions, including limestone injection for SO2 control, ammonia injection for NOx control, and the permitted baghouse for particulate control. The total emissions from the ACE boiler stack at any firing rate shall not exceed the following:

Pollutant	Emission Rate (1)
ROG (as CH4)	11 lbs/hr (2)
CO	280 lbs/hr (2)
NOx (as NO2)	104 lbs/hr (2)
SOx (as SO2)	83 lbs/hr (2)
PM	14.6 lbs/hr (3)
PM10	14.6 lbs/hr (3)
Sulfates	3.7 lbs/hr (3)
Ammonia	310 lbs/day
Opacity	20 percent (4)(5)

Notes:

(1) Prohibitory limits as per SBCAPCD Rules also apply.
(2) Based on a 3-hour rolling average, computed every 15 minutes.
(3) Emission rates determined by required compliance tests referenced in Condition 28 and in Condition 29e and Condition 34.
(4) A maximum 40 percent opacity is permissible for up to two minutes in any hour.
(5) This limit shall apply both to the ACE boiler plume and to the combined plume from any combination of the ACE boiler, Argus boiler 25, and Argus boiler 26.

(DOC Permit Unit ACE-1 Conditions 1 and 3)

Verification: Refer to verification for Condition 28. KMCC shall not exceed at any time subsequent to initial startup the emission thresholds referred to above. If the assumed emission rates (i.e., permit emission limits incorporated herein) contained in the SBCAPCD's DOC analysis are shown to be exceeded during the initial compliance testing of the ACE boiler, KMCC shall submit to the SBCAPCD and the Compliance Project Manager a revised analysis demonstrating compliance with the overall emission reductions which form the basis of this analysis within 50 lbs/day for any air contaminant, except for particulate sulfate which shall not change by more than 12 lbs/day. Amendments to the permit emission limits must be approved, in writing, by the SBCAPCD Executive Officer and by the Compliance Project Manager based on this revised analysis.

20. At least 90 days prior to operation of the ACE facility, KMCC shall submit to the SBCAPCD and the Compliance Project Manager an emissions monitoring system plan detailing the required systems shown in Condition 21, the data reporting and data retention protocols and the maintenance and calibration program to minimize systematic errors. Written approval of this plan by the SBCAPCD Executive Officer is required before operation of the ACE facility can commence. Quality assurance audits (sampling, analysis, and data processing audits) will be required periodically by the SBCAPCD. (DOC Permit Unit ACE-1 Condition 4)

    Verification: At least 90 days prior to commencement of operation of the ACE project, KMCC shall submit an emission monitoring system plan to the SBCAPCD and the Compliance Project Manager that will include the requirements listed above. KMCC shall receive written approval from the SBCAPCD and the Compliance Project Manager prior to commencement of operation of the emission monitoring system of the ACE project.

21. All continuous monitoring requirements shall be performed as per the following methodologies or others as approved by the SBCAPCD Executive Officer:

    1) Continuous monitoring systems to measure stack gas concentrations shall meet EPA monitoring performance specifications (40 CFR 60.13 and 40 CFR 60, Appendix B, Performance Specification 2).

    2) A transmissometer system for continuous measurement of the opacity of stack emissions shall meet EPA monitoring performance specifications (40 CFR 60.13 and 40 CFR 60, Appendix B, Performance Specification 1).

    3) A continuous monitoring system to measure stack gas volumetric flow rates shall meet EPA monitoring performance specifications (40 CFR Part 52, Appendix E).

    (DOC General Permit Condition 7[b])

Verification: KMCC shall notify the SBCAPCD and the Compliance Project Manager at least 30 days prior to the date upon which demonstration of the continuous monitoring system commences (40 CFR 60.13[c]). SBCAPCD and Compliance Project Manager approval of the system is required.

22. Excess emissions indicated by the continuous monitoring system shall be considered violations of the applicable emission limit for the purposes of these permits except during periods of startup and stabilization which shall be treated as reportable malfunctions. However, excessive emissions during startup and stabilization shall be reported. The fuel switch from natural gas to coal during each cold start shall not exceed four hours. (DOC General Permit Condition 7[b])

    Verification: KMCC shall report excessive emissions during startup and stabilization to the SBCAPCD as as practical. All reportable malfunctions shall be included in the quarterly continuous monitoring reports submitted to the Compliance Project Manager.

23. A continuous monitoring system must be installed and operated to monitor and record the fuel consumption, which may be calculated from the steam production records, and the molar ratio of calcium/sulfur being fed to the boiler. The instruments must be accurate to within plus or minus five percent of full scale or, if such instrument accuracy is not commercially available, the best available instrumentation shall be used. (DOC Permit Unit ACE-1 Condition 4)

    Verification: KMCC shall include a discussion of the fuel consumption continuous monitoring system with the monitoring system plan required of Condition 20. KMCC shall install and operate the continuous monitoring system after approval by the SBCAPCD and the Compliance Project Manager.

24. A continuous monitoring system must be installed and operated to monitor and record the mass flow rate of ammonia injected into the boiler. The instrument must be accurate to plus or minus five percent of full scale or, if such instrument accuracy is not commercially available, the best available instrumentation shall be used. (DOC Permit Unit ACE-1 Condition 4)

    Verification: KMCC shall include a discussion of the ammonia consumption continuous monitoring system with the monitoring system plan required of Condition 20. KMCC shall install and operate the continuous monitoring system after approval by the SBCAPCD and the Compliance Project Manager.

25. A continuous emissions monitoring system must be installed and operated to measure the concentration in the ACE boiler exhaust for NOx, (i.e., NO and NO2 individually) SO2, CO, NH3, O2 and opacity. In addition, the system shall automatically convert the actual concentrations to a corrected value at three percent O2, dry basis, and continuously record the actual stack NOx, CO, O2, SO2, and corrected concentrations. This monitoring system shall comply with the requirements of SBCAPCD Rules 218 and 903. (DOC Permit Unit ACE-1 Condition 4)

Verification: KMCC shall install and operate the continuous monitoring system after approval by the SBCAPCD and the Compliance Project Manager.

26. The operator shall maintain daily records for fuel usage, ammonia usage, and stack outlet emissions (as ppmv at three percent O2, dry and lbs/hr) and opacity. Prior to the ACE boiler start-up, the protocol for maintaining daily records shall be approved in writing by the SBCAPCD Executive Officer. (DOC Permit Unit ACE-1-Condition 4)

Verification: 90 days prior to ACE boiler startup, KMCC shall submit to the SBCAPCD and the Compliance Project Manager a protocol for the format used by the operator to record daily fuel usage, ammonia usage, stack outlet emissions and opacity. KMCC shall receive approval from the SBCAPCD and the Compliance Project Manager for the protocol prior to the ACE boiler startup. All records shall be maintained on-site and be made available to the SBCAPCD and Project Compliance Manager within 10 days of notification.

27. KMCC shall conduct all required compliance tests in accordance with SBCAPCD test procedures and protocols except as noted specifically, and furnish the SBCAPCD written results of such compliance tests within 45 days after testing. 30 days prior to the compliance source tests, KMCC shall provide a written test plan to SBCAPCD and CEC Staff for review and approval. KMCC shall provide to the SBCAPCD and Compliance Project Manager written notice 10 days prior to the compliance tests so that an observer(s) may be present. (DOC General Permit Condition 6)

Verification: KMCC shall comply with all requirements of the above condition and provide the compliance source tests plan and test results described above to the SBCAPCD. KMCC shall simultaneously submit copies of transmittal letters to the SBCAPCD and all reports described above to the Compliance Project Manager. KMCC shall not conduct such compliance tests until written approval from the SBCAPCD and the Compliance Project Manager is received.

28. All compliance (performance) source tests shall be performed as per the following methodologies or others as approved by the SBCAPCD Executive Officer:

The emissions of NOx, SO2, CO, and TSP, including sulfate content, shall be measured and results reported in accordance with the test methods set forth in 40 CFR 60 Appendix A and 40 CFR 60.8 (or the equivalent CARB test method). The following test methods shall be used unless otherwise specified by the SBCAPCD Executive Officer:

1) Compliance tests for the emissions of NOx shall be conducted using EPA Methods 1-4 and 7E.

2) Compliance tests for the emissions of SO2 shall be conducted using EPA Methods 1-4 and 6C.

3) Compliance tests for the emissions of CO shall be conducted using EPA Methods 1-4 and 10.

4) Compliance tests for the emissions of TSP shall be conducted using EPA Methods 1-5, except as follows:

The back half particulate catch will be modified by subtracting the mass of compounds containing NH4+ion, i.e. NH4HSO4, NH4HSO3, (NH4)2SO4 and (NH4)SO3. All other sulfate/sulfite compounds will be considered as particulate emissions.

For grain loading emissions limits (e.g., 0.005 (or less) grains per actual cubic foot): the emissions are determined based on the filter and probe catch as defined in CARB Source Test Method 5.

For mass emission limits (e.g., lbs/day): the emissions are determined based on the filter, probe, and impinger catch and the solvent extract, as defined in CARB Source Test Method 5 and as corrected for NH4+ion compounds.

For consideration of compliance with SBCAPCD Rules 404 and 405 the emissions are determined based on the filter, probe and impinger catch, and the solvent extract, as defined in CARB Source Test Method 5 and as corrected for NH4+ion compounds.

Compliance tests for the emissions of sulfates (reported as mass emission rate of SO4 ions) shall be conducted using CARB Method 8, except as follows:

i. The molecular weight used to report the results shall be that of SO4, rather than H2SO4.

ii. The collected concentration will be modified by subtracting the mass of compounds containing NH4+ ions, i.e., NH4HSO4, NH4HSO3, (NH4)2SO4, and (NH4)SO3. All other sulfate/sulfite compounds will be considered as sulfate emissions.

Compliance tests for the emissions of ammonia shall be based on a test method to be approved by the SBCAPCD, such as CARB Test Method 5 with appropriate impinger solutions and calculation techniques.

Compliance tests for the emissions of non-methane hydrocarbons shall be conducted using EPA Methods 1 through 4 and 25.

Compliance tests for opacity shall be conducted by the SBCAPCD or the California Air Resources Board or an approved third party using EPA Method 9, and by a certified smoke reader's evaluation of plume opacity.

(DOC General Permit Condition 7[a])

Verification: KMCC shall perform the compliance tests according to the methods listed above. Refer to Condition 27. Variations to these test

methods must first receive approval from the SBCAPCD and the Compliance Project Manager.

29. Within 60 days after achieving the initial startup of the ACE boiler, KMCC shall conduct compliance tests which will include, but will not be limited to, a test of the exhaust stream within the stack for:

a. Oxides of nitrogen (NOx as NO2 in ppm, at three percent O2 on a dry basis and as lbs/hr).
b. Nonmethane hydrocarbons (ppm, at three percent O2 on a dry basis and as lbs/hr).
c. Oxides of sulfur (SOx as SO2 in ppm, at three percent O2 on a dry basis and as lbs/hr).
d. Carbon monoxide (ppm, at three percent O2 on a dry basis and as lbs/hr).
e. Total Suspended Particulates, sulfates, and PM10 (as milligrams/cubic meter, at three percent O2 on a dry basis and as lbs/hr).
f. Flue gas flow rate (SCFM on a dry basis).
g. Ammonia (ppm, at three percent O2 on a dry basis and as lbs/day).
h. Opacity.

(DOC Permit Unit ACE-1 Condition 5)

Verification: Within 60 days after initial start-up of the ACE boiler, KMCC shall perform the compliance source tests for the pollutants listed above. Refer to Conditions 27 and 28.

30. KMCC shall conduct quarterly compliance tests in the first year after initial start-up and annual tests in the succeeding years, to determine stack outlet emissions as above. (DOC Permit Unit ACE-1 Condition 6)

Verification: KMCC shall submit the results of the quarterly compliance tests to the SBCAPCD and the Compliance Project Manager on a quarterly basis as available. KMCC shall submit the results of all compliance tests to the SBCAPCD and the Compliance Project Manager as part of the Annual Compliance Report. Refer to verifications for Conditions 28 and 29.

31. Sampling ports must be provided in accordance with SBCAPCD protocols. An equivalent method of emission sampling may be used upon approval of the SBCAPCD. Adequate and safe access must be provided by KMCC. (DOC Permit Unit ACE-1 Condition 7)

Verification: KMCC shall include in the performance test plan (Condition 27) a description and "Approved for Construction" drawings of the emission sampling ports. KMCC shall make the site available for inspection by the SBCAPCD, CARB, and the CEC staff during both construction and operation upon reasonable notice (1 hour for weekdays, and 8 hours for weekends and holidays).

32. KMCC shall report monthly fuel analyses of the sulfur and fixed nitrogen content. The fuel samples can either be composited "on delivery" or "as fired". To satisfy the "as delivered" condition, KMCC may use vendor analyses. Such records shall be maintained on site for a period of at least two years and made available to the SBCAPCD personnel upon request within 10 days. (DOC Permit Unit ACE-1 Condition 8)

Verification: Refer to verification to Condition 17.

33. The SBCAPCD shall be notified in writing of the construction completion date, the initial light-off date, and the start of the initial startup period of the ACE cogeneration system. An application for a permit to operate the ACE cogeneration system and for each air pollution control system must be filed with the SBCAPCD at least 90 days prior to the startup of the cogeneration system. (DOC Permit Unit ACE-1 Condition 9)

Verification: 30 days prior to the initial light-off of the ACE boiler, KMCC shall notify the SBCAPCD and the Compliance Project Manager in writing the initial startup date of the ACE cogeneration system. KMCC shall submit to the SBCAPCD its application(s) for Permits to Operate for the ACE cogeneration system and for each Air Pollution Control (APC) system at least 90 days prior to the startup of the cogeneration system. KMCC shall submit a copy of the application(s) to the Compliance Project Manager within 10 days of its submittal to the SBCAPCD. The SBCAPCD shall approve or disapprove the application(s) as prescribed in SBCAPCD rules.

34. The fabric dust collector baghouse (SBCAPCD permit ACE-2) of the ACE project must be properly maintained and kept in good operating condition at all times. The baghouse must be operating within specifications at all times during the ACE boiler operations. Flyash collection and disposal shall be handled in such a manner as to minimize entrainment to the atmosphere. Outlet loading of the ACE-2 baghouse shall not exceed either 0.005 grains per actual cubic foot (gr/acf) or 14.6 lb/hour at the nominal maximum flow rate of 341,000 actual cubic feet per minute (ACFM). KMCC shall conduct quarterly compliance tests in the first year and annual tests in the succeeding years, to determine stack outlet emissions as required under Condition 29. KMCC shall submit the quarterly compliance tests to the SBCAPCD and the Compliance Project Manager on a quarterly basis as the test results are available. KMCC shall submit the results of the annual compliance tests to the SBCAPCD and the Compliance Project Manager as part of the annual Compliance Report. (DOC Permit Unit ACE-2 Conditions 1, 2, 3, 4 and 5)

Verification: KMCC shall perform the compliance tests described above and provide the tests results to the SBCAPCD. KMCC shall simultaneously submit copies of transmittal letters to the SBCAPCD and the compliance test results described above to the Compliance Project Manager as part of the annual Compliance Report.

35. The cooling tower and cooling water system (SBCAPCD permit ACE-3) must be properly maintained and kept in good operating condition at all times.

The use of chromium compounds, normally introduced as a corrosion inhibitor additive in many of the KMCC cooling towers, is prohibited in the ACE project cooling tower. Alternative corrosion inhibitors used shall be subject to SBCAPCD and CEC staff approval. (DOC Permit Unit ACE-3 Conditions 1 and 2)

Verification: KMCC shall make the site available for inspection by the SBCAPCD, CARB, and CEC Staff during both construction and operation upon reasonable notice (1 hour for weekdays, 8 hours for weekend and holidays). KMCC shall submit to the SBCAPCD and Compliance Project Manager verification of KMCC's intent to use Betz DE-1186 or DE-1187 cooling tower additive or their chemical equivalents, at least 90 days before initial firing of the ACE facility. KMCC shall notify the SBCAPCD and Compliance Project Manager of any intention to use alternative corrosion inhibitors at least 90 days before such use. The notification shall include information on the toxicity of such additives together with an assessment of the potential health impacts of worker and public exposure to such additives. The use of alternative corrosion inhibitors is subject to approval by the Compliance Project Manager.

36. The ACE-2 cooling tower drift rate (determined by these compliance tests as defined below) shall not exceed 0.002 percent based on a maximum design circulation rate of 48,000 gallons per minute GPM or 0.0016 percent based on a maximum design circulation rate of 60,000 GPM. A decision as to the design circulation rate will be made prior to start of construction. The maximum TSP and PM10 emission rates shall not exceed 15 and 13 lbs/hour, respectively, and the sulfate emission rate shall not exceed 1.5 lbs/hour. Weekly tests of the blowdown water quality shall be conducted in accordance with the referenced test methods approved by the SBCAPCD. The TDS value (ppmw), so determined, multiplied by the maximum recirculation rate (GPM) for the week shall not exceed 1.5 EE9 at 48,000 GPM or 1.8 EE9 at 60,000 GPM, design rates, respectively. Inspections will be required quarterly by the SBCAPCD (either by a SBCAPCD inspector or a SBCAPCD approved third party). Should excessive drift loss be suspected, KMCC shall make appropriate repairs or conduct a source test to demonstrate compliance. If the SBCAPCD has reason to believe emission limits are still exceeded after repairs are completed, a compliance test may be required by the SBCAPCD.

Within 60 days after achieving the initial startup of the ACE boiler, KMCC shall conduct a compliance test in accordance with test procedures and protocols developed and adhered to during the permitting source tests by KMCC of their existing cooling towers (Reference: KMCC letter dated November 11, 1986, to SBCAPCD) or as amended with written approval of the SBCAPCD Executive Officer. KMCC shall then furnish the SBCAPCD and the Compliance Project Manager the written results of such compliance test within 45 days after testing. KMCC shall provide written notice of the compliance test to the SBCAPCD and the Compliance Project Manager 10 days prior to the test so that an observer(s) may be present. The compliance test will include, but will not be limited to, a test of selected cells for:

- o Drift rate, as percent of water circulation rate.
- o Water quality, as TDS in ppmw and chemical analysis.
- o Emission rates, in pounds/hour, for PM, PM10 and sulfates.

KMCC shall also conduct compliance tests every five years to verify the maintenance of the drift and emission rates. The SBCAPCD, or a SBCAPCD approved third party, shall inspect the cooling tower quarterly. KMCC shall maintain records of the weekly blowdown water quality tests for inspection by the SBCAPCD. (DOC Permit Unit ACE-2 Conditions 3, 4 and 5)

Verification: KMCC shall comply with all requirements of the above condition and provide written results of such compliance source tests within 45 days after testing. KMCC shall simultaneously submit the copies of transmittal letters, inspection reports from the SBCAPCD and the compliance source tests described above to the Compliance Project Manager.

37. The solid fuel unloading, storage and handling equipment (SBCAPCD permit ACE-4) must be properly maintained and kept in good operating condition at all times. The basic equipment must not be operated unless all pollution control systems are operational and in use to the extent required to meet SBCAPCD rules and regulations and permit conditions, namely, the four baghouses on the storage barn, new crusher, transfer house, and storage silos for particulate control. All conveyor systems shall be fully enclosed on at least one side, over the top and within 18 inches of the belt on the open side. Water spray systems which are activated by conveyor motion shall be provided at all transfer points except as those controlled by baghouses. The dead fuel storage shall be compacted and chemically sealed to prevent fugitive dust emissions. Before using this fuel, except on an emergency basis, SBCAPCD approval is required. The rate of turnover to prevent excess deterioration of the fuel shall not exceed once every three years. This constraint limits use to 100,000 tons for any three-day period. Interim use shall require compaction and chemical sealing on a daily basis during intrusion. (DOC Permit Unit ACE-4 Conditions 1, 2, 3 and 4)

Verification: KMCC shall maintain and make available on site for inspection the "Approved for Construction" drawings to the SBCAPCD, CARB, and the CEC staff upon reasonable notice (1 hour for weekdays, 8 hours for weekends and holidays). KMCC shall make the site available for inspection by the SBCAPCD, CARB, and CEC staff during both construction and operation upon reasonable notice (1 hour for weekdays, 8 hours for weekends and holidays). KMCC shall notify the Compliance Project Manager and obtain the approval from the SBCAPCD 30 days prior to use of fuel from the dead storage pile except in an emergency. KMCC shall provide in the Annual Compliance Report a summary of all emergencies requiring the use of coal from the dead storage pile.

38. The fabric dust collector baghouses for the fuel storage and handling systems must be properly maintained and kept in good operating condition at all times. These baghouses must be operating within specifications at all times whenever fuels are being unloaded or transferred. Outlet

particulate loading shall not exceed either 0.003 grains/ACF at the nominal maximum air ventilation rate dependent on the baghouses or the maximum mass emission rates as follows:

a) Storage Barn - 60,000 ACFM; 1.54 lbs particulate/hour
b) New Crusher - 12,000 ACFM; 0.31 lbs particulate/hour
c) Transfer House - 1,500 ACFM; 0.039 lbs particulate/hour
d) Storage Silos - 12,000 ACFM; 0.31 lbs particulate/hour

KMCC shall conduct compliance tests to verify the above outlet particulate emission rates. KMCC shall submit the results of these compliance tests to SBCAPCD and the Compliance Project Manager.

Within 60 days after achieving the initial startup of the ACE boiler, KMCC shall conduct compliance tests. KMCC shall then furnish the SBCAPCD and the Compliance Project Manager written results of such compliance tests within 45 days after testing. Written notice of the compliance tests shall be provided to the SBCAPCD and the Compliance Project Manager 10 days prior to the tests so that an observer(s) may be present. Subsequent to the compliance test, visual inspections will be required quarterly by the SBCAPCD (either by a SBCAPCD inspector or a SBCAPCD approved third party). Should excessive particulate emissions be suspected, KMCC shall make appropriate repairs or conduct a source test to demonstrate compliance. Regardless of the repairs made, the SBCAPCD may require a source test to verify compliance. (DOC Permit Unit ACE-5 Conditions 1, 2, 3 and 4)

Verification: KMCC shall comply with all requirements of the above condition and provide the compliance source tests results to the SBCAPCD. KMCC shall simultaneously submit copies of transmittal letters, inspection reports from the SBCAPCD and source tests results to the Compliance Project Manager.

39. The limestone handling system (SBCAPCD Permit Unit ACE-6) must be properly maintained and kept in good operating conditon at all times. The basic equipment must not be operated unless all pollution control systems are operational and in use to the extent required to meet SBCAPCD rules and regulations and permit conditions, namely the baghouse on the truck unloading and crushing system and the baghouse on the storage silo for particulate control. Outlet particulate loading for each baghouse shall not exceed 0.005 grains/ACF at the nominal maximum air ventilation rates of 4,500 ACFM or 0.19 lbs particulate/hour and 7,000 ACFM or 0.30 lbs particulate/hour for each baghouse, respectively. KMCC shall conduct compliance tests to verify the above outlet particulate emission rates. KMCC shall submit the results of these compliance tests to SBCAPCD and the Compliance Project Manager.

Within 60 days after achieving the initial startup of the ACE boiler, KMCC shall conduct compliance tests. KMCC shall then furnish the SBCAPCD and the Compliance Project Manager written results of such compliance tests within 45 days after testing. Written notice of the compliance tests shall be provided to the SBCAPCD 10 days prior to the tests so that

an observer(s) may be present. Subsequent to the compliance tests, visual inspections will be required quarterly by the SBCAPCD (either by a SBCAPCD inspector or a SBCAPCD approved third party). Should excessive particulate emissions be suspected, KMCC shall make appropriate repairs or conduct a source test to demonstrate compliance. Regardless of the repairs made, the SBCAPCD may require a source test to verify compliance. (DOC Permit Unit-6 Conditions 1, 2 and 3)

Verification: KMCC shall comply with all requirements of the above condition and provide the compliance source tests results described above to the SBCAPCD. KMCC shall simultaneously submit copies of transmittal letters, inspection reports from the SBCAPCD and the source test results described above to the Compliance Project Manager.

40. The ash handling system (SBCAPCD Permit unit ACE-7) must be properly maintained and kept in good operating condition at all times. The basic equipment must not be operated unless the pollution control system is operational and in use to the extent required to meet SBCAPCD rules and regulations and permit conditions, namely the baghouse on the pneumatic transport system which collects and conveys fly ash from the ACE boiler to the storage silo. Outlet particulate loading for the baghouse shall not exceed 0.003 grains/ACF at the nominal maximum air ventilation rate of 3,000 ACFM or 0.077 lbs particulate/hour. KMCC shall conduct compliance tests to verify the above particulate emission rates. KMCC shall submit the results of these compliance tests to the SBCAPCD and the Compliance Project Manager.

Within 60 days after achieving the initial startup of the ACE boiler, KMCC shall conduct compliance tests. KMCC shall then furnish the SBCAPCD and the Compliance Project Manager the written results of such compliance tests within 45 days after testing. Written notice of the compliance tests shall be provided to the SBCAPCD ten days prior to the tests so that an observer(s) may be present. Subsequent to the compliance test, visual inspections will be required quarterly by the SBCPACD (either by a SBCAPCD inspector or a SBCAPCD approved third party). Should excessive particulate emissions be suspected, KMCC shall make appropriate repairs or conduct a source test to demonstrate compliance. Regardless of the repairs made, the SBCAPCD may require a source test to verify compliance. (DOC Permit Unit-7 Conditions 1, 2 and 3)

Verification: KMCC shall comply with all requirements of the above condition and provide the compliance source tests results described above to the SBCAPCD. KMCC shall simultaniously submit copies of transmittal letters, inspection reports from the SBCAPCD and the source tests results described above to the Compliance Project Manager.

41. The Argus boiler No. 26 (SBCAPCD permit B000554) and Argus boiler No. 25 (SBCAPCD permit B000555) equipment must be properly maintained and kept in good operating condition at all times. The basic equipment shall not be operated unless all pollution control systems are operational to the extent required to meet SBCAPCD rules and regulations and permit conditons, namely, electrostatic precipitators (C000559 on B000554 and

C000557 on B000555) for particulate control, wet scrubbers (C000561 on B000554 and C000558 on B000555) for SOx control and appropriate new NOx control equipment to meet emission limitations. This equipment shall meet all SBCAPCD emission limits at all firing rates up to and including a maximum firing rate of 970 MMBtu/hr. Total NOx emissions shall not exceed, after modifications are completed, 442 lbs/hr based on a 3-hour rolling average, computed every 15 minutes. This is equivalent to 165 ppmv at 3 percent 02 on a dry basis at the maximum firing rate. SOx as SO2 emissions shall not exceed 24 ppmv for either boiler at 3 percent 02 on a dry basis (3-hour rolling average, computed every 15 minutes). (DOC Permit Units B000554 and B000555 Conditions 1, 2 and 3)

Verification: 60 days prior to NOx controls modification of the Argus 25 and 26 boilers, KMCC shall submit to the Compliance Project Manager for review and approval the details of the chosen NOx controls of the Argus 25 and 26 boilers. These details shall include, but not be limited to all the information necessary to conclude that the proposed mitigation (either the hydrocarbon injection method or selective catalytic reduction and Lo-Nox burners) will meet the performance criteria specified. Refer to Verification to Condition 45.

42. The retrofit of the Argus Boilers Nos. 25 and 26 to meet the emission limits for NOx specified in Condition 41 shall be scheduled as follows:

(a) For a period not to exceed 90 days after the initial startup of the ACE boiler, total NOx emissions from the ACE boiler, Argus boiler 25 and Argus boiler 26 shall not exceed 892 lbs/hr, based on a 3-hour rolling average, computed every 15 minutes.

(b) For a period not to exceed 180 days after the conclusion of Condition 42a, the ACE boiler and one Argus boiler may operate; however, total NOx emissions from these two boilers shall not exceed 547 lbs/hr based on a 3-hour rolling average, computed every 15 minutes, during that period.

(c) Following the retrofit of the first Argus boiler (Condition 42b), all three boilers may operate for a period not to exceed 90 days; however, total NOx emissions shall not exceed 773 lbs/hr based on a 3-hour rolling average, computed every 15 minutes, during that period. At the end of the 90 day operation of all three boilers, the Argus boiler that was not retrofitted shall be shutdown.

(d) Following this point in time the individual boilers shall not exceed the limits specified in their permits to operate or in SBCAPCD Rules and Regulations.

During this retrofit period, all other pollutant emission rates shall be in compliance. KMCC shall submit quarterly compliance reports to the SBCAPCD and the Compliance Project Manager to verify the requirements above. These quarterly reports shall present, but not be limited to, the following information: a monthly status report of the operations of the ACE, Argus 25 and Argus 26 boilers, and a status report of compliance

with the cumulative NOx emission rates for the ACE, Argus 25 and Argus 26 boilers described above. (DOC Permit Units B000554 and B000555 Condition 4)

Verification: KMCC shall comply with all requirements of the above condition and provide the quarterly compliance reports to the SBCAPCD. KMCC shall simultaneously submit copies of transmittal letters to the SBCAPCD and the quarterly compliance reports to the Compliance Project Manager.

43. Current Argus 25 and 26 monitoring requirements pertaining to fuel usage (quantity, quality and type), operating parameters, and boiler stack emissions (including NOx, NO, NO2, CO, SO2, O2 and opacity) shall be continued. Quarterly reports shall be provided to the SBCAPCD and shall present, but not be limited to, the following data on a daily basis: fuel usage, operating parameters, and continuous stack monitoring data including (1) average 24-hour NOx, NO2, and SOx emission rates and concentrations, (2) maximum 15 minute average NOx, NO2, and SOx emission rates and concentrations during steady state operation, and (3) maximum NOx, NO2, and SOx lbs/hr emission rate based on a rolling 3-hour average, computed every 15 minutes, (4) average NOx, NO2, and SOx lbs/hr emission rate based on a 3-hour average, computed every 15 minutes, and (5) total time, in hours, during which the NOx, NO2, and SOx emission rates and concentrations have exceeded the limits specified. Calculation of the NOx and SOx emission rates from corresponding steam flow data for each boiler may be based on average steam flow versus time data. In this case, the averaging method will be limited to time increments in which the maximum steam flow change is no greater than ten percent. (DOC Permit Units B000554 and B000555 Condition 6)

Verification: KMCC shall monitor the Argus 25 and 26 boilers for the data specified above and shall submit the results of such data collection to the SBCAPCD. Subsequent to the initial firing of the ACE boiler, KMCC shall simultaneously submit copies of transmittal letters to the SBCAPCD and the quarterly reports described above to the Compliance Project Manager.

44. Steam generation charts must be recorded in a manner that will provide a data recovery record of 98 percent for each quarterly operating period. These charts must be retained for a period of at least two years and must be made available for inspection by SBCAPCD personnel, upon request. (DOC Permit Units B000554 and B000555 Condition 6)

Verification: Subsequent to the initial firing of the ACE boiler, KMCC shall make the steam generation charts for the Argus boilers Nos. 25 and 26 available on site for inspection by the SBCAPCD upon reasonable notice (1 hour for weekdays, 8 hours for weekends and holidays).

45. Within 360 days of achieving initial startup of the ACE boiler, KMCC shall complete compliance tests on whichever of the retrofitted Argus boilers is to be brought back on-line first. Should the hydrocarbon injection NOx control method not be selected, the first retrofitted

boiler shall incorporate selective catalytic reduction (SCR) as the control method. Upon completion of the retrofit to the second Argus boiler, the same compliance tests shall be conducted on that boiler within 60 days. These compliance tests will include, but will not be limited to, a test of the stack exhaust from the boilers for the following based on a rolling 3-hour average, computed every 15 minutes, for gaseous pollutants or on a hourly average for particulate except as noted:

a) Oxides of nitrogen (NOx as NO2 in ppm, at three percent O2 on a dry basis and as lbs/hour).
b) Nonmethane hydrocarbons (as lbs/hour).
c) Oxides of sulfur (SOx as SO2 in ppm, at three percent O2 on a dry basis and as lbs/hour).
d) Carbon monoxide (as ppm, at three percent O2 on a dry basis and as lbs/hour).
e) Particulates, sulfates, and PM10 (as milligrams/cubic meter, at three percent O2 on a dry basis and as lbs/hour).
f) Flue gas flow rate (SCFM on a dry basis).

Should the hydrocarbon injection control method be selected, KMCC shall demonstrate that there are no emission increases, cumulative for both Argus boilers, above estimated levels for other affected air contaminants, namely, 1.94 lbs/hr NMHC, 54.4 lbs/hr CO, 111 lbs/hr TSP, 46.5 lbs/hr sulfate, 90.0 lbs/hr PM10 or 57.6 lbs/hr of directly emitted NO2.

(DOC Permit Units B000554 and B000555 Condition 5)

Verification: KMCC shall perform the compliance test for the data specified above and shall submit the results of such data collection within 45 days of completing the compliance tests to the SBCAPCD. KMCC shall simultaneously submit copies of transmittal letters to the SBCAPCD and the compliance tests described above to the Compliance Project Manager.

46. An application for an Authority to Construct and Permit to Operate the modified boilers and air pollution control systems shall be filed with the SBCAPCD for review at least 90 days prior to the start of construction. Authority to construct will be determined within 30 days by the SBCAPCD. (DOC Permit Units B000554 and B000555 Condition 7)

Verification: At least 90 days prior to beginning modification of the Argus 25 and 26 boilers, KMCC shall submit to the SBCAPCD and the Compliance Project Manager application(s) to modify the Authorities to Construct and Permits to Operate of these boilers. KMCC shall provide copies of the Authorities to Construct and Permits to Operate issued by the SBCAPCD to the Compliance Project Manager.

47. (Deleted)

48. The current kerosene used in the Liquid/Liquid Extraction (LLX) Basin (SBCAPCD Permit B001916) is considered photochemically non-reactive; however, should KMCC change to a different formulation, KMCC shall provide to the SBCAPCD a complete characterization of the solvent for evaluation and a new determination. (DOC Permit Unit B001916 Condition 1)

Verification: If KMCC intends to use a hydrocarbon fluid other than kerosene in the LLX basin operations, subsequent to the offset being implemented KMCC shall, not later than 60 days prior to ordering this other hydrocarbon fluid, submit to the SBCAPCD and the Compliance Project Manager an analysis of this fluid and how this fluid will comply with the requirements of SBCAPCD Rule 442.

49. Based on kerosene purchase and offsite disposal records, the kerosene lost onsite from the LLX basin shall not exceed 300 lbs/day, as calculated below. The definition of onsite losses is the difference between the weight of kerosene purchased and that disposed of offsite. Quarterly reports of these quantities shall be provided to the SBCAPCD. Since the quarterly purchase/disposal records of kerosene may not necessarily average to a true increment of daily emissions of solvent hydrocarbons (i.e., the difference being assumed to be emitted to the atmosphere), emisssion excesses shall be determined based on a rolling average of any four quarters which exceed 300 lbs/day or any two quarters exceed 350 lbs/day, each computed quarterly. (DOC Permit Unit B001916 Condition 2)

Verification: Subsequent to the offset being implemented, KMCC shall submit to the SBCAPCD and the Compliance Project Manager quarterly records of kerosene purchase and disposal used at the LLX basin and to the Compliance Project Manager, copies of Notices of Violation issued by the SBCAPCD.

50. As a daily check the spent brine discharge through the effluent pipe shall be sampled for kerosene content, and the discharge volumetric rate shall be determined based on the brine inlet rate. The samples shall be taken every eight hours and composited daily for analysis. The maximum daily kerosene discharge based on these measurements shall not exceed 300 lbs. Excesses and corrective action taken shall be reported to the SBCAPCD within 24 hours. The SBCAPCD recognizes that this method does not allow credit for the kerosene captured by the skimmer with subsequent off-site disposal. If necessary, the methodology will be revised to accout for such credit based on disposal data records or equipment changes at a future time. (DOC Permit Unit B001916 Condition 3)

Verification: Subsequent to the offset being implemented, KMCC shall submit to the SBCAPCD and the Compliance Project Manager quarterly records of the analysis of the spent brine discharge.

51. A hydrocarbon monitoring system (as approved by the SBCAPCD) shall be utilized in the vicinity of the LLX basin settling tanks to determine the fugitive hydrocarbon emissions. Once a baseline ambient concentration

indicative of normal, acceptable operation is established by agreement with the SBCAPCD, excursions of greater than 10 percent from the baseline must be reported to the SBCAPCD within 24 hours and corrective action taken. (DOC Permit Unit B001916 Condition 4)

Verification: KMCC shall submit to the SBCAPCD and the Compliance Project Manager an ambient hydrocarbon monitoring plan 120 days prior to modifications to the LLX basin to meet the 300 lbs./day requirement. The Compliance Project Manager shall approve the plan prior to installation of any ambient hydrocarbon monitors.

52. The Argus (SBCAPCD permit B001920), Trona No. 14 (permit B001921, Westend Sulfate Nos. 1 through 4 and Westend Borax (permits B001922, B001923, B001924, B001925, and B001926) cooling towers must be properly maintained and kept in good operating condition at all times. Chromium compounds, which are introduced as a corrosion inhibitor additive in many of the KMCC cooling towers, shall be eliminated from use in all cooling towers. Alternative corrosion inhibitors used shall be subject to SBCAPCD and CEC approval. (DOC Permit Units Cooling Towers Conditions 1 and 2)

Verification: KMCC shall make the site available for inspection by the SBCAPCD, CARB, and CEC Staff during both construction and operation upon reasonable notice (1 hour for weekdays, 8 hours for weekend and holidays). KMCC shall submit to the SBCAPCD and Compliance Project Manager verification of KMCC's intent to use Betz DE-1186 or DE-1187 cooling tower additive or their chemical equivalents in the existing cooling towers described above at least 90 days before initial firing of the ACE facility. KMCC shall notify the SBCAPCD and Compliance Manager of any intention to use alternative corrosion inhibitors at least 90 days before such use. The notification shall include information on the toxicity of such additives together with an assessment of the potential health impacts of worker and public exposure to such additives. The use of alternative corrosion inhibitors is subject to approval by the Compliance Project Manager.

53. Prior to achieving initial startup on the ACE boiler, KMCC shall conduct compliance tests in accordance with test procedures and protocols developed and adhered to during the permitting source tests by KMCC of their existing cooling towers (Reference: KMCC letter dated November 11, 1986, to SBCAPCD) or as amended with written approval of the SBCAPCD Executive Officer. The compliance test will include, but will not be limited to, a test of the exhaust stream from selected cells for:

- o Drift Rate, as percent of water circulation rate.
- o Water Quality, as TDS in ppmw and chemical analysis.
- o Emission Rates, in pounds/hour, for PM, PM10 and sulfates.

The drift rate (determined by compliance tests as defined described above) shall not exceed 0.002 percent based on the maximum circulation rate listed below for each cooling tower. Also, the concentration for total dissolved solids (TDS) in the cooling tower blowdown water shall

not exceed the value shown with a maximum sulfate content as indicated. The maximum PM10 combined total emissions for all cooling towers permitted, as determined by the referenced compliance test, shall not exceed 29 lbs/hour.

	Maximum Circulation Rate (GPM)	TDS (ppmw)	Sulfate (ppmw)
Argus	30,000	30,000	3,000
Trona No. 14	24,000	60,000	12,000
Westend Borax	3,000	30,000	3,000
Westend Sulfate No. 1	3,500	40,000	4,000
Westend Sulfate No. 2	3,500	40,000	4,000
Westend Sulfate No. 3	3,500	40,000	4,000
Westend Sulfate No. 4	9,360	40,000	4,000

KMCC shall conduct compliance tests every five years to verify the drift and emissions rates. KMCC shall conduct compliance tests every five years that will include as a minimum, drift rate, water quality and emission rates. The first compliance test shall commence prior to achieving initial startup of the ACE boiler. KMCC shall furnish the SBCAPCD and the Compliance Project Manager the written results of such tests 45 days after testing. Written notice of the compliance tests shall be provided to the SBCAPCD and the Compliance Project Manager 10 days prior to the test so that an observer(s) may be present.

Weekly tests shall be conducted in accordance with the test procedures referenced in Condition 28. The product of the actual TDS value (ppmw) times the recirculation rate (GPM) shall not exceed that value determined by the maximums given in the table above. Inspections will be required quarterly by the SBCAPCD (either by a SBCAPCD inspector or a SBCAPCD approved third party). Appropriate access in compliance with OSHA codes shall be provided by KMCC for these inspections. Should excessive drift loss be suspected, KMCC shall make appropriate repairs or conduct a source test to demonstrate compliance. If the SBCAPCD have reason to believe emission limits are still exceeded after repairs are completed, a compliance test may be required by the SBCAPCD. (DOC Permit Units Cooling Towers Conditions 3, 4 and 5)

Verification: KMCC shall comply with all requirements of the above condition and provide the compliance source tests described above to the SBCAPCD. KMCC shall simultaneously submit copies of transmittal letters, inspection reports from the SBCAPCD and the source test results described above to the Compliance Project Manager. KMCC shall maintain records of the weekly blowdown water quality test for inspection by the SBCAPCD.

54. No more than one unit train supplying fuel to KMCC facilities shall operate in the Southeast Desert Air Basin (SEDAB) during any one calendar day. (DOC Non-Permit Unit Conditions 1 and 2)

Verification: Subsequent to the initial firing of the ACE boiler, KMCC shall report monthly to the SBCAPCD a summary of fuel unit train operations. Should more than one fuel unit train operate in the SEDAB during a given day, KMCC shall notify the SBCAPCD within 24 hours. A compilation of these notification reports shall be included in the Annual Compliance Report to the Compliance Project Manager.

55. Permits to operate such equipment, taken out of service to effect an emission reduction, shall be surrendered at the time the new, affected permit unit or source is issued a Permit to Operate. All of the units proposed for shutdown are at the Westend Facility (WE). The shutdown units are as follows:

SBCAPCD permit B000223 - Soda Ash Process Train No. 7 (WE)
SBCAPCD permit B000224 - Soda Ash Process Train No. 6 (WE)
SBCAPCD permit B000225 - Soda Ash Process Train No. 5 (WE)
SBCAPCD permit B000226 - Soda Ash Process Train No. 4 (WE)
SBCAPCD permit B000235 - Lime Processes-Rotary Kiln (WE)
SBCAPCD permit B000235 - Carbonation Tower-H2S Scrubbers (WE)
SBCAPCD permit B000235 - Lime Processes-Raw Rock Screening (WE)
SBCAPCD permit B001766 - Lime Shipping (WE)
No SBCAPCD permit - Lime Cooling Tower (WE)

(DOC Permit Units B000223, B000224, B000225, B000226, B000235, B001766, and Lime Cooling Tower Conditions)

Verification: KMCC shall surrender to the SBCAPCD the SBCAPCD Permits to Operate for the equipment listed above when the ACE boiler project is issued a Permit to Operate. In the first quarterly compliance report following the issuance of the ACE boiler Permit to Operate, KMCC shall send copies of the surrendered Permits to Operate of the equipment listed above to the Compliance Project Manager.

56. Two boiler units at the Trona Facility (TR), SBCAPCD permits B000479 (Boiler No. 20) and B000483 (Boiler No. 22) will be put on cold standby prior to the commencement of operation of the ACE boiler. The Trona Boilers Nos. 20 and 22 will be subject to the following permit conditions:

a) Periodic maintenance periods shall be limited to a total of 72 hours of operation for each boiler per six month period.

b) When one or more of the Argus boiler Nos. 25 and 26 and ACE are shutdown, one or both of the Trona boilers may be fired within the constraint that the net NOx and SOx emissions for the combined set of boilers, i.e. Argus boilers (No. 25, No. 26, and ACE) and the Trona boilers (No. 20 and No. 22) do not exceed the allowable limits of 547 lbs/hr for NOx and 172 lbs/hr for SOx. To provide data for this emissions determination, KMCC shall either provide CEM for NOx and SOx or perform compliance tests for NOx and SOx on a periodic basis during a testing and maintenance period prescribed by the SBCAPCD. Based on these results, compliance of the individual Trona

boilers will also be determined. The above limitations shall not apply to the Trona boilers during 33 days within the first year after initial start-up of the ACE boiler.

c) The SBCAPCD shall be notified 30 days in advance, in writing of the dates for a scheduled Argus boiler outage and subsequent operation of one or both of the Trona boilers. This notification shall present data and/or calculations to substantiate compliance with item b) above. Prior to startup, written approval by the SBCAPCD Executive Officer is required.

d) Should a breakdown, either functional or based on excess emissions, occur at one of the Argus or ACE boilers such that one or both of the Trona boilers are required; KMCC shall notify the SBCAPCD as per SBCAPCD Rule 430 and file a written report substantiating the circumstances within seven days of the breakdown.

(DOC Permit Units B000479 and B000483 Conditions 1, 2, 3 and 4)

Verification: KMCC shall submit quarterly fuel use records of the Trona Boilers Nos. 20 and 22 to the SBCAPCD and the Compliance Project Manager. KMCC shall, 30 days in advance, submit in writing to the SBCAPCD a notice of scheduled Argus boiler outage and subsequent Trona boiler operation. KMCC shall follow the requirements of Condition d) above if a breakdown of the Argus or ACE boilers occur. KMCC shall include copies of the notification requirements of Condition d) in the Annual Compliance Report to the Compliance Project Manager. KMCC shall provide copies of the information as it becomes available required in Condition c) to the Compliance Project Manager in the Annual Compliance Report.

B. Biological Resources

This review addresses the potential impact of the ACE project on native vegetation and wildlife. Construction of the ACE plant, the electrical transmission lines, and the water pipeline and well sites could jeopardize biological resources through direct disturbance or habitat degradation or reduction.

As the proposed plant site has been previously disturbed due to the development of the existing Argus facility, and as no sensitive species have been detected at the site, the loss of wildlife habitat from construction of the ACE plant will not have a significant impact on biological resources (March FSA 22-7, 22-14).

Both the Kerr-Gen and Hackman transmission lines will be modified to service the ACE project. The Kerr-Gen line corridor covers highly disturbed terrain which contains very little native vegetation or wildlife habitat (March FSA 22-7, 22-14). The Hackman line occurs within the northern boundaries of established range of the threatened Mohave ground squirrel, a state-listed species (March FSA 22-16). However, KMCC trapping surveys[1] indicate the presence of the ground squirrel within the area directly affected by Hackman line construction is unlikely (August FSA 22-1).

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1. KMCC conducted these surveys in response to Staff's concern regarding the adequacy of information on the presence or absence of the Mohave ground squirrel in the area. See March FSA 22-23, 22-24, 22-25.

Construction of the water pipeline and well pads will directly impact several sensitive plant and wildlife species. Construction activity will remove some individual sand linanthus and may additionally impact the population by disrupting soil surfaces. Construction may also result in the killing of Mohave ground squirrels and desert tortoises and the destruction of their habitat (March FSA 22-17). With the implementation of mitigation measures proposed by Applicant and Staff and fully set forth below as Conditions of Certification, the loss of individual tortoises, squirrels and sand linanthus will be minimized, and unavoidable losses of habitat will be compensated through the purchase of 10 acres in the Desert Tortoise Natural Area (DTNA) (March FSA 22-20 - 22-22).

ACE project SO_2 and NO_2 emissions are not expected to have a significant cumulative impact on native vegetation since under "worst case" conditions emissions concentrations are significantly lower than that required to damage desert vegetation (March FSA 22-19). The soil concentrations of trace elements due to project emissions are also unlikely to impact native desert vegetation as projected "worst case" soil concentrations are within the range of typical soil concentrations (August FSA 22-2).

FINDINGS

Based on the evidence of record, the Committee finds:

1. With the implementation of the Conditions of Certification, below, the biological resources impacts of the ACE project will be adequately mitigated.

2. Applicant will purchase ten acres in the Desert Tortoise Natural Area as habitat preserve for the desert tortoise and the Mohave ground squirrel.

3. With the implementation of the Conditions of Certification, below, the ACE project will be in compliance with the laws, ordinances, regulations and standards set forth in the "Biological Resources" portion of Appendix A of this Report.

CONDITIONS OF CERTIFICATION

1. All excavation and deposition of excavated materials for pipeline placement from Highway 178 to the bifurcation points of the eastern and western pipeline alignment will take place within the roadbed as it existed in January 1987.

   A "schedule of construction" will be submitted to CEC Staff at least ten days prior to the commencement of construction of the pipeline. CEC Staff will use this schedule to plan site visits before or during the construction phase of the ACE project.

   KMCC shall submit a pipeline construction plan to the CEC Compliance Project Manager (CPM). The plan will show clearly the location of the proposed pipeline from Highway 178 to the eastern and western well sites. This location will be shown in relation to existing (and proposed roadbeds). Areas to be graded for access roads and well sites must also be clearly delineated and described in the plan.

   Verification: At least 30 days prior to the start of site preparation KMCC will submit to the CEC Compliance Project Manager a detailed plan of construction. No changes to this plan may be made without prior approval of CEC Staff.

2. In addition to off-site compensation for the loss of tortoise habitat, KMCC shall insure that there will be no incidental loss of tortoise due to construction of the eastern and western pipeline alignments. This shall be accomplished by:

   - Limiting all earth moving and pipeline construction to winter months when tortoise are inactive and hibernating in burrows (January 1 through February 28).

   - Prior to any construction (along the eastern and western alignments), tortoises likely to be affected by excavation or heavy equipment operation shall be located and removed to a hibernaculum.

   - Tortoises will be returned to the vicinity of their capture by March 1 and released during morning hours.

   - All tortoise removal, maintenance and replacement shall be conducted by a qualified biologist, in compliance with guidelines established by BLM, and in conformance with state law.

   The qualifications of the biologist should be based on his/her, 1) experience as a wildlife field investigator, 2) experience in handling

desert tortoise, and 3) extensive knowledge of the natural history and habitat of desert tortoise.

In the event construction is extended past March 1, KMCC will provide a biologist, on site, for each day that earth moving or pipeline burial is to take place. It shall be the job of the biologist to ensure that no tortoises are present in areas where construction is taking place. The biologist shall have the authority and be required to give clearance prior to any earth moving or pipeline burial on eastern or western pipeline alignments. In the event tortoises are located, the biologist shall be responsible for their relocation in a manner that is consistent with state law.

In addition, a "schedule of construction" will be submitted to CEC Staff prior to the commencement of site preparation or construction of the pipeline. CEC Staff will use this schedule to plan site visits before or during the construction phase of the ACE project.

Verification: Twenty days prior to site preparation on the eastern and western pipeline alignments KMCC shall provide CEC Staff with the name, telephone number, and qualifications of the designated biologist. The choice of biologist will be subject to CEC Staff and CDFG approval. At the same time KMCC will also submit a mitigation plan detailing the procedures to be used for the location, capture, and relocation of tortoise. This plan will also be subject to CEC Staff in consultation with CDFG. The designated biologist will file weekly reports to the CEC CPM detailing events during all phases of mitigation implementation regarding the handling of tortoises, but will communicate with CEC Staff daily if necessary.

KMCC shall notify CEC CPM 10 days in advance of all earth moving or pipeline burial associated with the eastern or western pipeline alignments.

KMCC shall submit a schedule of construction to the CEC CPM 10 days prior to commencement of site preparation or construction of the pipeline.

3. The eastern alignment pipeline shall be placed entirely within existing roadbed with the exception of a short segment (not to exceed 100 yards) which will cross undisturbed habitat from the well site to existing roadbed.

Verification: Same as for Condition 1, above.

4. KMCC shall provide funds to purchase sufficient habitat (not less than 10 acres) and to preserve and maintain this habitat in order to compensate for the otherwise unmitigatable impacts to desert tortoise and Mojave ground squirrel resulting from pipeline construction. Sufficient money for the purchase and rehabilitation, and maintenance of the acreage shall be placed in an escrow account at least 90 days prior to any project construction for transfer to an agent that is acceptable to CEC Staff in consultation with California Department of Fish and Game (DFG). Parcel

selection shall be subject to approval by CEC Staff and DFG staff. This parcel will be purchased by the agent and transferred to an organization that is acceptable to CEC Staff in consultation with DFG. No future activities on the parcel which may conflict with the purpose for which it was purchased will be allowed. Any future transfer of the parcel from the accepted agent to a third party must have the approval of CEC Staff in consultation with DFG. No project construction shall take place until initiation of the escrow account is verified by CEC Staff.

Verification: KMCC shall propose an agent to implement the land purchase and notify CEC in writing of this. If the agent is found acceptable to CEC Staff a letter of acceptance will be sent to the agent by CEC CPM. Upon approval, CEC Staff and DFG, in consultation with the agent, will identify parcels that will meet the intent of this condition and identify actions that must be accomplished for rehabilitation. An estimate of cost will be calculated by the agent in consultation with CEC Staff. CEC Staff will notify KMCC of the estimated costs by writing. KMCC shall provide the CEC CPM with written verification of initiation of the escrow account. A copy of papers verifying the establishment of the escrow account described above shall be sent to the CEC CPM, prior to construction. Funds shall be provided for initial rehabilitation of the parcel and to establish an interest-bearing account, the interest from which shall be used for the maintenance of the parcel. CEC Staff, in consultation with DFG, will determine to whom ownership of the parcel shall be transferred. Language shall be incorporated into the deed which restricts inconsistent uses and the transfer of the parcels to any agent other than one acceptable to CEC Staff in consultation with DFG.

CEC Staff will be provided with access to the parcel for purposes of inspections to insure that the purposes of the conditions are being met.

5. KMCC shall identify any areas of sand linanthus along the proposed eastern pipeline alignment and the Hackman transmission line alignment. The alignments will be surveyed by a qualified biologist in April or May prior to excavation or blading. Prior to excavation, an area not to exceed 20 feet in width will be designated for pipeline placement through areas of sand linanthus. The remainder of sand linanthus habitat within the 75-foot construction corridor will be fenced until pipeline placement and burial is completed. The topsoil of areas of linanthus to be disturbed by excavation will be removed and stockpiled until completion of construction, and then respread over previously undisturbed areas where linanthus was present. The KMCC biologist will have the responsibility and authority to implement the above conditions.

The biologist shall be selected on the basis of possession of the following qualifications, in order of importance: 1) experience as a botanical field investigator, with experience in field sampling design and field methods; 2) taxonomic experience and a knowledge of plant ecology; 3) familiarity with the plants of the area, including rare species; and 4) familiarity with the appropriate state and federal statutes related to rare plants and plant surveys.

Verification: Twenty days prior to the sand linanthus survey, KMCC shall provide the CEC CPM with the name, telephone number, and qualifications of the designated biologist. The choice of biologist will be subject to CEC Staff approval. Twenty days prior to the commencement of excavation of the eastern alignment, and cutting of access roads for the Hackman line replacement, a report detailing survey results and mitigation implementation will be submitted by the biologist to CEC CPM Staff. Excavation of the eastern pipeline alignment and Hackman line access road construction will not begin until CEC Staff approval of those reports is forwarded to KMCC. Following the completion of pipeline construction on the eastern alignment, the biologist will supervise the replacement of topsoil on disturbed Linanthus areas. KMCC will report the completion of soil distribution to the CEC CPM no later than five days following the completion of topsoil replacement.

CEC Staff review of the above reports will be completed in 10 working days.

6. KMCC shall arrange for right-of-way and grant access to CEC and CDFG staff to inspect biological resource impacts, mitigation measures, and study areas during pre-construction, construction, and operation activities of the power plant, transmission line, and other related facilities. The access will be provided at times necessary to conduct biological field observations.

   Verification: KMCC will provide documentation to the CEC CPM that arrangements have been made for the above access.

7. Prior to the time the cogeneration plant and the transmission line are due to be deactivated, KMCC will prepare a decommissioning plan which includes biological resource elements.

   Verification: KMCC will submit the biological resource elements of the decommissioning plan to the CEC Compliance Project Manager for a determination of adequacy and acceptability according to the laws in effect at that time. (See Decommissioning Section.)

8. Where feasible, all excavation and deposition of excavated materials for water pipeline placement, from the bifurcation point of the eastern and western alignment pipelines to the western well site, will take place within roadbed (as it existed in January 1987). Initial determination of feasibility of placement of this pipeline section in existing roadbed will be made by KMCC and will be subject to approval by Staff in consultation with DFG. Where it is determined that pipeline placement is only feasible outside of existing roadbed, the pipeline will be constructed without the blading of access roads along the pipeline route. The only access roads to be permitted along the western alignment will be constructed to allow access to the western well site and will be constructed in a manner to minimize impact to Mohave ground squirrel habitat.

Verification: At least 30 days prior to the start of site preparation, KMGC will submit to the CEC Compliance Project manager a detailed plan of construction. CEC shall review the construction plan and shall notify KMCC of its acceptability within 14 days. Once the pipeline is constructed, KMCC shall provide a written statement verifying compliance to the approved plan of construction. No changes to this plan may be made without approval of CEC staff.

C. Water Resources

Water resources concerns include the impact of the proposed ACE project on water supply and water quality.

The proposed project will create a demand for approximately 1,200 gallons per minute (gpm) of non-potable groundwater, 1,000 gpm of which will be pumped from the Valley Wells well field and 200 gpm from the South Brackish well field (March FSA 20-11). With the operation of the ACE project, the Valley Wells well field will have a field life of 67 to 88 years if the existing well depths are increased 100 feet. This is more than adequate to meet project needs. The South Brackish well fields will have a field life of 18 years after the start of ACE operations, which will be extended to 28 years with a 100 foot increase in well depth (March FSA 20-11 - 20-12). Although this falls short of the project life of 30 years, other alternative water supplies including other water aquifers in the Searles Valley East Fan, COSO Geothermal water, and additional construction measures for process water, are available to extend the useful field life to outlast the ACE project life (March FSA 20-13 - 20-14, 20-18).

The proposed project will have a potable water need of 180 gpm. Changes to the process operations at KMCC's Westend facility will provide water savings adequate to supply this need (March FSA 20-14).

Impacts to water quality due to construction-related erosion are expected to be minor as the area has been previously disturbed and is subject to only

infrequent rainfall. Construction wastes will be disposed of properly in approved facilities to avoid significant adverse impacts to water quality (March FSA 20-15 - 20-16).

The proper disposal of wastes generated during operation of the proposed ACE project will ensure the protection of area water quality. Boiler fly ash and bottom ash will be transported to and disposed of at the Searles Lake bed. Wastewater will be discharged into the all other liquor (AOL) line for the Argus facility and injected into the lake formation. Sanitary wastewater will be treated in a subsurface septic tank and disposed of in a leach line system. Oily wastes will be treated in an oil/water separation unit. Wastes from accidental spills and boiler acid cleaning will be disposed of in a licensed waste disposal facility (March FSA 20-16).

FINDINGS

Based upon the evidence of record, the Committee finds:

1. With the implementation of the Conditions of Certification, below, the ACE project will comply with the applicable laws, ordinances and standards identified in the "Water Resources" section of Appendix A of this Report.

2. With the implementation of the Conditions of Certification, below, there will be no significant adverse impacts on water resources from the construction and operation of the ACE project.

CONDITIONS OF CERTIFICATION

1. If KMCC relies on brackish water sources from within Searles Valley as its sole supply for the ACE project cooling tower, KMCC shall utilize a minimum of 400 gpm of cooling water blowdown from the cooling tower after improving the quality to a practical extent sufficient for re-use as cooling water.

   Verification: Prior to project start-up, KMCC shall submit a statement to the CEC Compliance Project Manager (CPM) verifying the amount of cooling water blowdown to be re-used, the manner by which such waters are

to be treated, and the means by which treatment wastes are to be disposed.

2. KMCC shall assure that an adequate potable and non-potable water supply exists for the life of the proposed ACE project.

   Verification: KMCC shall report to the CEC CPM in annual compliance reports, on the status and amounts of new non-potable or potable water supplies for the ACE project.

3. KMCC shall continue to monitor the existing flood channel and levee system at least once a year and after every major storm to assure that the system is not damaged and functions properly. This will verify whether deposition of sediment or bedload has raised the channel bed or that the protective levee system has eroded to such an extent as to reduce the necessary freeboard and/or carrying capacity of the flood channel. KMCC shall, upon observation of such reductions in flood protection, commence corrective measures immediately to restore the flood channels and/or the protective levees to accommodate at least a 100-year flood event. KMCC shall have a report prepared that includes an analysis by a Registered Civil Engineer to determine that the rated capacity of any flood channels or levee systems exceeds the flood flow for a 100-year flood event. Annual inspections should assure that cross sectional areas and channel slopes are adequate to pass design flows. Every 5 years, and starting with the first report, the report should include a back water analysis of the entire flood channel to determine the carrying capacity of the channel. This requirement extends only to channels used to direct natural drainage basin flood flows around ACE project facilities.

   Verification: In the Annual Compliance Report submitted to the CEC CPM, KMCC shall include an annual review and inspection of major flood channels and levee systems used to protect the proposed ACE facility from damages due to severe floods.

4. KMCC shall provide perimeter drainage channels to intercept and collect project site runoff and convey the runoff to the existing flood control system. Such collection systems shall be designed to direct flows away from artificial slopes of the existing flood channel or by including maintenance of such slopes as part of ongoing operations and maintenance activities.

   Verification: At least 30 days prior to construction, KMCC shall provide the CEC CPM with a site drainage plan for the proposed ACE facility prepared by a Registered Civil Engineer. The plan should include assumptions used in determining runoff from the project site and its collection and conveyance to the existing flood protection system. A maintenance plan and construction timetable should be included with the plan. Annual inspections of such channels shall be included in the inspection requirement cited in item 3 above.

5. KMCC shall redesign the railroad embankment drainage system to accommodate excess runoff and to eliminate potential flood hazard to the community of Trona.

Verification: At least 30 days prior to construction of the ACE facility, KMCC shall report to the CEC CPM of such actions that are necessary to repair the railroad embankment to prevent the buildup of excess runoff and provide to the CEC CPM a time table for the completion of such actions.

6. KMCC shall protect ACE facility pipelines to minimize or prevent the potential for damage due to flash floods along the new pipeline route.

   Verification: At least 30 days prior to construction of the new pipeline, KMCC shall provide the CEC CPM with a site plan of the final pipeline route and the protective measures to be used to prevent damages due to flood flows.

7. KMCC shall comply with sections 4999 through 5008 of Title 23 of the California Administrative Code and monitor water use of the ACE facility.

   Verification: Prior to the start of ACE operations, KMCC shall submit to the CEC CPM evidence of compliance with sections 4999 through 5008 of Title 23 of the California Administrative Code for any groundwater extraction by well field for the Searles Valley, Indian Wells Valley and any other groundwater basin in San Bernardino County. In addition, KMCC shall provide annual reports of the ACE project water use (both potable and non-potable water) to the CEC CPM by March 31 after the end of a calendar year. This report shall list the amount of water used, the source of the water supply, the manner in which it was used at the ACE facility and whether it was a potable supply or non-potable supply.

8. KMCC shall acquire a purveyor's permit from the San Bernardino County Department of Environmental Health Services (SBCDEHS) for the construction of its domestic water supply system for the ACE project.

   Verification: At least 30 days prior to construction, KMCC shall present to the CEC CPM a copy of the purveyor's permit for the ACE project or provide evidence that the permit was not required.

9. KMCC shall dispose of sanitary wastes in a manner approved by the county and at a site approved by the Lahontan Regional Water Quality Control Board and SBCDEHS.

   Verification: At least 30 days prior to construction, KMCC shall submit a statement to CEC CPM verifying that the sanitary wastes are being disposed of in an approved manner at an appropriate site. A copy of the letter notifying LRWQCB and SBCDEHS shall also be provided to CEC CPM.

10. KMCC shall notify EPA of plans to add additional wastewaters to the AOL line for injection underground. If required, the UIC permit shall be amended as appropriate, and monitoring of the AOL line shall be conducted.

Verification: At least 30 days prior to construction, KMCC shall submit a statement to CEC CPM verifying that EPA has been notified. Copies of all correspondence between EPA, LRWQCB and KMCC related to the UIC permit shall be submitted to CEC CPM in the Periodic Compliance Reports.

D. Soil Conservation

Construction and operation of the ACE project can lead to accelerated water and wind erosion through the removal of vegetation and disturbance of the soil during earth moving activities. The proposed ACE project is located on a broad alluvial plain that slopes approximately 3 percent to the southeast. Soils at the plant site consist of fine to coarse sandy soils with some silt and scattered gravel; at the pipeline and transmission line routes, the soils range from mildly alkaline sands to sandy loams (March FSA 21-2).

During construction of the plant site and associated facilities, natural wind erosion and the generation of fugitive dust by earth moving activies and vehicular traffic can result in a soil loss of 296 tons/acre/year (March FSA 21-4, 21-5). Applicant's proposed mitigation measures of wetting unpaved ground surfaces, soil compaction, and the use of pavement and crushed rock will be adequate to reduce these impacts to an acceptable level (March FSA 21-9). Considering the low annual rainfall and minimal slope in the area, the proposed flood control channels, drainage ditches and diversion berms will adequately control water erosion during construction (March FSA 21-5, 21-6, 21-9).

After construction, the combined water and wind erosion at the plant site is expected to be 5.8 tons/acre/year. This is close enough to the soil loss tolerance of 5 tons/acre/year to be considered insignificant. Wind erosion at the transmission line and water pipeline routes will be insignificant due to the limited area involved, and the proper compaction of the soils will keep water erosion to an acceptable level (March FSA 21-5, 21-6).

FINDINGS

Based on the evidence of record, the Committee finds:

1. With the implementation of the conditions of certification, below, the construction and operation of the ACE project facilities will create no significant impacts to area soils.

2. With the implementaiton of the conditions of certification, below, the construction and operation of the proposed project will comply with the applicable laws, ordinances, regulations and standards identified in the "Soil Conservation" portion of Appendix A of this Report.

CONDITIONS OF CERTIFICATION

1. KMCC shall submit a combined grading and wind and water erosion control plan for the ACE project site and all lands to be disturbed by supporting facilities. Mitigation measures shall include all of the following:

   - Provide drainage away from all foundations and artificial slopes to collection ditches
   - Pave the main access road and other roads where biological concerns do not preclude paving
   - Surface areas designated in the erosion control plan with 3 to 4 inches of crushed rock (3/4-inch maximum size)
   - Compact all fill materials
   - Monitor existing flood control channel and levee system periodically and after every major storm
   - Maintain cut and fill slopes during operations
   - Minimize disturbance of vegetated areas
   - Use a truck-mounted spray water system for dust control during construction
   - Provide temporary berms around construction areas and permanent erosion controls (e.g. culverts, ditches, swales)

   Verification: Sixty days prior to commencing site preparation, KMCC shall submit the grading and erosion control plan to the CEC Compliance Project Manager and the San Bernardino County Building and Safety Department for review and comment. Within 30 days after receipt of the combined plan, CEC and San Bernardino County shall notify KMCC of the acceptability of the plan.

2. If the pipeline encroaches on Inyo County roadways, KMCC shall submit specifications for returning those roads to their present contours and conditions.

Verification: Sixty days prior to commencing any road work in Inyo County, KMCC shall submit a combined grading and erosion control plan to the CEC, CPM and the Inyo County Department of Public Works.

3. KMCC shall minimize soil-related impacts by implementing the measures specified in the above-identified grading and erosion control plan.

Verification: Within 180 days after operation begins, KMCC shall file "as-built" engineering plans of soil measures as specified in the erosion control plan, with the San Bernardino County Building and Safety Department and the CEC Compliance Project Manager (and the Inyo County Public Works Department, if applicable). An affidavit signed by the project engineer shall accompany the CEC filing, identifying areas or methods that deviate from those proposed in the ACE Project AFC or supporting documents, which include the county-approved grading and erosion control plans.

E. Cultural Resources

Cultural resources include paleontological resources (fossilized remains of plant and animal life), prehistoric archaeological resources, ethnographic resources (resources important to the heritage of ethnic or cultural groups), and historic resources (evidence of human activity since the late 18th century to 50 years ago).

No paleontological resources were discovered in the project area. Due to extensive disturbance by previous construction, there is a low probability the site contains fossil remains of paleontological importance (March FSA 26-5, 26-8).

A records search, literature review and archaeological survey revealed four prehistoric archaeological sites and one isolated artifact in the project area. Three of these sites are the remains of small temporary camps and are located near the proposed brackish water pipeline. These sites have been disturbed by heavy equipment traffic, probably due to the construction of a nearby flood control levee. The fourth site is a prehistoric quarry located outside the project impact area. Currently unrecorded remains are unlikely because of the substantial disturbance of the area during construction of the existing facilities (March FSA 26-6,26-8).

A literature search revealed records of various camps and place names in the general area of the Argus project. However, the evidence does not indicate specific cultural resource locations. Nonetheless, as Native American

representatives have expressed concern over the three archaeological sites encountered near the proposed brackish water pipeline, these resources are considered to be ethnographic resources. Monitoring during construction of the pipeline will ensure indirect impacts to these resources will be avoided (March FSA 26-6, 26-8, 26-10).

Although numerous historic resources occur in the project vicinity, including a late mining era dump and several State Historic Landmarks, none is located within the project impact area (March FSA 26-7, 26-8).

With the implementation of the Conditions of Certification, below, the impacts of the proposed project on cultural resources will be mitigated to an insignificant level, and the project will be in compliance with the applicable laws, ordinances, regulations, and standards identified in the "Cultural Resources" portion of Appendix A of this Report.

FINDINGS:

Based upon the evience of record, the Committee finds:

1. The site proposed for construction of the Argus project has no known paleontological resources.

2. The proposed brackish water pipeline area contains three prehistoric archaeological sites which are also considered to be ethnographic resources.

3. The project impact area contains no known historic resources.

4. With the implementation of the Conditions of Certification, below, the proposed project will be in compliance with the applicable laws, ordinances, regulations and standards identified in the "Cultural Resources" portion of Appendix A of this Report.

CONDITIONS OF CERTIFICATION

1. KMCC shall designate a qualified paleontologist who will be on-call during site preparation and construction activities for the project.

   Verification: KMCC shall provide CEC with the name and telephone number of their paleontologist at least 30 days prior to the start of any ground disturbance and construction activities.

2. KMCC shall designate a qualified cultural resource specialist to be on site to monitor site preparation construction activities in the vicinity of archaeological sites SBr-3846, 3847, and 3848 and to be on-call during site preparation and construction activities in other project areas.

   Verification: KMCC shall provide CEC with the name and telephone number of their cultural resource specialist at least 30 days prior to the start of any ground disturbance or construction activities.

3. If paleontological or cultural resources are discovered during construction, work in the immediate area of the resource shall be halted and the designated paleontologist or cultural resources specialist, as appropriate, shall be consulted to evaluate the significance of the resource. Within one working day KMCC shall notify the CEC of any resource discovery and associated work stoppage. The designated paleontologist/cul-tural resource specialist and representatives of KMCC and the CEC Staff shall confer within one working day of the notification to discuss possible mitigation measures. Pending resolution of this matter, construction activity in the resource area shall remain stopped.

   Verification: KMCC shall notify the CEC within one working day of the resource discovery and the work stoppage. KMCC shall include a report on any such work stoppage or find in the Periodic Compliance Reports.

F. Noise

This review addresses the impact of expected noise levels of project construction and operation on noise-sensitive receptors and expected conformity with local and state ordinances. The proposed ACE project site is located in the northwest corner of San Bernardino County. The nearest noise-sensitive receptors are the residents of Trona and Argus, located to the northeast and southwest of the project site, respectively (March FSA 19-5).

There will be about a 4 dB increase in the noise level during the clearing/excavation phase, and about an 8 dB increase during the foundation/erection phase of project construction. After construction, pipes will be cleaned using high-pressure steam over a period of four to five days with each operation lasting about 15 minutes. This cleaning process will create noise levels in excess of the maximum level of 75 dB recommended by the County Department of Environmental Health Services for residential areas. Although these noise levels could result in some adverse impacts on the residents of Trona and Argus, they are temporary and will not cause significant impacts (March FSA 19-10).

Noise levels generated by plant equipment during project operation will not exceed the San Bernardino County Residential Noise Performance Standard at any residence. Under a "worst case" situation, the number of boiler ash trucks using First Street in Argus could double from 7 to 14 trucks per day, and miscellaneous supply trucks will increase by less than one truck per day. The resultant increase of less than 1 dB at 6 sensitive receptors in Argus will

not be perceivable and therefore will not create a significant adverse impact (March FSA 19-13).

No significant noise impact on plant personnel is expected during facility operation. Applicant will use specific noise control techniques during the final design of the plant to limit plant interior operating noise levels to below 90 dB, the Cal-OSHA limit for an 8-hour day (March FSA 19-13 - 14).

FINDINGS:

Based on the evidence of record, the Committee finds:

1. With the implementation of the Conditions of Certification, below, the ACE project will be in compliance with the applicable laws, ordinances, regulations and standards identified in the "Noise" portion of Appendix A of this Report.

2. With the implementation of the Conditions of Certifiction, no significant adverse noise impact from project construction or operation will result.

CONDITIONS OF CERTIFICATION

1. KMCC shall develop a Noise Complaint Resolution Program for handling public complaints during both the construction and operational phases of the proposed project. The Program shall include at a minimum, procedures for logging complaints, identifying contact personnel, scheduling responses to complaints, investigating the magnitude of the complaint, and resolving the complaint. The intend of this procedure shall be for KMCC to promptly conduct an investigation to determined the nature and cause of the complaint and take reasonable measures to eliminate its cause.

   Verification: Not later than 30 days before construction begins, KMCC shall submit to the CEC Compliance Project Manager and the San Bernardino County Department of Environmental Health Services, a procedure for handling public complaints. The County Department of Environmental Health Services shall, within 15 days of receipt of the procedure, notify KMCC and the CEC Compliance Project Manager regarding the acceptability of the procedure.

2. No later than 90 days after plant operation begins, KMCC shall conduct a noise survey at the four previously monitored locations. The survey will cover a continuous 24-hour period at a plant load in excess of 90% of plant capacity, with the results reported in terms of Ldn, hourly Leq, and the statistical descriptors, L10, L50, and L90.

KMCC shall prepare a report on the survey which will be used to determine the plant's conformance with the San Bernardino County Noise Performance Standards as recommended by the County and for comparison with pre-project ambient noise levels. In the event that the Noise Performance Standards are not complied with, or noise levels are substantially higher than predicted, the report shall contain details of the mitigation plan and a schedule for instituting corrective measures. KMCC shall conduct an additional noise survey within 5 working days of completion of the mitigation measures and report the results to the CEC and the San Bernardino County Department of Environmental Health Services within 15 days of completing the survey. The results of the survey would be used to evaluate the effectiveness of such corrective measures. No additional off-site noise surveys shall be required unless the public registers complaints about operational noise.

Verification: Within 15 days of completing the initial or any additional noise surveys, KMCC shall submit the noise survey report to the CEC Compliance Project Manager and the County Department of Environmental Health Services. The County Department of Environmental Health Services shall notify KMCC and the CEC in writing, within 15 days of receipt of the report, about the acceptability of the survey. If the report indicates that further mitigation is required, the CEC and the San Bernardino County Department of Environmental Health Services shall so inform KMCC within 15 days of receipt of the report.

3. KMCC shall conduct an occupational noise survey to identify the noise-hazardous areas in the facility, no later than 90 days after the plant reaches full operation. The survey shall be conducted by a qualified person, in accordance with the provisions of Title 8 of the California Administrative Code, sections 5095-5100 (Article 105). The survey results shall be used to determine the magnitude of employee noise exposure. KMCC shall prepare a report on the survey results and propose mitigation measures, if necessary, that will be implemented to comply with Cal/OSHA regulations.

   Verification: Within 30 days of the occupational noise survey, KMCC will prepare the report on the survey and make it available to Cal/OSHA upon request.

4. KMCC shall implement the noise mitigation measures specified in the AFC as well as the additional mitigation measures proposed by staff in this testimony (see the Mitigation section of this testimony).

   Verification: KMCC shall include, in the first annual compliance report after commencement of full operations, information specifying how and where these measures were implemented. KMCC shall make the construction site and the power plant, when operational, available for inspection by the San Bernardino County Department of Environmental Health Services, Cal/OSHA, and CEC.

5. KMCC shall limit noise-generating construction activities to the hours (5 a.m. to midnight) except in cases of emergency. The extended work day (5 a.m. to midnight) is permissible provided noise during the extended construction hours is adequately mitigated and does not constitute a public nuisance. An emergency is drfined for purposes of this condition as an event involving a spill, an accident, imminent loss of equipment, or other unforeseen events requiring immediate action to protect employee or the public health and safety.

   Verification: KMCC shall report to the San Bernardino County Department of health Services, within 24 hours, any emergency associated with noise-generating construction activities. Any complaints received from the public during normal or extended construction hours shall be addressed under the Complaint Resolution Program (required by Noise Condition 1).

G. Land Use

The proposed project site is located in San Bernardino County, with the project water pipe and electrical feeder lines extending north into Inyo County (March FSA 24-1). Portions of the proposed water facilities and electrical transmission lines cross public lands managed by the BLM (March FSA 24-15).

The plant site is located on KMCC property west of the existing Argus chemical plant. The land is zoned M-2, General Manufacturing, which allow the proposed use (March FSA 24-4, 24-15). The proposed project is compatible with the existing on-site cogeneration and chemical processing facilities. As existing land uses in the immediate area are industrial transportation and chemical processing, the project is not expected to have a significant impact on open-space areas to the west and residential areas to the south and northeast (March FSA 24-13).

The project water pipeline and electrical feeder and transmission lines will require for the most part an upgrade of existing lines on private lands and will not create a significant impact on land use (March FSA 24-13, 24-14). The remainder of the water and electrical feeder lines and the project wells will be constructed on previously undisturbed lands. New access roads to these facilities will likely result in an increase in off-road recreational use of the area. The proposed uses are consistent with existing water facilities, recreation and open-space uses (March FSA 24-14).

Portions of the proposed water supply line and electrical transmission lines, as well as the alternative water supply line (to be pursued in the event private property owners do not approve the upgrade of the existing water supply line on the preferred route), will cross public lands managed by the BLM (15). The BLM Desert Plan requires that all pipelines with diameters greater than 12 inches and all new electrical transmission lines of 161 kV or above be located within a designated utility corridor. As the proposed and alternative water supply lines are subject to this requirement, the Condition of Certification requires KMCC to obtain right-of-way permits and amendments as appropriate to assure consistency with the Desert Plan (March FSA 24-15 - 24-16).

FINDINGS

Based on the evidence of record, the Committee finds:

1. The ACE project will cause no significant impacts to area land uses.

2. With the implementation of the Condition of Certification, below, the development of the ACE project will be consistent with applicable laws, ordinances, regulations and standards set forth in the "Land Use" portion of Appendix A of this Report.

CONDITION OF CERTIFICATION

1. KMCC shall obtain right-of-way permits from BLM and amendments to BLM's Desert Plan as appropriate to allow construction and operation of the water line. All of the foregoing shall be accomplished prior to commencement of constructing the water line.

   Verification: Prior to construction of the proposed waterline, KMCC shall submit to the CEC BLM's written approval of the required BLM right-of-way grants and right-of-way permit amendments for the proposed water line; and BLM's written confirmation of the proposed water line's compliance with all applicable BLM plans and policies, including the California Desert Conservation Area Plan.

H. Socioeconomics

Relevant socioeconomic concerns include the impact of the proposed project on the local area's economic base, public services, and housing. The proposed ACE Project and associated facilities will be located in San Bernardino and Inyo counties near the unincorporated towns of Trona, Argus, and Westend, and 25 miles from the City of Ridgecrest.

During project construction, up to 200 workers will be employed. Assuming that 50 percent of the workers bring families and that the average family size is 3.3 persons, this will result in a maximum temporary population increase of 430 persons. Thirty-three jobs will be created during operation of the project, resulting in a permanent population increase of no more than 100 persons (March FSA 23-8 - 23-9).

The majority of construction workers are expected to live in trailer parks in the Trona-Argus area or in hotel/motel rooms in Ridgecrest. Ample space exists in the Argus trailer park and, while occasional difficulties may be encountered in finding rooms, an estimated 1,000 motel rooms will be available in Ridgecrest. The increase in the permanent population during project operation represents less than 5 percent of the annual growth in housing stock and will not create a significant impact on housing (March FSA 23-10).

The Trona Unified School District is currently 700 persons below capacity and can amply accommodate the children of construction workers who move to the area. Although the Sierra Sands School District, which includes Ridgecrest,

is operating at capacity in its elementary schools, most construction workers living in Ridgecrest will not be living with families. The estimated additional 18 students due to project operations is not expected to have a substantial impact on schools (March FSA 23-10).

No significant adverse impacts on law enforcement, hospital, or fire protection resources are expected as a result of the temporary and permanent population influxes (March FSA 23-11,23-12). Fire protection is further discussed in the "Safety" section of this Report.

The proposed project will increase property tax revenues by about $1.28 million annually, and increased revenues from sales and use taxes during construction and operation will additionally benefit the local economy (March FSA 23-11).

FINDINGS

Based on the evidence of record, the Committee finds:

1. The Argus Cogeneration Expansion Project will not cause adverse socioeconomic impacts in the Trona, Argus and Ridgecrest areas.
2. The ACE project will generate benefits to the area economy by generating tax revenues.

I. Visual Resources

A project's impact on visual resources is determined by evaluating the landscape character of the project site, the sensitivity of viewpoints, and the contrast between the existing background and the proposed project. The project site is located at the base of the Argus mountain range in the Searles Valley area of northwestern San Bernardino County. It is bordered on the south by the existing KMCC plant, on the north and west by desert terrain, and on the northeast by the residential community of Trona (March FSA 2-3).

Landscape character concerns the physical charcteristics of the land as well as the cultural modifications of the project area. The Searles Valley is relatively flat desert with sparse vegetation. The predominant activity in the project area is industrial. Because of the lack of unique physical characteristics and the high visibility of existing development, the proposed project will have an insignificant impact on landscape character (March FSA 2-7, 2-11, 2-12).

Viewpoint sensitivity concerns the impact on views from residential and recreation areas, travelled roads and scenic corridors. Travellers of Trona Highway, which is classified by the BLM as a high visual sensitivity corridor, will have a middleground view (0.5-3.0 miles) of the proposed project. Because the view will be obstructed for the most part by the existing KMCC plant structures, and because of the short travel time through the immediate area, visual impacts to travellers are minimal. Similarly, the impact of the middleground views from the residential and commercial areas is insignificant

due to the position of the existing KMCC facility between the project site and the viewing areas. Visual impacts to most regional recreation areas are minimized as the Argus range screens all but distant views (5 miles) of the project. While users of the Argus Range Roadless Area to the west of the site will have moderate to high visibility of the project, the extensive nature of the recreation area and the existence of the KMCC facility adjacent to the project site renders the visual impacts insignificant (March FSA 2-9, 2-11).

The project includes two transmission lines from the project site to the Searles Substation south of Argus, and a electric service line from an existing substation in Trona to the Valley Wells pump station to the north (March FSA 2-5). Although views of the transmission and electric lines are from predominantly middle- and foreground distances, most are already dominated by existing utility lines and the area's industrial appearance (March FSA 2-11).

Project wells will be located approximately 7 miles north of the project site. Users of the KMCC recreation area at Valley Wells will have middleground views of the well sites. Most of the containment structures will be below grade and difficult to discern at this distance. Visual impacts will be mitigated by Applicant's use of low contrast colors for the pumping station. The existing pipeline will be replaced in the existing alignment and the area will be regraded and revegetated after construction (March FSA 2-11, 2-12).

FINDINGS:

Based on the evidence of record, the Committee finds

1. The proposed project will have insignificant impacts on the landscape character of the area.

2. The proposed project will have insignificant impacts on viewpoint sensitivity in the area.

3. With the implementation of the Condition of Certification, below, the proposed project will not be in conflict with any applicable laws, ordinances, regulations or standards.

CONDITION OF CERTIFICATION

1. To minimize the visual contrast of the proposed project, KMCC shall:

   a. Construct the well sites so that no more than two feet of the containment structure is above grade.

   b. Utilize materials or paint for the well site facility that will blend in with the natural desert colors surrounding the site.

   c. Restore vegetation to a condition consistent with that found around the well sites and along the proposed pipeline routes.

   Verification: No less than sixty (60) days prior to construction of the well sites, KMCC shall submit to the CEC Compliance Project Manager three sets of the proposed construction documents including grading plans, vegetation restoration plans, and paint or material color samples.

J. Traffic

The construction and operation of the proposed project may impact the traffic flow and physical condition of area roadways. The main access road to the proposed plant site is First Street, which proceeds south from the plant boundary about 1 mile to an intersection with Trona Road in Argus. Railroad access to the project area is provided by the Trona Railway, which connects to the Southern Pacific Line running south to Mohave (March FSA 27-3).

During the construction period, the number of employees will peak at 200 persons. In a "worst-case scenario" assuming all workers will be entering and leaving the project at the same time, this will add 182 vehicle trips per day in each direction. This additional traffic volume does not approach the capacity of the 2-lane roadways involved (March FSA 27-8).

Construction material and equipment will be delivered to the site by an average of ten trucks per day, raising the percent of trucks on Trona Road from 9 percent to 9.5 percent (March FSA 27-8). California DOT and San Bernardino County representatives conclude this will not create a significant impact on the maintenance requirements of Trona Road. San Bernardino County has, however, expressed concern over possible safety hazards and roadway damage due to the added truck traffic on First Street in Argus (March FSA 27-9).

Other transportation activites during construction include an estimated 20 rail shipments delivered as part of the regular train service, and the

temporary interruption of traffic operation along Trona Road during construction of the power transmission and water lines. These activities will not have a significant impact on area transportation (March FSA 27-9).

During operation of the proposed project, railway fuel deliveries will result in approximately one additional coal train per week. The Trona Railroad can accommodate, and indeed looks forward to, this additional business and anticipates no negative impacts to the railroad (March FSA 27-10).

Truck deliveries during project operations include up to 18 trucks per day delivering limestone, and up to 14 trucks per day for boiler ash disposal. The limestone deliveries will increase the percentage of trucks on Trona Road by ½ percent, which will not have a significant impact on the road's maintenance requirements (March FSA 27-10). Although usual travel by the disposal trucks will be accross KMCC property, in the event the crossing at Cement Plant Road is washed out (an occasional event), the boiler ash disposal trucks will use First Street and Trona Road to Cement Plant Road, raising the concerns regarding safety hazards and roadway damages due to construction deliveries discussed above (March FSA 27-11).

FINDINGS

Based on the evidence of record, the Committee finds:

1. With the implementation of the Conditions of Certification, below, the additional traffic generated by the construction and operation of the ACE project will not significantly impact traffic flow in the area.

2. With the implementation of the Conditions of Certification, the additional traffic generated by the construction and operation of the ACE project will not adversely impact the physical condition of area roads.

3. With the implementation of the Conditions of Certification, the ACE project will be in compliance with the standards, ordinances, and laws set forth in the "Traffic" section of Appendix A of this Report.

CONDITIONS OF CERTIFICATION

1. KMCC shall comply with the Inyo County, Kern County, San Bernardino County and CALTRANS restrictions on over-size or over-weight vehicles. KMCC shall obtain necessary transportation permits from the counties and CALTRANS.

   Verification: In its annual compliance report, KMCC shall notify the CEC of any transportation permits obtained during the reporting period.

2. KMCC shall comply with the appropriate Inyo County and San Bernardino County requirements imposed to avoid the delay of traffic on county roads during construction operations.

   Verification: In its annual compliance report, KMCC shall notify the CEC of any San Bernardino County Excavation Permits or Inyo County Encroachment Permits applied for or obtained during the reporting period. KMCC shall indicate whether county road traffic was delayed during operations, thus requiring these permits.

II. HEALTH AND SAFETY

Public Resources Code sections 25523 (a) and (d) require the Commission to determine whether a proposed facility will meet applicable safety standards. The following topic areas address whether the construction and operation of the ACE project would pose unacceptable risks to public health and safety.

A. Public Health

The operation of the proposed project presents potential adverse public health impacts resulting from the emission of, and exposure to, criteria, noncriteria and toxic air pollutants, as well as from electric and magnetic fields produced by the proposed transmission line.

The evidence shows the risks associated with the emissions of noncarcinogenic pollutants and the electromagnetic fields of the project transmission lines are insignificant with regard to public health impacts (March FSA 17-27, 17-23). However, the initial risks associated with project emissions of carcinogenic air pollutants as the project was originally proposed were unacceptably high (March FSA 17-27-17-28). Applicant has since proposed several modifications to the ACE project design and operations, including the reduction of the arsenic content of the cooling tower, the reduction in the number of circulation cycles for the cooling tower water, and the elimination of coke as a fuel for the ACE boiler. In addition, Applicant proposed to install drift eliminators, and to substitute a nonhazardous Betz scale inhibitor for the chromate-based additive in both the ACE facility and other KMCC cooling towers in the Searles Valley (August FSA 17-1, 17-3).

With these modifications, project emissions are not expected to result in any acute or chronic health risks. Further, as a result of the implementation of these mitigation measures, there will be an improvement in the air quality of the Searles Valley with regard to carcinogenic risk (August FSA 17-8).

FINDINGS

Based on the evidence of record, the Committee finds:

1. The ACE project, if constructed and operated in compliance with the Conditions of Certification below and those contained in the "Air Quality" portion of this Report, will comply with applicable laws, ordinances, regulations and standards reflected in the "Public Health" portion of Appendix A of this Report.

2. The ACE project, if constructed and operated in compliance with the Conditions of Certification below and those contained in the "Air Quality" portion of this Report, will have no significant adverse affects on public health.

3. With the implementation of the Conditions of Certification, below, there will be a net improvement in the air quality of the Searles Valley with regard to carcinogenic risk.

CONDITIONS OF CERTIFICATION

1. In addition to implementing the comprehensive monitoring requirements stated under condition 16-10 in the Air Quality FSA, KMCC shall, once yearly, for two years following start-up of the ACE project and implementation of modifications proposed for the existing KMCC facilities, provide the CEC Compliance Project Manager results of field measurements of the ambient air concentrations of the following pollutants in the project area: chromium, lead, aluminum, and benzene.

   Verification: KMCC shall submit to the CEC Compliance Project Manager, within 90 days of completion, the results of these field ambient air measurements of the levels of these listed pollutants. These results shall be presented in the form of a comparison of the ambient levels measured during operations and before the construction and start-up of the ACE project. The CEC staff shall review these results and respond to KMCC within 60 days of the receipt of these results.

2. Cooling tower additives used in KMCC's cooling towers during the operation of the ACE facility shall contain no hexavalent chromium. KMCC shall use Betz DE-1186 or Betz DE-1187 as the cooling tower corrosion inhibitor and shall notify the CEC of any intention to use a different cooling tower additive, at least 90 days before such use. The notification shall include information on the toxicity of the additive together with an assessment of the potential health impacts of worker and public exposure to the additive. The CEC shall notify KMCC of the acceptability of the additive 30 days after receipt of KMCC's notification.

   Verification: KMCC shall submit to the CEC, verification of KMCC's intent to use Betz DE-1186 or Betz De-1187 cooling tower corrosion inhibitor or equivalent chemical at least 90 days before start-up.

3. KMCC shall install high efficiency drift eliminators in all of KMCC's coolig towers prior to the operation of the ACE facility. The efficiency of such drift eliminators in minimizing cooling tower drift shall be consistent with the efficacy shown in Public Health: Table 1, as presented by KMCC. In the event that such efficiency is not achieved, KMCC shall submit to the CEC a plan for achieving KMCC's stated efficiency. The source tests on the efficacy of the drift eliminators shall be conducted once yearly, for two years following their installation.

   Verification: KMCC shall submit to the Compliance Project Manager within 90 days of completion, the results of the source tests to verify the efficacy projected for the drift eliminators. The CEC shall review these results and respond to KMCC within 60 days of the receipt of these results.

4. KMCC shall, on a yearly basis, for two years following start-up of the ACE facility and implementation of modifications proposed for KMCC's existing facilities, submit to the CEC results of ACE stack source tests and area field measurements of the ambient concentrations of the following pollutants: chromium, lead, aluminum and benzene. These test and monitoring results shall be submitted to the CEC in the form of (1) a comparison of ACE boiler emission rates and the emission rates assumed by KMCC for these pollutants in KMCC's exposure assessment and (2) a comparison of the ambient levels measured during operations and the ambient levels measured before the start-up of the ACE facility.

   Verification: KMCC shall submit to the Compliance Project Manager, within 90 days of completion, the results of the measurement of these listed pollutants.

B. Waste Management

Hazardous and non-hazardous wastes will be generated during the construction and operation of the proposed ACE project. This review addresses the adequacy of the waste treatment and disposal practices and their conformity with applicable laws, ordinances, regulations and standards.

Aprroximately 10 cubic yards of domestic solid waste per week and 10 cubic yards of hazardous waste per month will be generated during construction of the project facilities. The nearby Argus Class III disposal facility and the Kettleman Hills and Casmalia Class I disposal facilities have adequate capacity for the disposal of nonhazardous and hazardous wastes from project construction (March 1987 FSA 18-6, 18-9).

During operation of the proposed project, several types of wastes will be generated. Approximately 94 tons per day of boiler fly ash and bottom ash will result from the burning of coal. If the ash is found to be (or assumed to be) potentially hazardous, Applicant will seek a variance from DHS to manage the ash as a special waste, and will dispose of it as specified by the LRWQCB. Otherwise, the ash will be disposed of at the Searles Lake disposal facility which has adequate capacity for project ash disposal (March FSA 18-7-8, 18-9, 18-10).

Approximately 780 gpm of wastewater generated during plant operations will be discharged into the existing all other liquor (AOL) line for the Argus facility and injected into the Searles Lake Formation. This addition will not

adversely impact the formation and may, in fact, benefit the solution mining process by replacing water levels in the aquifer (March FSA 18-8, 18-9, 18-10).

Domestic solid wastes will be disposed of in the Argus Class III landfill. Sanitary wastewater will be treated in an existing below-ground septic tank and disposed of in a leach line system. Acid cleaning boiler wastes, wastes from accidental spills, and all other hazardous materials will be disposed of through a licensed contractor (March FSA 18-8-9-, 18-11-12).

FINDINGS:

Based upon the evidence of record, the Committee finds:

1. With the implementation of the Conditions of Certification, the proposed project will be in compliance with the applicable laws, ordinances, regulations and standards identified in the "Waste Management" section of Appendix A of this Report.

2. With the implementation of the Conditions of Certification, the potential for adverse environmental impacts from hazardous and nonhazardous wastes generated by the proposed project will be adequately minimized.

CONDITIONS OF CERTIFICATION

1. Construction wastes shall be disposed of by KMCC or its contractors at facilities approved by the Lahontan Regional Water Quality Control Board and San Bernardino County.

   Verification: At least 30 days before beginning construction, KMCC shall submit a letter to the CEC Compliance Project Manager listing the actual disposal facilities to be used. KMCC shall provide the CEC with a copy of the provisions in all the contracts with contractors requiring compliance with waste management laws and regulations designed to protect public health and the environment.

2. KMCC shall notify DHS if additional hazardous materials will be generated during the operation of the ACE project and therefore seek an amendment to their Hazardous Waste Generator Permit if necessary. KMCC shall comply with all conditions of the permit.

Verification: Within 90 days after commencing commercial operations, KMCC shall submit to the CEC Compliance Project Manager a copy of the Hazardous Waste Generator Permit or a letter from DHS stipulating a waiver of such permit.

3. KMCC shall analyze the boiler fly ash and bottom ash from the proposed facility to determine if it is hazardous under Title 22 of the CAC and notify DHS and LRWQCB of the results. However, KMCC may assume that the ACE project ash will be as hazardous as the ash from the existing Argus facilities solely on the basis of the levels of its constituents. If this assumption is made, KMCC will so notify LRWQCB and will obtain the variance from DHS for disposal of this hazardous ash. The ash will then be classified as a special waste and will be disposed of as required under Title 23 of CAC. The LRWQCB will then have administrative jurisdiction over the disposal of this hazardous ash as a special waste.

   Verification: If KMCC obtains a variance from DHS and a permit for ash disposal from LRWQCB, then KMCC shall provide a copy of the permit to the CEC Compliance Project Manager at least 90 days before the beginning of commercial operations.

4. If KMCC stores hazardous wastes on site for more than 90 days or if the ash is determined to be hazardous and a variance is not granted by DHS, KMCC shall obtain a determination from DHS that the requirements of a hazardous waste storage or disposal facility permit have been satisfied. Storage and disposal of such wastes shall be in accordance with DHS regulations.

   Verification: KMCC shall notify the CEC Compliance Project Manager in its Annual Compliance Report if KMCC applies for a Hazardous Waste Facility permit.

5. KMCC shall dispose of sanitary wastes in a manner approved by San Bernardino County.

   Verification: Before the start of construction, KMCC shall submit a statement to the CEC Compliance Project Manager verifying that the sanitary wastes will be disposed of in an approved manner. A copy of the letter notifying LRWQCB and the San Bernardino County Department of Environmental Health Services of this disposal plan shall also be submitted to the CEC Compliance Project Manager.

6. KMCC shall notify EPA of plans to add additional wastewater to the All Other Liquor line for injection underground. If required, the UIC permit shall be amended as appropriate.

   Verification: Before the start of construction, KMCC shall submit a statement to the CEC Compliance Project Manager verifying that the EPA has been notified of any proposed changes to the underground injection program. Copies of all correspondence between the EPA, LRWQCB and KMCC about the UIC permit shall be submitted to the CEC Compliance Project Manager. Prior to start of operation, the amended UIC permit (if required) shall be submitted to the CEC Compliance Project Manager.

7. KMCC shall annually prepare a report summarizing the nature of all project-related hazardous wastes along with all hazardous waste disposal methods and facilities used. The report shall also include the quantities of hazardous wastes generated.

Verification: KMCC shall submit a hazardous waste summary report to the CEC Compliance Project Manager in the Annual Compliance Report.

8. KMCC shall notify the CEC of any waste management-related enforcement action or proposed action against KMCC, the waste hauler, or the disposal facility operator during the construction and operation of the proposed ACE Project.

Verification: KMCC shall notify the CEC Compliance Project Manager within 10 days of notification, of any such impending enforcement action.

9. KMCC shall prepare a final waste disposal plan for all the operational wastes that will be produced during the lifetime of the proposed cogeneration plant. At a minimum, the waste disposal plan shall specify by generic category (Class I, II or III):

a. The manner in which each operational waste will be handled;
b. The proposed disposal facility;
c. The proposed route for hauling the waste to the selected disposal facility;
d. Available alternative solid waste disposal facilities as well as KMCC's ability to use those facilities; and
e. KMCC's plans for operating the power plant if there were to be no available licensed waste disposal facilities.

Verification: Six months prior to the scheduled start of the commercial operation of the proposed facility, KMCC shall submit the disposal plan to the CEC Compliance Project Manager. Within 30 days, CEC shall review the plan and notify KMCC of its acceptability. KMCC shall not begin commercial operations until the plan is approved by CEC.

10. KMCC shall ensure that hazardous wastes generated during construction and operations are disposed of in a manner and at a facility permitted by DHS and the appropriate Regional Water Quality Control Board for disposal of hazardous wastes.

Verification: In its Annual Compliance Report, KMCC shall submit to the CEC Compliance Manager, verification that hazardous wastes were transported by a DHS-permitted hazardous wastes hauler and that the wastes were disposed of at appropriate facilities.

C. Public and Worker Safety

This review addresses the adequacy of project safety programs, fire prevention capability, and measures for handling hazardous substances to protect public and worker safety during construction and operation of the ACE project.

The transportation, handling and storage of hazardous substances will comply with the applicable laws, ordinances, standards, and general industrial material management practices identified in the "Public and Worker Safety" portion of Appendix A of this Report. Hazardous materials to be used during normal operations include sulfuric acid, sodium hydroxide, ammonia, Betz 5404A, Betz 778P, Betz 3-12, and Betz 437 (March FSA 10-14). These will be stored separately on-site in tanks located within dikes so that spillage will be contained to the curbed areas (March FSA 10-14 - 10-17). Applicant did not address the subject of lubricating oil handling and storage; however, with the implementation of the Conditions of Certification, below, lubricating oil will be handled safely and in accordance with the applicable LORS (March FSA 10-18).

KMCC operates its own 24-hour fire brigade equipped with a fire engine, rescue truck and ambulance at both the Trona-Argus and Westend plant locations. Fire protection water will be supplied from the existing Argus plant's fire protection water and pumping facilities (March FSA 10-12). On-site fire protection will be provided by a combination of wet-pipe sprinklers, portable CO_2, dry chemical, and halon fire extinguisher systems, and a fire alarm system designed and constructed in accordance with the applicable LORS (March FSA 10-12 - 10-13, 10-18 - 10-20).

The proposed ACE project will be covered by the existing Argus facility safety and health program which includes a safety program, an occupational health program, accident and disaster response plans, a chemical monitoring program, and a training program (March FSA 10-9). The Conditions of Certification, below, additionally require a plan be developed for evacuation of Argus facility personnel and the Argus community in the event of a major ammonia spill (March FSA 10-21).

FINDINGS

Based upon the evidence of record, the Committee finds:

1. The proposed project, if constructed and operated in accordance with the Conditions of Certification, below, will not create safety hazards to the public or to project workers.

2. The proposed project, if constructed and operated in accordance with the Conditions of Certification, below, will be in compliance with the applicable laws, ordinances, regulations, and standards listed in the "Safety" portion of Appendix A of this Report.

CONDITIONS OF CERTIFICATION

1. KMCC shall comply with storage and handling procedures for flammable liquids as specified in NFPA 30 and Title 8, CAC, section 5415 - 5420, 5426 - 5439, 5465 - 5498. Title 13, CAC, section 1160 et seq.; 1161 et seq., 1202.1 et seq.

   Verification: KMCC shall submit a letter to CEC CPM signed by the CBO, verifying compliance with the above LORS 30 days prior to the first receipt of any hazardous liquids.

2. KMCC shall comply with the handling, storage and usage requirements for hydrogen including leakage detection in accordance with NFPA 50A; 49 CFR 173.302, 178.36 and 178.37; 29 CFR 1910.101A and 1910.103; Title 8, CAC, section 5465 - 5498.

   Verification: KMCC shall submit a letter to CEC CPM signed by the CBO,* verifying compliance with the above LORS 30 days prior to the commencement of any operation.

3. KMCC shall comply with the requirements of ASME B31.1 piping codes.

Verification: KMCC shall submit a letter to CEC CPM signed by the CBO, verifying compliance with the above codes 30 days prior to any operation.

4. KMCC shall comply with the handling and storage requirements for sulfuric acid as specified in Title 8, CAC, sections 5415 - 5420, 5426 - 5439. Title 13, CAC, section 1160 et seq.; 1161 et seq., 1202.1 et seq.

Verification: KMCC shall submit a letter to CEC CPM signed by the CBO3, verifying compliance with the above codes 30 days prior to first filling of any storage or day tank.

5. KMCC shall comply with the handling and storage requirements for sodium hydroxide as specified in Title 8, CAC. Sections 460, 5155, 5162, and 5165.

Verification: KMCC shall submit a letter to CEC CPM signed by the CBO3, verifying compliance with the above LORS 30 days prior to first filling of any storage and day tank.

6. KMCC shall comply with the handling and storage procedures for lube oil as specified in Title 8, CAC, sections 5417 and 5420.

Verification: KMCC shall submit a letter to CEC CPM signed by the CBO, verifying compliance with the above LORS 30 days prior to the commencement of start-up operation.

7. KMCC shall submit its fire protection program, specifications and drawings for the construction of the ACE facility to the CBO3 for approval.

Verification: KMCC shall submit to the CEC CPM a copy of the CBO's approvals and written acceptance of KMCC's construction fire protection program 45 days prior to the scheduled commencement of construction.

8. KMCC shall submit its fire protection program for the operation of the cogeneration facility to the CBO* for approval.

Verification: KMCC shall submit to the CEC CPM a copy of the CBO's approval and written acceptance of KMCC's operations fire protection program for the proposed facility, 15 days prior to the first turbine roll.

9. KMCC shall request the CBO to annually reexamine the fire protection program.

Verification: KMCC shall summarize the joint reexamination of the fire protection program in its annual compliance report to the CEC CPM.

10. KMCC shall prepare and implement an accident prevention program for both the operation and the construction of the ACE project and shall request that the Cal-OSHA Consultation Service review their program.

Verification: KMCC shall request a letter from the Cal-OSHA Consultation Service certifying compliance with the requirements of Title 8, CAC, sections 1509 and 3203. A copy of the letter shall be filed by KMCC with the CEC CPM prior to commencing site preparation.

11. KMCC shall facilitate on-site worker safety inspections conducted by Cal-OSHA during construction and operation of the facility or when an employee complaint has been received.

Verification: KMCC shall request Cal-OSHA to notify the CEC CPM in writing in the event of a violation that would involve Cal-DOSH action affecting the construction and operation schedule and shall notify the CEC CPM of the necessary corrective action. KMCC shall note any Cal-DOSH inspections and actions in its periodic compliance reports.

12. KMCC shall comply with storage and handling requirements of anhydrous ammonia as specified in 29 CFR Section 1910.111; Title 8, CAC, sections 3203, 500 - 512, 5415 - 5420, 5426 - 5439, 5445 - 5461, 5465 - 5498, 5583 - 5612 and ANSI k61.1-1981. Title 13, CAC, section 1160 et seq.; 1161 et seq., 1202.1 et seq.

Verification: KMCC shall submit a letter to the CEC CPM, signed by the CBO, verifying compliance with the above LORS within 30 days prior to the first filling of the ammonia storage tank.

13. KMCC shall comply with ACI 349-80, Appendix B; API 614, API 615, API 650, API RP-520, API RP-521, ASME Sections I, II, and VIII, and UBC Chapters 5, 19, 32 and 33 as applicable in constructing tanks, pressure vessels and systems, heat exchangers and the associated electrical wiring.

Verification: KMCC shall submit a letter to the CEC CPM, signed by the CBO3, verifying compliance with the referenced standards 30 days prior to filling any tank or pressure vessel or using any related system or heat exchangers and their associated electrical wiring.

14. KMCC shall comply with the design requirements for building construction, and mechanical, electrical, and plumbing components in accordance with Title 24, CAC, sections 2-101 to 2-522; 2-2701 to 2-2910; 2-3201 to 2-3330; 3-280-5 to 3-427-22; 4-403 to 4-2212; S-102 to S-1704; and Chapters 5, 19, 32 and 33 of the Uniform Building Code (UBC); San Bernardino County Uniform Fire Code Ordinance 3054, 3055.

Verification: KMCC shall submit a letter to the CEC CPM signed by the CBO verifying compliance with these LORS cited at least 30 days prior to start up of the ACE project.

15. KMCC shall only contract with California licensed haulers for the transport of hazardous materials.

Verification: KMCC shall submit a letter to the CEC CPM signed by the plant manager, verifying that KMCC is contracting with California licensed haulers for the transport of hazardous materials indicating license number and name.

16. For all hazardous materials, KMCC shall comply with the following Title 8, CAC:

- sections 500 - 512; Anhydrous Ammonia
- sections 5139 - 5155; Dust, Fumes, Mists, Vapors and Gases
- sections 5160 - 5185; Hot, Flammable, Poisonous, Corrosive and Irritant Substances
- sections 5503 - 5624; Design, Construction and Installation or Venting, Diking, Valving and Supports
- section 3203; Operation; Accident Prevention Program
- section 5415 - 5420, 5465 - 5498, 5621, 6000, 6003; Flammable Liquids, Gases and Vapors
- sections 6150 - 6184; Fire Protection
- Title 22 sections 66693-66723 Management of Hazardous and Extremely Hazardous Waste

Verification: KMCC shall submit a letter to the CEC CPM signed by the CBO verifying compliance with the above LORS within 30 days prior to the first filling of any tank or container with hazardous materials.

17. KMCC shall comply with the requirements of 49 CFR 172, 173, 178 for Containers of Hazardous Chemicals.

Verification: KMCC shall submit a letter to the CEC CPM signed by the CBO verifying compliance with the above requirements within 30 days prior to the first receipt of any hazardous materials.

18. KMCC shall submit applicable documents to the CBO3 requesting their review of the fire protection systems for conformance with applicable sections of the following (NFPA) standards:

- NFPA 10; Portable Fire Extinguisher
- NFPA 12; Carbon Dioxide Extinguishing Systems
- NFPA 12A; Halon Fire Extinguishing Systems
- NFPA 13; Standard for the Installation of Sprinkler Systems
- NFPA 14; Standpipe and Hose Systems
- NFPA 15; Water Spray Fixed System
- NFPA 17; Dry Chemical Extinguishing Systems
- NFPA 20; Centrifugal Fire Pumps
- NFPA 26; Standard for Supervision of Valves

- NFPA 30; Flammable and Combustible Liquids Code
- NFPA 70; National Electric Code
- NFPA 72E; Automatic Fire Detectors
- NFPA 1961; Standards for Fire Hoses
- NFPA 1962; Standards for Fire Hose Case Use
- NFPA 1963; Standards for Fire Hose Connections
- NFPA-NEC; Class I, Division II, Group D Hazardous Area Designation
- Uniform Building Code
- Uniform Fire Code San Bernardino County

Verification: KMCC shall submit to the CEC CPM a copy of an affidavit signed by the CBO3, stating that the fire protection is in compliance with the above codes 30 days prior to "first fill" of any hazardous materials, or plant start-up.

19. KMCC shall develop an evacuation plan coordinated with local governments, local medical facilities, the local police department and county sheriff department to be put in place in case of a major ammonia release.

Verification: KMCC shall submit to the CEC CPM a copy of the plan signed by representatives from each of the above groups 30 days prior to "first fill" of ammonia.

III. ENGINEERING

Public Resources Code section 25523 requires the Commission to review the design, construction, and operation of the proposed project to determine whether it is in conformity with applicable law. Public Resources Code section 25523 empowers the Commission to require design and operational modifications to ensure the facility's safe and reliable operation. The following subparts summarize the engineering disciplines examined, and contain proposed Conditions of Certification governing the technical design, construction, and operation of the ACE project.

A. Engineering Geology

The purpose of engineering geology review is to determine whether the proposed project's facilities would adversely affect or be affected by geologic features and processes at the site. Specifically, the Committee's evaluation addresses: 1) the geologic conditions affecting design and construction of the facilities; 2) the potential impacts to the project such as landslides, liquefaction and ground shaking; 3) the potential impacts on geological resources such as minerals or gems; and 4) compliance requirements to assure mitigation of geologic hazards and compliance with applicable LORS resulting in a safe, reliable facility.

The proposed facility is located in the Searles Valley between the Argus Range to the west and the Slate Range to the east. As slopes in the proposed facility location are gentle, slope instability is not expected to present a geologic hazard (March FSA 15-13). Depth to groundwater is greater than 50 feet, and soil density increases with depth so that the potential for soil liquefaction at the site is low (March FSA 15-16).

Although evaporite is mined commercially elsewhere in the Searles Valley, neither this nor other valuable geologic resources occur at the project site (March FSA 15-16).

During heavy rains, the project site may be adversely impacted by debris flows from ephemeral streams draining the Argus and Slate Ranges (March FSA 15-13). Debris flows will be controlled by diversion structures and dams, and

the proposed water pipeline will be protected by reinforcement and burial (March FSA 15-17).

The facility site is located in the seismically active triangular area bounded by the Sierra Nevada, Garlock and Death Valley fault zones (March FSA 15-1,15-5). The area within 60 miles of the proposed site has experienced a number of strong historic earthquakes, and ten faults and fault zones have been identified within 31 miles of the site (March FSA 15-7 - 15-11). The geologic hazards associated with this seismic activity will be mitigated by designing the facility to peak ground acceleration levels obtained from KMCC's statistical seismic hazards analysis, which Staff concludes is appropriate for the ACE project site (March FSA 15-13, 15-17, 15-18 - 15-19). Earthquake-resistant design measures are discussed further in the "Structural Engineering" section of this Report.

FINDINGS

Based upon the evidence of record, the Committee finds:

1. The proposed project will have no significant impacts on geologic resources.

2. With the implementation of the Conditions of Certification, below, the project will be constructed in accordance with the applicable laws, ordinances, and standards identified in the "Engineering Geology" portion of Appendix A of this Report.

3. With the implementation of the Conditions of Certification, below, impacts to the project due to geologic hazards will be minimized.

CONDITIONS OF CERTIFICATION

1. KMCC shall assign to the project, to be present as needed, an engineering geologist, certified by the State of California, to monitor engineering geologic conditions. This is to assure that conditions encountered during excavation are similar to those described in the Application for Certification (AFC) and data responses as may be modified by additional

design explorations. The engineering geologist will also assure that any adverse conditions encountered are mitigated in a safe, environmentally sound manner. This shall include:

- o Monitoring compliance with design intent in engineering geologic matters
- o Providing consultation during the design and construction of the project
- o Evaluating geologic conditions and geologic safety
- o Recommending field changes to the responsible civil engineer

Verification: At least ten (10) days prior to submittal of proposed grading plans (at least 30 days prior to the start of site preparation), KMCC's responsible design engineer shall report to the CEC and designated CBO the name(s) and license or registration number(s) of the assigned engineering geologist(s). Personnel changes shall be noted and pertinent data submitted in each subsequent monthly construction report.

2. To assure that the facilities are constructed in accordance with pertinent laws, ordinances, regulations, standards, plans, and policies, the California certified engineering geologist shall sign all preconstruction, construction, and postconstruction reports pertaining to the engineering geologic suitability of the plant site, transmission line corridor, and water supply pipeline route.

   Verification: At least ten (10) days prior to submittal of proposed grading plans (at least 30 days prior to the start of site preparation) KMCC's responsible design engineer shall report to the CEC and designated CBO the name(s) and certification number(s) of the assigned engineering geologist(s). Personnel changes shall be noted and pertinent data submitted in each subsequent monthly construction report.

3. KMCC shall incorporate all engineering geologic hazard mitigation measures in the design plans and specifications submitted to the CBO for his approval prior to issuance of construction permits.

   Verification: At least 30 days prior to commencing construction or ground disturbance, KMCC shall submit to the CEC a notice of transmittal indicating that the design plans and specifications have been sent to the CBO and that the engineering geologic hazard mitigation measures have been included in those plans and specifications.

4. If geologic conditions do not differ much from those conditions described by KMCC in their AFC, then KMCC shall implement the AFC's recommended mitigation measures for adverse geologic conditions. If conditions differ significantly, then mitigation measures shall be revised and submitted to the CBO for approval.

Verification: KMCC's certified engineering geologist shall verify compliance with the AFC's recommended mitigation measures or any revised mitigation measures in the geologic grading report and "as-graded" grading plan.

5. KMCC shall ensure that geologic records of site inspections, especially detailed logs of excavated surfaces, will be made during site preparation and submitted to the CEC upon request.

Verification: In the next Periodic Compliance Report, KMCC shall notify the CEC of the availability of geologic records of site inspections.

B. Civil Engineering

Civil engineering review assesses whether the design criteria, performance, objectives, soil properties, and construction methods are sufficiently defined and documented to assure reasonable compliance with applicable laws, ordinances, regulations and standards. Civil site work on the proposed project will consist of site preparation, excavation for foundations, construction of site yard facilities, embankment and slope development, construction of secondary containment facilities, drainage ditches, culverts, roads, site paving, and underground facilities (March FSA 6-7).

To accommodate the main plant and fuel storage structures, portions of the site will be graded, using balanced cut and fill, to an elevation 1725 feet above mean sea level (MSL). Additional grading will be required for the cooling tower facility and various roadways and ditches around the perimeter of the site (6-7). Loose or soft zones will be compacted in place or excavated and replaced with compacted backfill to a density of at least 90 percent of the maximum density as determined by ASTM D1557 (March FSA 6-7,6-22). About 34,000 cubic yards of excess material from excavation will be disposed of in a designated on-site disposal area (March FSA 6-10).

The drainage system around the existing plant will be modified to divert storm water away from the proposed plant. New ditches connecting the project with the existing system will be self-cleaning with the gradient sized for a minimum velocity of 2-1/2 feet/second. The site will be graded to provide a minimum slope of 1 percent so that all surface run-off will drain away from

all foundations and into collection ditches. Outfall structures will be sized based upon a 100-year, 60 minute, 1.1 inch/hour storm (March FSA 6-7, 6-11).

Site access roads and the main plant road will be paved with asphalt concrete, and all other roads will be surfaced with 3 to 4 inches of 3/4 inch crushed rock (March FSA 6-12). All heavy loads will be transported to the site prior to building road pavement, and roadway loads after final pavement will not exceed applicable roadway design criteria (March FSA 6-22).

Applicant's civil engineering criteria are acceptable for design purposes. Although the evidence of record does not contain adequate data regarding the water pipeline and secondary containment facilities criteria, post-certification final design reivew, as provided for in the Conditions of Certification, below, will ensure all project civil works will be in compliance with applicable laws, ordinances, regulations and standards (March FSA 6-24, 6-25).

FINDINGS

Based on the evidence of record, the Committee finds:

1. The proposed civil engineering practices and mitigation measures constitute sound engineering practice.

2. With the implementation of the Conditions of Certification, below, the project will conform with the applicable laws, ordinances, regulations and standards (LORS) identified in the "Civil Engineering" portion of Appendix A of this Report.

CONDITIONS OF CERTIFICATION

1. Kerr-McGee Chemical Corporation (KMCC) shall assign to the Argus Cogeneration Expansion (ACE) Project, a responsible, qualified civil engineer, registered in California, who shall:

- o be directly responsible for the design of secondary containment facilities, the proposed earthwork and related civil works facilities including, but not limited to site preparation and grading, excavation, design and construction of drainage ditches, under-ground utilities, culverts, site access roads, and sanitary sewer systems;

- o prepare and sign (or directly supervise the preparation of) plans, calculations and specifications for erosion and sediment control, structure foundations and related civil work facilities at the plant site, to comply with the AFC requirements and the Commission Decision;

- o monitor construction progress to insure compliance with the design intent;

- o evaluate and recommend necessary changes in the design ofthe civil works facilities and changes in the construction procedures; and

- o be responsible for all civil work construction conforming with approved plans and specifications - the UBC, Local Codes and Ordinances and applicable requirements as specified by the Commission decision. (UBC 1985 edition; Business and Professions Code, section 6704).

Verification: Within 30 days prior to the submittal of the proposed plans, specifications and calculations for grading, erosion and sediment control and related civil works, KMCC shall submit to the California Energy Commission (CEC) Compliance Project Manager (CPM) and the Chief Building Official (CBO) the name, qualifications and registration number of the responsible civil engineer, assigned to the project to perform the duties set forth above. If the civil engineer is subsequently reassigned or replaced, KMCC shall, within 10 days, submit the information required above for the newly-assigned individual to the CEC CPM and the CBO.

2. KMCC shall assign to the project a qualified civil engineer registered in California and fully competent and proficient in soil mechanics, who shall:

   - o prepare the soils engineering reports required by UBC Chapter 70;

   - o be present, as required, during site grading and earthwork to provide consultation and to monitor compliance with the requirements set forth in Appendix D to the AFC and the 1985 Edition of the UBC, Chapter 70;

   - o recommend field changes to the responsible civil and construction engineers;

   - o prepare the soils grading report. (A "final report")

This civil engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations. (Business and Professions Code, section 6704; UBC 1985 Chapters 29 and 70; Title 8, CAC, section 341; Rule 145, California Board of Professional Engineers).

Verification: Within 30 days prior to the start of site preparation, KMCC shall submit the name, qualifications and registration number of this civil engineer to the CBO and CEC CPM. If the civil engineer is subsequently reassigned or replaced, KMCC shall submit, within 10 days, the information required above for the newly-assigned individual to the CEC CPM and the CBO.

3. Prior to the start of site grading, KMCC shall submit to the CBO for review and approval:

   - o five (5) sets of the proposed Grading Plan combined with the Erosion and Sediment Control Plan (combined grading plan), and three sets each of the specification and calculations signed by the responsible civil engineer;
   - o a Soils Engineering Report and Engineering Geology Report;
   - o a statement signed by the responsible design engineer that the proposed combined grading plan, drainage structures, specifications and calculations comply with the applicable laws, ordinances, regulations and standards (LORS) and with the criteria and requirements set forth in the Commission's Decision; and
   - o KMCC shall send a copy of the transmittal letter to the CEC detailing compliance with the above requirements (UBC 1985 edition, Chapter 70 - Excavation and Grading; Title 8, CAC section 341).

   Verification: At least 90 days, or less if mutually agreed with the CBO, prior to the start of site grading, KMCC shall submit to the CBO the above described documents. When the work described in the combined grading plan conforms with all applicable requirements, KMCC shall obtain from the CBO one complete set of the submitted plans, stamped and signed with the CBO's approval and KMCC shall submit written notice to the CEC CPM, in the next monthly construction progress report, that the documents conform to said requirements and have been approved.

4. Prior to the start of construction of each major structure foundation or civil work facilities, KMCC shall submit 5 sets to the CBO and one set to the CEC CPM of each of the following:

   - o geotechnical report, field exploration, laboratory tests and engineering analyses detailing the nature and extent of the site soil that may be susceptible to rapid settlement or collapse if the soil becomes saturated under load;

- o report on foundation investigation to comply with UBC, Chapter 29, Subchapter 2905 (b, c and d);

- o the proposed final design plans including soil classification and design bearing capacity (ASTM D442, D1556, D1557, D2922, and D3017);

- o calculations, specifications, soil reports and quality control procedures, signed by the responsible design engineer, to verify that the proposed bearing capacity and the foundation settlements values as presently proposed are still valid and applicable; and

- o a signed statement that the proposed plans comply with the criteria set forth in Appendix D to the AFC and all the requirements set forth in the Commission's Decision.

Verification: At least 90 days, or less if mutually agreed with the CBO, prior to the start of construction of major structure foundations, KMCC shall submit the above documents to the CBO and to the CEC CPM. KMCC shall obtain one complete set of the original submittal stamped and signed with the CBO's approval. KMCC shall notify the CEC CPM in the next monthly construction progress report that the proposed foundation plans, specifications and calculations conform with the requirements set forth in Section 4.3.2.4 and 4.4 and Appendix D to the AFC and that the CBO has approved them.

5. After completing foundation excavations, KMCC's responsible civil engineer for plant site activities shall submit to the CBO for review and approval supplementary soil grading and geologic grading reports, as-graded grading plans and a signed statement that any modifications in foundation design required by site geotechnical conditions were incorporated in the modified foundation plans approved by the CBO.

   Verification: KMCC shall provide the CEC CPM with the CBO's review comments and approvals, in the next monthly construction progress report.

6. KMCC shall make payments to the CBO equivalent to the fees listed in Chapter 70, Section 7007(a) and (b), Table No. 70-A and 70-B of the Uniform Building Code for the plan review and permit. If the county in which the plant is to be constructed has adjusted the UBC fees by county codes or ordinances, KMCC shall pay the adjusted fees (UBC Chapter 70, Section 7007(a) and (b), Table No. 70-A and 70-B).

   Verification: KMCC shall make payments to the CBO at the time of submittal of the plans, calculations and specifications and the soils report. KMCC shall send a copy of the transmittal letter to the CEC CPM in the next monthly construction progress report.

7. KMCC shall keep the CBO and the CEC informed of the plant site construction progress.

   Verification: KMCC shall prepare and submit, on a monthly basis, the construction progress reports to the CEC CPM and the CBO.

8. All plant site grading operations shall be subject to inspection by the CBO and CEC Staff. (Title 8, CAC, Chapter 4, Division of Industrial Safety; UBC 1985 Edition, Chapters 29 and 70; San Bernardino Ordinance No. 2815).

Verification: If the inspector finds that the work is not being done in accordance with the approved plans, the discrepancies shall be reported immediately to the CBO, the CEC CPM and KMCC's responsible design engineer. The inspector shall then prepare a written report, detailing the discrepancies and non-compliance items and send a copy to the CBO, the CEC CPM and KMCC's responsible engineer. If the CBO delegates inspections to KMCC, their inspectors shall file monthly progress reports with the CBO and the CEC CPM.

9. KMCC's responsible civil engineer for plant site activities shall (when the Engineering Geologist identifies unforseen adverse geologic conditions) stop all earthwork and construction in the affected area (unless safety requires continuing work). KMCC shall prepare and submit modified plans, specifications, and calculations to the CBO. (Title 8, CAC, Chapter 4, Division of Industrial Safety; UBC 1985 Edition, Chapters 29 and 70).

Verification: Within 10 days after receipt of the design changes, the CBO, in consultation with the CEC, shall approve or disapprove the changes. Upon approval of the revised design, the CBO shall authorize KMCC to resume earthwork and construction in the affected areas. KMCC shall provide a copy of such approval to the CEC CPM in the next monthly construction progress report.

10. After completion of rough grading, KMCC's responsible civil engineer shall submit the following documents to the CBO:

- o the soils grading and geologic grading reports;
- o as-graded grading plan; and
- o a summary of soil compaction tests.

Verification: Within 180 days after completion of rough grading, KMCC's responsible civil engineer shall submit the above documents to the CBO for review and approval. KMCC shall file with the CEC CPM a copy of the CBO's review comments and approval in the next monthly construction progress report.

11. After completion of finish grading and erosion and sedimentation control facilities, KMCC's responsible civil engineer for plant site activities shall:

- o submit to the CBO a final as-graded grading plan, final erosion and sedimentation control plans, a signed statement that these documents conform with the final approved combined grading plan, and, if

required by the CBO, supplementary soil grading and geologic reports; and

- o notify the CBO in writing that the work is ready for final inspection (1985-UBC; San Bernardino Ordinance Number 2815).

Verification: Within 180 days after completion of finish grading and erosion and sedimentation control facilities, KMCC's responsible civil engineer for plant site activities shall submit the above documents to the CBO for review and approval and shall submit transmittal letters to the CEC CPM. KMCC shall seek final approval from the CBO only after all required submittals are received and reviewed and after all work including installation of all drainage facilities and their protective devices and all erosion control measures, have been completed in accordance with the final approved combined grading plan. KMCC shall notify CEC CPM in the next monthly construction report when final CBO approval has been issued.

12. KMCC shall submit to the CBO for review five sets of plans and three sets each of calculations and specifications for the concrete or lined earth berm secondary containment facilities for the chemical storage area, the fuel oil storage tanks, and acid and caustic storage tanks. The design plans and calculations should be signed and stamped by the responsible civil engineer. KMCC shall send a copy of the transmittal letter to the CEC CPM. (ACI 318, 318.1; ASTM A185, A615; UBC 1985 Edition, Chapter 26; U.S. EPA, 40 CFR 112 et seq.; Title 8, CAC, sections 5583-5605).

    Verification: At least 60 days, or less if mutually agreed with the CBO, prior to the start of construction of the secondary containment facilities, KMCC shall submit the above documents to the CBO for review and a copy of the transmittal letter to the CEC CPM. If the CBO finds said documents conform to the requirements for secondary containment facilities, KMCC shall obtain one complete set of the submitted plans, stamped and signed with the CBO's approval. KMCC shall submit written notice to the CEC CPM (prior to beginning work) that the secondary containment facilities have been approved by the CBO and conform to the applicable requirements.

13. After construction of the spill containment facilities, KMCC shall submit the as-built plans and a signed statement by the responsible civil engineer that the work was done in accordance with the final approved plans and that the spill containment facilities are adequate for their intended function. (Title 8, CAC, sections 5583-5605).

    Verification: Within 90 days after completion of the spill containment and control facilities, KMCC shall submit said documents to the CBO for review. KMCC shall file with the CEC CPM a copy of the CBO's review comments and approvals.

14. KMCC shall obtain from Southern California Edison Company and submit to the CBO for review five sets of plans and three sets each of calculations and specifications for the transmission line pole foundations, guy

anchors, access roads and crossings. The design plans and calculations should be signed and stamped as reviewed by the responsible civil engineer. KMCC shall send a copy of the transmittal letter to the CEC CPM (CPUC General Order No. 95; Title 8, CAC, section 341; CALTRANS Standard Specification, 1984 edition; ASTM C76, C478).

Verification: At least 60 days, or less if mutually agreed with the CBO, prior to the start of construction of the transmission line poles, guy anchors, access roads and crossings, KMCC shall submit the above documents to the CBO for review and a copy of the transmittal letter to the CEC CPM. If the CBO finds said documents conform to the requirements listed under the Transmission Line section of this testimony, KMCC shall obtain one complete set of the submitted plans, stamped and signed with the CBO's approval. In the next monthly construction report, KMCC shall notify the CEC CPM that the access roads and crossings have been approved by the CBO and conform to the requirements.

15. KMCC shall submit to the CBO for review five sets of plans and three sets each of calculations and specifications for the water pipeline. The design plans and calculations should be signed and stamped by the responsible civil engineer. KMCC shall send one copy of the transmittal letter to the CEC CPM. (Title 8, CAC, section 341; AWWA C301; AWWA C302).

Verification: At least 60 days, or less if mutually agreed with the CBO, prior to the start of construction of the water pipeline, KMCC shall submit the above documents to the CBO for review and a copy of the transmittal letter to the CEC CPM. In the next monthly construction progress report, KMCC notify the CEC CPM that the water pipeline has been approved by the CBO and conform to the applicable requirements.

C. Structural Engineering

This review of the proposed ACE project structural design criteria analyzes whether such criteria are sufficiently detailed to assure design and construction will safeguard against danger to personnel and property, and will comply with applicable standards, ordinances and laws. This review also examines whether the seismic analysis methods and design criteria are sufficient to achieve seismic performance objectives and mitigate site seismic hazards.

Applicant's seismic performance criteria are to design and construct the proposed facility to resist earthquakes of varying magnitudes with minimum structural damage (August FSA 5-12). In response to staff recommendations, Applicant will design the facility to resist a moderate earthshaking with an estimated peak ground acceleration (PGA) of approximately 0.20 g with few or no outages. This criterion has a 15 percent probability of exceedence in 30 years (August FSA 5-34). The evidence indicates that, while preliminary design criteria are adequate, post-certification verification will be required to ensure final acceptability (August FSA 5-32-5-33, 5-36).

With the implementation of the proposed modifications reflected in the Conditions of Certification, below, the structural and seismic design criteria and analysis methods are adequate to ensure the proposed project will meet performance objectives and comply with the applicable standards, ordinances, and laws identified in the "Structural Engineering" portion of Appendix A of this Report.

FINDINGS

Based on the evidence of record, the Committee finds:

1. Preliminary phase review indicates that, with the implementation of the Conditions of Certification, the ACE project can be designed and constructed in comformity with the applicable standards, ordinances, and laws identified in the "Structural Engineering" section of Appendix A of this Report.

2. Further review of the final design of the ACE project is necessary, and will occur during the post-certification stage.

CONDITIONS OF CERTIFICATION

1. KMCC shall design, construct, and inspect the cogeneration facility in accordance with applicable LORS identified herein, under the sections entitled Applicable Laws, Ordinances, Regulations, Standards, Plans, and Policies on pages 5-2 through 5-10 of this testimony, the section entitled Proposed Modifications, and pertinent portions of KMCC's submitted documents listed under the section of this testimony entitled Summary of KMCC's Proposal, pages 5-11 through 5-12.

   Verification: Fourteen (14) days prior to the start of commercial operation, KMCC's project manager shall submit to the California Energy Commission (CEC) Compliance Program Manager (CPM) a proposed program for preventive maintenance of painted steel structures and a statement of verification that all design, construction, and inspection requirements of the applicable LORS and the Commission Decision have been met for the area of structural engineering.

2. KMCC shall assign to the project a responsible design engineer who shall be either a registered structural engineer with the authority to use the title "Structural Engineer" in California or a registered California Civil engineer who shall be fully competent and proficient in design of power plant structures and equipment supports. The design engineer shall:

   a. Be directly responsible for design of proposed structures and equipment supports;

   b. Provide consultation to the responsible construction engineer during design and construction of the project;

   c. Monitor construction progress to ensure compliance with design intent;

   d. Evaluate and recommend necessary changes in design; and

e. Prepare, stamp, and sign all necessary building plans, specifications and calculations.

The tasks performed by the responsible design engineer may be divided between two or more engineers as long as each engineer is responsible for a particular segment of the project (e.g., t/g building, foundation, and installed equipment, etc.) Each plant segment cannot have more than one responsible design engineer. (Business and Professions Code; Chapter 7, Division 3.)

Verification: At least 60 days (or a lesser number of days mutually agreed to by the CBO[1] and CEC-CPM) prior to submittal of building plans, KMCC shall identify to the CEC-CPM and set forth the qualifications of the responsible design engineer assigned to the project to perform the duties set forth above.

3. At least 60 days prior to the start of final design, KMCC shall submit to the CEC-CPM two sets of preliminary plans and seismic design criteria for critical and noncritical structures, equipment, and equipment supports. The plans shall show each of the structural configurations and the necessary data to clarify whether the structure is "regular" or "irregular." The seismic design criteria for critical structures, equipment supports, and equipment shall indicate the method to determine the fundamental frequencies of the structures, equipment support, and equipment. Further, KMCC shall submit complete engineering data regarding switchyard structures and transmission systems as requested in Data Request No. 225, the engineering criteria regarding miscellaneous equipment, not yet ordered, as requested in Data Request No. 237, and the stability data for the superstructure footings of the Active Fuel Storage Building as indicated in Proposed Modification No. 2.

   Verification: KMCC shall submit the plans and design criteria to the CEC-CPM. The CEC-CPM shall review and concur, within 45 days of receipt of the data, that the structure classification, seismic design criteria, and seismic analysis methods are consistent with the requirements of this decision prior to final design. Further, prior to final design, the CEC-CPM shall review and concur that the structure configuration, structural design criteria and analysis methods, and seismic design criteria and analysis methods for the structures, equipment supports, and equipment submitted in accordance with the above Condition are consistent with the requirements of this decision.

4. KMCC shall design and construct each structure, equipment support, equipment anchorage, foundation, turbine/generator, boiler, cyclone, cooling tower, fan, baghouse, ASME pressure vessel, switchyard equipment, or power piping system in accordance with the requirements set forth in Condition No. 1. KMCC shall design, fabricate, and install all field-fabricated tanks in accordance with API650 or AWWA D-100 and Title 8,

1. "CBO" is the city or county Chief Building Official or other designated authority or the CEC duly authorized representative.

CAC, Chapter 4. KMCC shall design and construct the transmission line structures in accordance with CPUC GO-95 and ASCE "Design of Steel Transmission Pole Structures" (ASCE Design . . . applies only to steel poles, if used). If there are conflicting requirements, the more conservative requirement shall govern (e.g., the highest load and the lowest allowable stress).

Prior to the intended start of construction of each structure, equipment support, equipment anchorage, foundation, or fabrication of the turbine/generator, boiler, cyclones, cooling tower, fans, baghouse, ASME pressure vessels, switchyard equipment, and power piping KMCC shall submit four sets each of proposed final design plans and three sets each of the specifications, calculations, soils report, and quality control procedures for each structure, equipment support, equipment anchorage, foundation, turbine/generator, boiler, cyclones, cooling tower, fans, baghouse, ASME pressure vessel, switchyard equipment and power piping to the CBO with one copy of a complete transmittal package (plans, calculations, specifications, soils report and quality control procedures) to the CEC-CPM.

To expedite design and construction scheduling, plans, calculations, and specifications for foundations that support structures shall be filed with, as a minimum, the preliminary structural design, preliminary structural analysis, and the foundation loading diagrams. Plans, calculations, and specifications for foundations that support equipment shall be filed with, as a minimum, the preliminary equipment outline drawing and preliminary loads. Subsequently, for equipment, structures, and foundations, a final engineering package consisting of final equipment drawings, final structural analysis, and final structural design shall be submitted. The final plans, calculations, and specifications shall clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design and be signed and stamped by the responsible design engineer. In addition, the responsible design engineer shall submit a signed statement to the CBO and to the CEC-CPM that the proposed final design plans, specifications and calculations conform with all of the requirements set forth in the Commission's Decision.

Verification: KMCC shall submit the plans, calculations, and other required documents to the CBO and the CEC-CPM at least 120 days (or a lesser number of days mutually agreeable to the CBO and CEC-CPM) prior to the intended start of construction for each structure, equipment support, or foundation. If the CBO discovers nonconformance with the stated requirements, he shall notify KMCC's responsible design engineer within 75 days of the submittal date and shall return the nonconforming portion of the plans to KMCC for correction. KMCC's responsible design engineer shall resubmit the corrected plans within 30 days of the return to KMCC of the nonconforming submittal.

The CBO shall return one complete set of original or revised submittals stamped and signed with his/her approval to KMCC within 120 days of the original submittal, provided the plans comply with the stated

requirements. KMCC shall submit written notice to the CEC CPM in the next weekly construction report that the proposed building plans, specifications, and calculations have been determined by the CBO to be in conformance with the requirements set forth in the applicable laws, ordinances, regulations, standards, plans, and policies in Condition 1 and that the CBO has approved them.

5. KMCC shall make payments to the CBO equivalent to the fees listed in the Uniform Building Code (UBC) Chapter 3, Sections 304(a) and (b), and Table No. 3-A for the plan review and permit. If the county in which the plant is to be built has adjusted the UBC fees by county ordinance or code, KMCC shall pay the adjusted fees. If the county CBO declines to perform the plan reviews and inspections required in Conditions Nos. 4 and 8 through 12, or elects to enforce only the county building ordinance but not the remaining requirements in Condition Nos. 4 and 8 through 12, then the CEC shall designate an authorized representative. KMCC shall pay the costs of the CEC's authorized representative for performing the verifications cited in these Conditions. The costs may be higher than required by county ordinance or UBC fee schedules.

Verification: KMCC shall make payment to the CBO at the time of submittal of the plans, specifications, calculations and soils report, and notify the CEC-CPM that the payment has been made.

6. KMCC shall apply for and obtain an "in-lieu" building permit and upon receipt of payment and approval of the proposed building plans, the CBO shall issue the permit to KMCC.

Verification: The CBO shall notify the CEC-CPM that an "in lieu" building permit has been applied for by and issued to KMCC.

7. KMCC shall keep the CBO informed regarding the status of construction by submitting a weekly construction progress report. The content and format of the report shall be agreed upon by the CBO, CEC-CPM, and KMCC prior to the start of construction.

Verification: KMCC shall submit a weekly construction progress report to the CBO and the CEC-CPM.

8. Inspections shall be performed in accordance with Chapters 3 and 70 of UBC (1982 edition) and the requirements of the applicable LORS. KMCC shall assign as a resident engineer, a registered civil engineer in the State of California, who shall be present on site as required to monitor construction activities, who shall have authority to halt construction and to require changes or remedial work if the work does not conform to the applicable requirements and who shall be responsible for the special and continuous inspections required by UBC Section 306. All welding, such as structural, piping, tanks, and pressure vessels, shall be inspected by a certified weld inspector (AWS and/or ASME as applicable). Names and qualifications of the resident registered civil engineer, the certified weld inspector, and other special inspectors shall be submitted to the CBO and to the CEC-CPM at least 60 days (or a

lesser number of days mutually agreeable to the CEC-CPM and CBO) prior to start of any activity requiring special inspections in accordance with UBC Section 306 (UBC, Chapters 3 and 70).

Verification: Prior to issuance of the "in lieu" building permit, KMCC shall identify the resident civil engineer, the certified weld inspectors, and the certified special inspectors to the CBO and to the CEC-CPM. The CBO shall notify KMCC and the CEC-CPM of all approvals or disapprovals of the resident registered civil engineer, weld inspectors, or special inspectors.

9. All structural work shall be subject to inspection by the CBO and CEC CPM, KMCC shall notify the CBO and CEC CPM when the work is ready for inspection.

   Verification: All inspectors shall file a weekly report of their inspections with the CBO. If any inspector finds the work is not being done in accordance with the approved plans, the discrepancies shall be reported immediately to KMCC's resident civil engineer, to the CBO, and the CEC-CPM. The inspector shall prepare a subsequent written report sending copies to KMCC, the CBO, and the CEC-CPM.

10. If any changes to the approved final plans are deemed necessary, KMCC shall file with the CBO and CEC-CPM design changes to the final plans as required by UBC section 303. KMCC shall submit three sets of the revised drawings, and two sets of the specifications, and calculations to the CBO with one copy of the complete transmittal package to the CEC-CPM and shall notify the CBO at least 15 days in advance of the intended filing (UBC, Chapter 3). Transmittal package shall contain revised drawings, specifications, calculations, soil report, and quality control procedures.

    Verification: The CBO shall return two sets of submittals stamped and signed with his/her approval to KMCC within 30 days (or a lesser number of days mutually agreeable to the CBO and CEC-CPM), provided the plans comply with the stated requirements and shall notify the CEC-CPM that he has approved the revised plans.

11. Upon completion of any structure, equipment support, foundation, or other item designated in Condition No. 4, KMCC's responsible resident engineer shall submit to the CBO and to the CEC-CPM:

    a. a written notice that the structure is ready for final inspection, and

    b. a signed statement that the structure conforms with final approved building plans. The marked up "as-built" drawings[2] for the

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2. Final "as built" drawings shall be submitted within six months of completing construction of each structure, foundations, or equipment support.

construction of structural and architectural work shall be submitted to the CBO. Changes approved by the CBO shall be identified on the "as-built" drawings.

Verification: The CBO shall inspect the completed structure and review the submitted documents. When the work and the as-built plans conform with the approved final building plans, the CBO shall give them final approval and shall notify the CEC-CPM and KMCC of such approval. If the San Bernardino County Building Official is used as the CBO, he/she shall also issue a Certificate of Occupancy after final approval.

12. KMCC shall submit weekly to the CBO and the CEC-CPM, two sets each of the following data:

    - o Concrete cylinder strength test reports, (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, mix design designation and parameters).
    - o Concrete pour sign-off sheets.
    - o Bolt torque inspection reports (including location of test, date, bolt size, recorded torques).
    - o Field weld inspection reports, (including type of weld, location of weld, inspection or non-destructive testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description or number [ref: American Welding Society (AWS)]).
    - o Reports covering other structure activities requiring special inspections in accordance with UBC, Section 306.

    Verification: The CBO shall review the above reports and shall indicate approval/disapproval to KMCC within 30 days with copies to the CEC-CPM, provided specific test results comply with identified requirements. If disapproved, the CBO shall immediately advise KMCC and the CEC-CPM of the reason for disapproval.

13. At least 195 days (or a lesser number of days mutually agreeable to the CBO and CEC-CPM) prior to the intended start date of the first increment[3] of construction, KMCC shall furnish to the CBO and the CEC-CPM a schedule of structural plan submittals, a Master Drawing List, and a Master Specification List.

    The schedules shall contain a description and list of proposed submittal packages of structural plans, calculations, and specifications for critical electrical and mechanical equipment and the estimated date of submittal.

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3. The first increment of construction is the excavation for foundations.

Verification: KMCC shall submit the schedule, Master Drawing List, and Master Specifications List to the CBO and to the CEC-CPM and shall provide updates monthly.

D. Reliability

This review addresses the facility's availability, quality control, fuel and water supply, and seismic risk to assure consistency with reliability goals.

Applicant anticipates the ACE plant will have an equivalent availability factor in excess of 90 percent (March FSA 12-1, 12-4). Staff's analysis shows the equipment redundancy and system arrangement results in an equivalent availability factor of about 90 percent; however, when planned outages are factored in, this becomes 86 percent (March FSA 12-15, 12-18). Applicant expects an 85 percent capacity figure, while Staff concludes the capacity figure will be 81 percent (March FSA 12-15, 12-18).

Quality control programs and procedures will provide for engineering review and supervision of equipment procurement, site construction and installation to assure adherence to specifications and plans (March FSA 12-6, 12-15 - 16). A licensed design engineer will retain supervisory control over, and have final review of, specifications, purchase orders and field changes (March FSA 12-16).

The ACE project is expected to use coal as the primary fuel and natural gas as the back-up and start-up fuel for the duration of its 30-year plant life (March FSA 12-16). Although Applicant currently has no executed contracts for project coal requirements, positive response to inquiries has been received from nine vendors, indicating the availability of the fuel at an acceptable cost. Based upon the limited use of natural gas, the projections for

availability of natural gas and coal, and the coal companies' previous history of service to existing KMCC facilities, the fuel supply appears adequate to assure reliable plant operations (March FSA 12-7, 12-16 -17).

When operating, the ACE project will use an average of 180 gpm of potable water from Indian Wells Valley wells and 1200 gpm of brackish water from the South Brackish and Valley Wells well fields. With the construction of two new wells at Valley Wells and a new 20-inch-diameter pipeline the supply, transmission and storage of brackish and potable water will be adequate for plant operation and reliability (March FSA 12-7, 12-17, 12-18).

Applicant proposed to design the ACE facility to withstand a .24g peak ground acceleration (pga), which corresponds to a 10 percent probability of exceedence over a 30 year project life (March FSA 12-8). This design criterion is consistent with Staff's recommendations that the risk of exceedence be no greater than 15 percent (March FSA 12-19). With the implementation of the Conditions of Certification contained in the "Structural Engineering" portion of this Report, the seismic design criteria will be adequate with regard to project reliability (March FSA 12-18).

FINDING

Based upon the evidence of record, the Committee finds:

1. The system design, equipment, seismic risk, fuel and water supplies, and the quality control plans are adequate to provide reasonable assurance the ACE project will operate in an acceptably reliable manner.

CONDITIONS OF CERTIFICATION

1. Kerr-McGee Chemical Corporation shall inform the California Energy Commission (CEC) of any changes in the proposed plant design made

subsequent to certification by the Commission, whether made during the design process or construction, which would affect the project availability or capacity factors.

Verification: KMCC shall submit the proposed change to the CEC Compliance Project Manager at least 30 days prior to proceeding with such change with the rationale and supporting design and analytical documentation justifying these changes.

2. KMCC shall demonstrate, on a sample basis, implementation of the quality control (QC) program.

   Verification:

   a. No later than thirty (30) days prior to issuance for bid, KMCC shall submit to the CEC's Compliance Project Manager, two copies of the request for quotations containing engineering specifications, QC provisions and requirements for the boiler feedwater pumps and induced draft fan.

   b. Ten (10) days after the purchase orders for the boiler feedwater pumps and induced draft fan have been executed, KMCC shall submit to the CEC's Compliance Project Manager, two copies of the purchase orders or that portion of the purchase orders containing the engineering specifications, quality control provisions and means of verification of these requirements.

3. KMCC shall file with the CEC a report documenting discovered nonconformances and corrective actions taken during start-up, containing the following:

   - identification of any nonconformity which requires a corrective action;
   - description of the corrective action taken and hours needed to resolve the problem;
   - identification of problems or technical circumstances which resulted in interruption of a given start-up activity; and
   - description of corrective action taken and hours needed to resume the start-up activity.

   Verification: Within sixty (60) days of checkout and start-up operation through the first invoicing of electricity sales, KMCC shall file with the CEC Compliance Project Manager a report containing the above information.

4. KMCC shall prepare an annual report documenting the plant availability and capacity factors achieved and supported by the following information:

- o Operating-hours, outage hours, cause of outage and downtime for each piece of major equipment including the following:

  - Fluidized bed combustor;
  - Steam turbine-generator;
  - Limestone feed system;
  - All pumps;
  - All fans and blowers;
  - Ammonia injection system;
  - Water cooling system and condenser;
  - Baghouse particulate removal system;
  - Computer, intrumentation and control systems;
  - Breaching between baghouse and stack.

- o For each forced outage, a precise identification of the equipment whose failure caused the forced outage and the resulting forced outage hours.

- o Identification of equipment or other causes (such as curtailment) for which a planned outage was instituted in any given month.

- o Annual plant availability factors, per Electric Power Research Institute definitions.

Verification: Within ninety (90) days following each anniversary of the start of commercial operation, KMCC shall file an annual report with the CEC Compliance Project Manager containing the above information.

E. Mechanical Engineering

Mechanical engineering review addresses whether the major mechanical equipment, piping, vessels, and tanks will be designed, constructed and installed in accordance with applicable standards, ordinances, and laws; whether the heating, ventilating, and air conditioning (HVAC) and plumbing systems will be designed and installed in compliance with applicable codes and standards; and whether the equipment will perform their intended functions.

The performance criteria are to provide from zero to 650,000 pounds per hour of 450 psig/680° F process steam while generating an annual average of 89.9 MW of electricity for sale to Southern California Edison (SCE). The project is proposed to operate at an availability factor of 90 percent and an capacity factor of 85 percent. Applicant also intends to develop operating experience and data for a 100 MW Circulating Fluidized Bed (CFB) steam generator and for the control of NO_x and SO_x emissions (March FSA 7-6, 7-7).

As the AFC was filed during the beginning of the preliminary engineering phase, only the CFB steam generator and turbine generator have been identified with regard to manufacturer and model (March FSA 7-14). The CFB boiler represents the latest design technology for burning coal. Although initial operational problems and technical issues associated with the scale-up from the smaller, 20 MW pilot versions of the CFB will likely be encountered, the design appears adequate to meet the performance objectives (March FSA 7-14 -15).

Although the remaining equipment has been described only in generic terms referring to operating limits, Applicant has selected standard power plant equipment with a long history of successful operation in electric generating plants (March FSA 7-14). Applicant will include all applicable industrial standards in the purchase orders and specifications, and these standards will be reflected in the manufacturers' drawings during the final engineering design phase (March FSA 7-13). Implementation of the Conditions of Certification, below, will reasonably assure the facility will be designed, constructed and operated in accordance with safety criteria and performance objectives (March FSA 7-15).

FINDINGS

Based on the evidence of record, the Committee finds:

1. Preliminary phase review of the ACE project indicates it can be designed and constructed in conformity with the applicable standards, ordinances, and laws identified in the "Mechanical Engineering" portion of Appendix A of this Report.

2. The ACE project is reasonably expected to meet the stated objectives of providing process steam, generating electricity, and developing operating experience for a CFB steam generator of utility scale.

3. Further review of the final design of the ACE project is necessary, and will occur during the post-certification stage.

CONDITIONS OF CERTIFICATION

1. KMCC shall incorporate all applicable portions of the Laws, Ordinances, Regulations and Standards (LORS) proposed by KMCC and those cited by California Energy Commission (CEC) Staff in the section titled Applicable Laws, Ordinances, Regulations, Standards, Plans and Policies as defined in this testimony in the design basis, calculations, procurement specifications, purchase orders and maintenance and operation manuals for all following equipment:

    - o Circulating Fluid Bed Boiler (CFB) Steam Generator
    - o Primary Air Fan (PA)

- o Secondary Air Fan (SA)
- o Induced Draft Fan (ID)
- o Recirculating Fan (RF)
- o Loop Seal Fan
- o Air Preheater
- o Heat Exchangers
- o Coal Conveyors
- o Limestone Conveyors
- o Bottom Ash Conveyors
- o Ammonia Storage and Handling Equipment
- o Baghouse
- o Turbine/Generator
- o Condenser
- o Cooling Tower
- o Condensate Pumps
- o Demineralizer System
- o Deaerator
- o Boiler Feed Water Pumps
- o Coal Storage Silos
- o Limestone Storage Silos

Verification: Upon delivery of the above equipment to the site, KMCC shall submit to the CEC Compliance Project Manager a list of all applicable LORS for each piece of the above-listed equipment, accompanied by a statement from each equipment vendor, certifying that the equipment has been designed and fabricated in accordance with the listed LORS and verified by KMCC's quality assurance representative.

2. KMCC shall perform tests or have a third party perform tests for the following equipment in accordance with the ASME Performance Test Codes (PTC) as guidelines to formulate standard test procedures to determine the performance and operability of each piece of equipment.

o Steam Generating Units	PTC 4.1
o Air Heaters	PTC 4.3
o Steam Turbines	PTC 6
o Centrifugal Pumps	PTC 8.2
o Compressors	PTC 10
o Fans	PTC 11
o Closed Feedwater Heaters	PTC 12.1
o Steam Condensing Apparatus	PTC 12.2
o Deaerators	PTC 12.3
o Speed and Load-Governing Systems for Steam Turbine-Generator Units	PTC 20.1
o Overspeed Trip Systems for Steam Turbine-Generator Units	PTC 20.2
o Dust Separating Apparatus	PTC 21
o Atmospheric Water Cooling Equipment	PTC 23
o Ejectors	PTC 24
o Safety and Relief Valves	PTC 25.3

Verification: KMCC shall submit to the CBO and the CEC Compliance Project Manager a letter stamped and signed by the responsible mechanical engineer, registered to practice mechanical engineering in the State of California, accompanied with the test reports certifying the acceptance of the test results, and certifying that these tests have been performed per standard test procedures using referenced applicable ASME Performance Test Codes as guidelines.

3. Prior to the intended start date of the first increment of construction that would involve mechanical components, Kerr-McGee Chemical Corp. (KMCC) shall furnish to the CBO and CEC a schedule for the submittal of the related work packages. The schedule must contain a description of the proposed submittal packages including the mechanical plans and required calculations, and specifications and the estimated date of submittal.

   Verification: KMCC shall submit the schedule to the CBO and CEC Compliance Project Manager at least 180 days (or a lesser number of days mutually agreeable to the CBO and the CEC) prior to the intended start date of the first increment of construction that will involve mechanical component systems.

4. KMCC shall design and install all piping, other than domestic and refrigeration, to either ANSI B31.1 (Power Piping Code), ANSI B31.2 (Fuel Gas Piping Code), ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code) or ANSI B31.8 (Gas Transmission and Distribution Piping Code) as applicable. Prior to the start of each increment of construction, KMCC shall submit four copies of the proposed final design drawings, specifications, calculations, and applicable quality control procedures for each plant piping system to the CBO with a copy of the transmittal letter to the CEC. The final plans, specifications, and calculations shall clearly reflect the inclusion of approved criteria, assumptions, and methods used in the design. The responsible engineer, registered to practice mechanical engineering in the State of California, shall submit a signed and stamped statement to the CBO and to the CEC that the proposed final design plans, specifications, and calculations conform with all of the requirements set forth in the Commission Decision. The responsible engineer also shall submit a signed and stamped statement to the CBO and to the CEC that all piping systems, except domestic and refrigeration, have been designed, fabricated, and installed in accordance with all applicable requirements.

   The principal piping systems for which design plans, specifications, calculations, and quality control procedures shall be submitted are:

   a. Condensate system;
   b. Boiler feedwater systems;
   c. Main steam system;
   d. DeNOx system;
   e. Process steam system;
   f. Natural gas supply system;

g. Fire water system;
h. Cooling water system.

Verification: KMCC shall submit the required documents to the CBO at least 120 days (or a lesser number of days acceptable to the CBO) prior to the intended start of each increment of construction or fabrication. KMCC shall submit a letter to the CEC Compliance Project Manager with copies of the CBO comments and approvals to certify completion of both the plan-check and installation. The CBO may require, as necessary, the licensee to employ special inspectors to monitor shop fabrication or equipment installation.

5. KMCC shall ensure that all pressure vessels are designed, fabricated and installed in accordance with ASME Code VIII and Title 8, CAC, section 450 et seq, including those vessels furnished by vendors. Prior to the intended start of fabrication or construction, KMCC shall submit four (4) sets each of proposed final design plans, specifications, calculations, and quality control procedures for each pressure vessel to the CBO with a copy of the transmittal letter to the CEC. In addition, the responsible design engineer, registered to practice mechanical engineering in the State of California, shall stamp and sign all plans and drawings (if applicable), specifications, and calculations and shall submit a statement to the CBO and to the CEC that the proposed final design plans, specifications, and calculations conform with all of the applicable requirements set forth in the Title 8, CAC, section 450 et seq. and ASME Boiler Pressure Vessel Code Section VIII. KMCC shall submit to the CBO the code certification papers and other documents required by code for all pressure vessels installed in place.

   Fabrication drawings for pressure vessels and storage tanks shall be stamped and signed by a responsible engineer registered to practice Mechanical Engineering in the state where such equipment is to be manufactured. KMCC shall request a written notification from the CBO that the plan check and installation were in accordance with code requirements.

   Verification: KMCC shall submit the required plans, calculations, and specifications to the CBO and a copy of the transmittal letter to the CEC Compliance Project Manager at least 120 days (or a lesser number of days acceptable to the CBO) prior to construction, or installation. KMCC shall send copies of CBO comments and approvals to the CEC Compliance Project Manager in the next monthly construction progress report. KMCC shall furnish the CBO, at least 30 days prior to installation of each pressure vessel, with the code certification papers and any other documents required by the code and make this document available (upon request) to the CEC Staff and Cal/OSHA anytime during the project life.

6. KMCC shall ensure that the CFB steam generator, including the superheater, is designed, fabricated, and constructed in accordance with ASME Section I and ANSI B31.1.

Verification: At least 120 days (or lesser number of days acceptable to the CBO) prior to start-up, KMCC shall submit the documentation pertaining to the above and request a written notification from the CBO as to whether the installation and inspection was accomplished in accordance with the applicable codes and regulations. KMCC shall send copies of CBO comments and approvals and Cal/OSHA inspection results to the CEC Compliance Project Manager in the next monthly construction progress report.

7. KMCC shall design and install all heating, ventilating, air conditioning, and refrigeration systems within buildings and related structures, in accordance with the Uniform Mechanical Code, Chapter 2-53; Title 24, CAC, those and applicable sections from 2-101 through 2-5107; NFPA and ASHRAE 55-74. Prior to start of construction, KMCC shall submit four sets each of the proposed final design plans, specifications, calculations, and quality control procedures for each HVAC system to the CBO, with a copy of the transmittal letter to the CEC. The final plans, specifications, and calculations shall clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. In addition, the responsible engineer, registered to practice mechanical engineering in the State of California, shall sign all plans, drawings, calculations and specifications and submit a signed statement to the CBO and to the CEC certifying that the proposed plans, specifications, and calculations conform to all applicable codes and standards.

   Verification: At least 120 days (or a lesser number of days acceptable to the CBO) prior to the intended start of construction, KMCC shall submit to the CBO four (4) copies of the calculations, plans and specifications. KMCC shall request the CBO to perform the plan check and inspection required to ascertain that the HVAC systems are designed and constructed in accordance with Uniform Mechanical Code, Title 24, CAC, sections noted as above. KMCC may be required by the CBO to employ special inspectors as required to monitor shop fabrication of all equipment. KMCC shall request in writing a written notification from the CBO as to when the HVAC system is ready for operation. KMCC shall transmit copies of the CBO's comments and approvals to the CEC Compliance Project Manager in the next monthly construction progress report.

8. KMCC shall comply with and design, fabricate and install in accordance with:

   a. Energy Conservation in the building as specified in Title 24, CAC, those applicable sections from 2-5301 through 2-5364.

   b. Refrigerant piping design and fabrication procedures as set forth in the ANSI B31.5 Refrigeration Piping Code.

   c. Refrigeration equipment efficiencies as set forth in ASHRAE 20-70 ARC.

   d. Operational requirements of the HVAC system as stated in NFPA 90A, NFPA 101 and Title 24, CAC, those applicable sections from 2-101 through 2-5107.

e. Plumbing requirements as stated in Title 24, CAC, sections 5-1105, 5-401, 5-412, 5-301, 5-302, 5-310, 5-314, 5-316, 5-802, 5-803, 5-906, 5-910, 5-912, 5-1501, 5-1502, 5-1503, 5-1504, 5-1505, 5-1507, 5-1601, 5-1602, 5-1606, 5-1607, 5-303

f. Potable water system in accordance with Title 24, CAC, sections 5-1001, 5-1004, 5-1008, 5-1010, 5-1011, 5-1012

Prior to the start of construction, KMCC shall submit six sets each of the proposed final plans, and three sets each of the specifications, calculations, and quality control procedures for each plumbing system to the CBO, with a copy of the transmittal letter to the CEC. The final plans, specifications, and calculations shall clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer, registered to practice mechanical engineering in the State of California, shall stamp and sign all plans, drawings, and calculations and shall submit a signed statement to the CBO and the CEC, certifying that the proposed final design plans, specifications, and calculations have been prepared in conformance with all of the requirements set forth in the Commission Decision.

Verification: At least 120 days (or a lesser number of days acceptable to the CBO) prior to the start of the first increment of the construction, KMCC shall submit the documents specified above to the CBO and a copy of the transmittal letter to the CEC Compliance Project Manager. The CBO shall perform the plan check and inspection required to demonstrate that the sanitation facility of the proposed cogeneration plant has been designed in accordance with applicable codes and standards, and may require, as necessary, KMCC to employ special inspectors to monitor shop fabrication, field installation, and shop or field tests. KMCC shall request the CBO to return two complete sets of approved submittals to KMCC. KMCC shall request a written notification from the CBO as to when the sanitary facilities have been installed, tested, and inspected, and are ready for operation. KMCC shall forward copies of the CBO's comments and approvals to the CEC Compliance Project Manager in the next monthly construction progress report.

F. Electrical Engineering

Electrical engineering review addresses whether the major electrical equipment ratings are adequate for system operating requirements, whether the proposed electrical equipment will operate safely during electrical fault conditions, whether the electrical system will have adequate protective devices to ensure reliable operation, and whether the specified equipment will comply with the applicable standards, ordinances, and laws.

The proposed project includes a 115 kV switchyard; a power train consisting of a steam turbine, a 13.8 kV generator, and associated ancillary and auxiliary electrical equipment; and a start-up transformer (March FSA 8-9). The generator is connected to a main, step-up transformer rated 98/110 MVA with voltage step-up from 13.8 to 115 kV. This is satisfactory to transform the generator power to the voltage of Southern California Edison's 115 kV system (March FSA 8-16).

Both the unit auxiliary transformer and the station auxiliary transformer are rated 11.2/15 MVA, so that either transformer can satisfactorily supply the entire station auxiliary load of 9.2 MW (March FSA 8-16). In addition, the project includes a 115-13.8 kV start-up transformer to provide startup power to the station auxiliary loads when 115 kV power is unavailable, or to supply power directly to the existing Argus plant (March FSA 8-9, 8-16).

The withstand ratings of the electrical equipment are adequate for their respective short circuit duties (March FSA 8-16, 8-17). Although the ACE

electrical system does not include individual over-current protective devices such as those normally specified for base-load plants where a high level of reliability is required, the increase in ACE plant availability is too small to make this addition economically justifiable. Therefore, the electrical system will have an acceptable level of reliability as proposed (March FSA 8-17 - 8-18).

Applicant will include all applicable industrial standards in purchase orders and specifications, and these standards will be reflected in the manufacturers' drawings. Compliance with the Conditions of Certification, below, will ensure the proposed electrical equipment will meet applicable laws, ordinances, and standards, as well as the performance objectives for equipment ratings and safety (March FSA 8-14, 8-18).

FINDINGS

Based upon the evidence of record, the Committee finds:

1. With the implementation of the Conditions of Certification below, the proposed project's electrical equipment will meet the applicable laws, ordinances, regulations and standards identified in the "Electrical Engineering" portion of Appendix A of this Report.

2. With the implementation of the Conditions of Certification, below, the proposed project's electrical equipment ratings will be adequate for system requirements.

3. With the implementation of the Conditions of Certification, below, the proposed project's electrical equipment will operate safely during electrical fault conditions.

4. The ACE project will have adequate protective devices to ensure an acceptable level of reliability.

5. Further review of the final design of the ACE project is necessary, and will occur during the post-certification stage.

CONDITIONS OF CERTIFICATION

1. The responsible electrical design engineer, registered to practice in the State of California shall sign and stamp all final design drawings, plans, specifications, calculations and applicable quality control procedures. The final plans, specifications and calculations shall clearly reflect the inclusion of approved criteria, assumptions and methods used in the design of the electrical facility. The electrical equipment shall be designed and procured in accordance with the applicable laws, ordinances, regulations and standards (LORS) and the National Electric Code (NEC). These specifications and code requirements shall be included in the purchase orders. The responsible electrical design engineer shall submit to the CBO and the CEC a signed statement certifying that the proposed final design plans and specifications conform to all the requirements set forth in the Commission Decisions and the NEC. KMCC shall request the CBO to verify that the documents submitted demonstrate compliance with the applicable LORS.

   Verification: No later than 30 days prior to installation, KMCC shall transmit to the CEC Compliance Project Manager (CPM) a copy of CBO's statement that the above documents conform to the applicable LORS.

2. KMCC shall submit to the CBO five sets each of the items listed below.

   a. Final design plans to include:

      - one-line diagrams for the 115 kV, 13.8 kV, 4.16 kV and 480 V systems
      - system grounding drawings
      - lighting drawings
      - general arrangement or conduit drawings
      - other plans as required by the CBO

   b. Final calculations to establish:

      - system stability
      - short-circuit ratings of equipment
      - load flow
      - ampacity of feeder cables
      - voltage drops in feeder cables
      - voltage regulation with Argus - ACE tie in service

- coordination study calculations for circuit breaker and protective relay settings

- other calculations as required by the CBO

Verification: Thirty days (or a lesser number of days mutually agreeable to the CBO, but not less than 20 days) before start of electrical equipment installation, KMCC shall submit the above to the CBO. At least ten days before start of installation, KMCC shall submit to the CEC Compliance Project Manager a copy of a letter from the CBO verifying that the items listed under a and b above are in accordance with applicable LORS.

3. To ensure safe design, KMCC shall construct from plans which have been reviewed by the CBO and which bear a stamp or mark indicating that they have been found suitable for the intended installation. These plans and any design changes shall remain on the site at all times. KMCC shall request the CBO to inspect the completed installation to ensure compliance with the requirements of applicable LORS including the NEC and Title 24, California Administrative Code (CAC).

   Verification: Prior to initial turbine roll, KMCC shall submit to the CEC CPM a statement signed by the CBO that the electrical equipment has been installed in accordance with applicable portions of the NEC and Title 24, CAC.

4. KMCC shall incorporate all applicable industrial standards listed in Appendix B into the design documents, procurement specifications, and purchase orders, for all electrical equipment including but not limited to that in the following lists:

   LIST I

   Battery and Battery Chargers
   Cable, Medium Voltage
   Cathodic Protection Equipment
   Disconnect Switches, Medium & High Voltage
   Generator Units and Accessories
   Grounding Resistors
   High-Voltage Circuit Breakers
   Motor Control Centers, Medium Voltage
   Motors, Larger than NEMA frame size 445
   Nonsegregated Bus, Medium Voltage
   Protective Relay Panels
   Segregated Phase Bus
   Surge Arrestors
   Switchgear
   Transformers: Main and Auxiliary

   LIST II

Cable, Low Voltage
Cable Trays
Conduit
Disconnect Switches, Low-Voltage
Distribution Panels
Grounding Materials
Heat-Tracing Equipment
Lighting Fixtures
Lighting Materials
Load Centers
Motor Control Centers, Low Voltage
Motors, NEMA frame size 445 and smaller
Nonsegregated Bus, Low Voltage
Transformers: Dry Type

Verification: In the monthly construction progress report, KMCC shall submit a list of standards and proof of compliance (a signed statement by the engineer in responsible charge stating that the equipment meets the identified standards) for all items included in Groups I and II that have been delivered to the site during the reporting period.

IV. TRANSMISSION LINE CONSTRUCTION

A. Transmission System Evaluation

This review addresses the adequacy of the proposed ACE transmission outlet facilities and the impact of the project's power transfer upon SCE's transmission system. The ACE project switchyard will take the power plant output and split it into two 115 kV single circuits which will interconnect with SCE's transmission system via a "hardwire tap" (a connection made without circuit breakers or other system protection equipment) (March FSA, 14-6, 14-9).

In order to avoid thermal overloads under the "worst case" line outage of an Inyokern-Searles circuit, the ACE plant must reduce its output by 44 MW. Under more probable emergency conditions, ACE generation must be reduced by 23 MW. Given the low probability of .41 outages/year, the expense of mitigation (by rebuilding the lines or terminating at Inyokern), and SCE's ability to accommodate the loss of much larger generating units, this potential curtailment is marginally acceptable (March FSA 14-16, 14-18, September amendment p. 2). Staff also analyzed the additional impact of the Luz SEGS project (LS 1987a) on the SCE system, and concluded that SCE's existing Automatic Generation Control System can be expanded to curtail ACE and Luz project generation to preclude system overloads without adversely impacting either project or the ratepayer (September amend p. 3).

The ACE project will not adversely impact the SCE system, and will be in compliance with industry performance criteria/objectives with regard to capacity, system reliability and economics (March FSA 14-25, 14-27, September amend. p. 4).

FINDINGS

Based on the evidence of record, the Committee finds:

1. Operation of the ACE project will have no adverse impacts on the SCE system beyond the Searles, Inyokern and Argus substations.

2. The Inyokern-Searles Number 1 and Number 2 transmission lines are adequate during normal operating conditions and, with the implementation of the Conditions of Certification, below, during emergency conditions with regard to capacity, reliability and economics.

3. With the implementation of the Conditions of Certification, below, the interconnection at the proposed hardwire tap is acceptable.

4. With the implementation of the Conditions of Certification, below, the project will meet acceptable criteria for thermal loading, voltage limits, stability, and energy losses.

CONDITIONS OF CERTIFICATION

1. The Kerr-McGee Chemical Corporation (KMCC) shall ensure that the design, construction and operation of the proposed transmission outlet facilities and power plant will conform to the following requirements:

   a. Maximum net power output of the plant shall be no greater than 96 MW (at 0.95 power factor) at rated site conditions except for temporary excursions to 98.8 MW with a maximum time duration of ten percent of the annual operating time or momentary excursions not to exceed one hour of any magnitude (within the limitations of the generating unit) to accommodate Southern California Edison's system operating conditions.

   b. At the discretion of Southern California Edison (SCE), power output of the ACE project shall be reduced or discontinued to maintain the Inyokern-Searles circuit loading to less than or equal to 83 MW at .95 power factor for (N-1) conditions.

   c. Circuit protection devices shall be provided for both of the ACE Searles circuits to isolate faulted portions of the power grid.

d. The Inyokern-Searles circuits shall be normally operated with one circuit to Searles open per Transmission System Evaluation: Figure 2.

Verification: No later than 60 days prior to construction of the ACE outlet facilities, KMCC shall submit to the CEC Compliance Project Manager all pertinent drawings such as one line diagrams and a description of electrical equipment signed and sealed by a California Registered Electrical Engineer in responsible charge of the equipment and operational procedures per Requirement 1.

2. KMCC shall request and must receive before proceeding, approval from the CEC staff for any variance from requirement No. 1 above. KMCC shall provide a full description and justification, and relative merit analysis for any requested change. This request shall include any changes to the following:

   a. Inyokern-Searles No. 1 and No. 2 loading (normal conditions): 76 MW or less at .95 power factor;

   b. Inyokern-Searles No. 1 and No. 2 loading (N-1 condition): 83 MW or less at .95 power factor;

   c. Operation of Inyokern-Searles transmission line: One circuit is to remain open at the Searles substation; and

   d. System protection: Phase and neutral overcurrent, over and under voltage, over and under frequency and impedance (distance) relaying per the AFC and supplements (KMCC 1986d and 1986c).

   Verification: KMCC shall inform the CEC Compliance Project Manager of any impending changes which may not conform to Requirements 1 and 2 and request approval to implement such changes. No changes may be made without written approval of CEC Staff. All such requests and subsequent action shall be noted by KMCC in the Annual Compliance Reports.

3. KMCC shall be responsible for inspection of the proposed facilities during construction for conformance to Requirements 1 and 2 above and any subsequently CEC approved changes, thereto. In case of nonconformance, KMCC shall inform the CEC in writing within 10 calendar days of such a nonconformance and identify the corrective actions proposed by KMCC.

   Verification: Within 60 days following first successful synchronization of the ACE generation with the SCE system, KMCC shall transmit to the CEC Compliance Project Manager an engineering description(s) and all relevant "as-built" drawings, such as one-line diagrams, routing maps, engineering descriptions, and other documents of the "as-built" facilities referred to and required in Requirements No. 1, 2 and 3 above, signed by a California Registered Electrical Engineer in responsible charge with all approved changes, if any, attached.

B. Transmission Line Engineering

Transmission line engineering review addresses the adequacy of the ACE transmission facilities with regard to capacity, economics, and reliability during normal and emergency conditions; and the impact of the proposed project upon the existing SCE system.

The ACE switchyard will use a ring bus arrangement with three 115 kV circuit breakers, each with two 115 kV disconnect breakers (March FSA 13-4). The continuous rating of the circuit breakers is 1200 amperes, which exceeds the net peak generator output of 496 amperes (March FSA 13-10 - 13-11). The interrupting capability of these circuit breakers is 20,000 amps, which exceeds the approximate fault duty of the ACE switchyard of 5387 amps (March FSA 13-11). Therefore the circuit breakers will be loaded within their thermal ratings.

The cost of the ACE switchyard is $1,536,000, which is consistent with other utility cost estimates and therefore considered to be acceptable (March FSA 13-11).

Each transmission line circuit has one circuit breaker, with a third circuit breaker available for use by either circuit should the primary circuit breaker be taken out of service. This arrangement is acceptable with regard to reliability as each circuit breaker and one transmission line can be taken out of service without curtailing service (March FSA 13-11 - 13-12).

The existing Kerr-Gen transmission line can accommodate the addition of one of the proposed 115 kV transmission outlet lines above its 33 kV circuit. SCE will rebuild the existing Hackman line to include the second 115 kV line (March FSA 13-8, 13-12). Both will be strung with 653.9 kcml ACSR conductors (March FSA 13-12). The normal loadings for the ACE Searles outlets Number 1 and Number 2 are 41.5 MW and 58.5 MW, respectively, and 100 MW under emergency conditions. This is within the conductor's normal thermal rating of 165 MW and emergency thermal rating of 181 MW. This corresponds to a loading of 24.5 percent and 34.6 percent, which is satisfactory with regard to energy losses. The system is highly reliable as the two 115 kV circuits are on separate rights-of-way, allowing for maintenance or forced outages without curbing project generation (March FSA 13-13 - 13-14).

FINDINGS

Based upon the evidence of record, the Committee finds:

1. The existing ACE switchyard is adequate with regard to capacity, economics, and reliability to deliver ACE power to the 115 kV system.

2. The proposed ACE-Searles outlet lines Number 1 and Number 2 are adequate with regard to capacity, economics, and reliability as an outlet for the Argus project.

3. The proposed hardwired tap is adequate with regard to capacity, economics and reliability.

4. With the implementation of the Conditions of Certification, below, the proposed project transmission system will be in compliance with the applicable laws, ordinances, regulations and standards identified in the "Transmission Line Engineering" portion of Appendix A of this Report.

CONDITIONS OF CERTIFICATION

1. Kerr-McGee Chemical Corporation (KMCC) shall ensure that the design, construction, and operation of the proposed transmission outlet facilities will conform to the following requirements:

a. Three 115 kV power circuit breakers and seven disconnect switches with suitable continuous and interrupting current ratings shall be installed in a ring bus arrangement at the ACE project switchyard, as shown in Transmission Line Engineering: Figure 2.

b. Two 653.9 KCML ACSR conductored wood pole transmission lines, approximately 5 miles in length, in a parallel configuration shall be constructed between the ACE project switchyard and a hardwired tap just outside the Searles substation as described in Staff Transmission Line Engineering testimony.

c. The transmission facilities shall meet or exceed the requirements of California Public Utilities Commission (CPUC) General Order 95, Rule 37.

d. No other generating unit, transmission or distribution circuit or load other than as described in the AFC and amendments thereto may be connected to the outlet facilities.

e. KMCC shall report any change in ownership of the switchyard, outlet circuits or hardwired tap to the CEC 30 days prior to legal transfer. All requirements and verifications shall apply to the future owner(s).

Verification: No later than 60 days prior to construction of the transmission outlet facilities, KMCC shall submit verification documents to the CEC Compliance Project Manager. These documents shall include all pertinent drawings, such as one-line diagrams and descriptions of electrical equipment, signed and sealed by a California Registered Electrical Engineer in responsible charge and a signed statement by the Registered Electrical Engineer that the facilities have been designed consistent with requirements 1a - 1d above.

KMCC's report of change in ownership shall include a copy of the terms and conditions of such transfer and acknowledge that the new owner was apprised of the Conditions of Certification.

2. KMCC shall submit to the CEC any request for a variance from requirement 1 above and items a through k below. Approval must be obtained from CEC Staff before any change (variance) is implemented. KMCC shall provide a full description, justification and relative merit analysis for any requested change. This request shall include any changes to the following:

a. Route Specified: per Figure 10 of Attachment No. 6 of the Data Adequacy Response to the AFC (KMCC 1986b).

b. Connection Point: adjacent to Searles substation.

c. Conductor Size: 653.9 kcml ACSR or larger.

d. Number of Conductors: one per phase.

e. Number of Circuits: two 115 kV circuits generally on separate rights-of-way.

f. Voltage level: nominal 115 kV phase to phase.

g. Conductor Loading: 98.8 MW peak at rated site conditions.

h. Pole Types: Wood pole construction supporting 12 kV or 33 kV distribution circuits as described in Transmission Line Engineering testimony.

i. Capacity: two 115 kV circuits each at 848 ampere (normal) 933 ampere (emergency) rating based on present Southern California Edison (SCE) rating conditions.

j. ACE-Searles Outlet, Searles and Inyokern System Protection: Differential type relaying around the hardwired tap point with zones to the Searles substation, Inyokern substation, and the ACE project switchyard.

k. Any other change that may significantly affect the capacity, reliability or economics of the ACE transmission system.

Verification: KMCC shall inform the CEC Compliance Project Manager of any proposed changes which may not conform to requirements 1 and 2 and request approval to implement such changes.

3. KMCC shall be responsible for the inspection of the proposed transmission facilities during construction, for compliance with requirement Nos. 1 and 2 above, and any subsequent CEC-approved changes, and for conformance with CPUC General Order 95. In case of nonconformance, KMCC shall inform the CEC in writing, within 10 days of such nonconformance, and identify the corrective actions proposed by KMCC to be taken.

Verification: Within 60 days following first succesful synchronization of the ACE generation with the SCE system, KMCC shall transmit verification documents to the CEC Compliance Project Manager. These shall include engineering description(s) and "as-built" one-line drawings signed by the California Registered Electrical Engineer in responsible charge for the facilities covered by requirements Nos. 1, 2 and 3 above. A statement attesting to conformance with general order 95 shall be concurrently provided.

C. Transmission Line Safety and Nuisance

Transmission line safety and nuisance concerns include fire and aviation hazards, interference with communications systems, audible noise, and hazard and nuisance shocks caused by the transmission line structure or operation.

The proposed project transmission lines will connect the ACE project switchyard to SCE's system at a pair of hardwired taps into the existing SCE Inyokern-Searles Number 1 and Number 2 lines. One project transmission line will be constructed above the 33 kV Kerr-Gen line. The second transmission line will consist of all new structures and conductors in the existing Hackman line right-of-way. The 115 kV lines will be strung 14 feet above the 33 kV lines on transmission poles with a maximum height of 66 feet. The transmission lines will be located approximately 4 statute miles (21,000 feet) from the Trona Airport. Based on these specifications, the transmission lines will not constitute an aviation hazard (March FSA 9-6, 9-8).

Communication interference caused by operation of the transmission lines is expected to be minimal at a distance of 50 feet from receptors. As the project transmission lines will have a minimum clearance of 50 feet, and the width of the right-of-way is 30 feet, interference is not likely. The Conditions of Certification, below, provide for mitigation of reported interference with radio or television reception, and for interference with railway signal circuits along the Trona Railroad line which parallels the proposed Inyokern-Searles No. 1 line for approximately 2.5 miles (March FSA 9-8 and 9-9).

The potential for creating fire hazards, nuisance shocks, and hazard shocks will be minimized by complying with the applicable laws, ordinances, regulations and standards identified in the "Transmission Line Safety and Nuisance" portion of Appendix A of this Report (March FSA 9-9, 9-10, 9-11). Noise generated during operation of the transmission lines will be below the 55 dB value in compliance with the San Bernardino Development Code (March FSA 9-10).

FINDINGS

Based upon the evidence of record, the Committee finds:

1. With the implementation of the Conditions of Certification, below, the proposed transmission lines will cause no significant safety or nuisance impacts.

2. With the implementation of the Conditions of Certification, below, the proposed transmission lines will be in compliance with the applicable laws, ordinances, regulations and standards identified in the "Transmission Line Safety and Nuisance" portion of Appendix A of this Report.

CONDITION OF CERTIFICATION

1. Kerr McGee Chemical Corporation (KMCC) shall request that Southern California Edison (SCE) design, construct, operate and maintain the transmission lines in accordance with the applicable LORS. KMCC shall also request that SCE provide the CBO with design documents, drawings and specifications stamped or sealed by the responsible California-registered electrical engineer.

   Verification: KMCC shall request that SCE submit to the CEC Compliance Project Manager (CPM) a statement from the responsible, California-registered electrical engineer verifying that the transmission line has been constructed in accordance with GO-95 and GO-52. The statement shall be submitted within 90 days after completion of the transmission line. (GO-95; Title 8, CAC, section 2940, et seq.)

2. KMCC shall request that SCE inspect the transmission lines annually to ensure compliance with the applicable LORS.

Verification: KMCC shall request that SCE submit to the CEC CPM a report of each annual inspection. This report shall include a list of any deficiencies found, the corrections proposed and a timetable for accomplishing the corrections.

3. Before energizing either transmission line, KMCC shall, regardless of ownership or location, ensure that all metallic fences, gates or other large permanent metallic objects within the rights-of-way are grounded.

   In the event that the owner (other than SCE) of the metallic item raises objections to its being grounded, KMCC shall notify the CEC Staff, and as a result, shall be released from this requirement.

   Verification: Within 60 days after the completion of the transmission line construction, KMCC shall file a statement with the CEC CPM verifying compliance with the grounding procedures defined in the National Electrical Safety Code. (NESC). If a landowner has objections to the grounding, KMCC shall include, if obtainable, a written statement from the landowner to that effect.

4. In the event of complaints regarding induced current in vehicles, portable objects, large metallic roofs, fences, gutters, or other objects in the right-of-way, KMCC shall request that SCE investigate and take all reasonable measures, at KMCC's expense, to correct the problems arising from valid complaints.

   For object constructed, installed or otherwise placed within the right-of-way after acquisition, KMCC shall request that SCE, at KMCC's expense, ground such objects within the right-of-way upon request, normally within a week of such request. Notification to SCE of the need to ground is the responsibility of the property owner. KMCC shall advise the property owner of such responsibility, in writing, prior to the signing of the right-of-way agreement. KMCC shall request that SCE advise the property owners, in writing, at the time the right-of-way agreement is signed, that the refueling of vehicles or equipment under the transmission line is not recommended.

   Verification: KMCC shall request that SCE maintain a record of activities related to this requirement. Upon reasonable requests, these records shall be made available to CEC CPM and authorized CEC Staff. (NESC).

5. KMCC shall request that SCE make every reasonable effort to locate and correct, on a case-by-case basis, all causes of radio and television interference attributed to the transmission line facilities. Corrective actions shall include, but not be limited to, adjusting or modifying receivers; adjusting, replacing or adding antennae; replacing, improving or adding antenna signal amplifiers, filters or lead-in cables.

   Verification: KMCC shall request that SCE maintain records of complaints and corrective actions and shall, upon reasonable request, make these records available to CEC CPM and authorized CEC Staff. All complaints

are to be recorded with explicit notations of the corrective actions performed. Complaints which did not result in corrective action shall be defined and justified. The records shall be signed by the authorized owner's representative and also by the complainant to indicate the concurrence with the corrective action or justification of no corrective action. (47 CFR, section 15.25).

6. In order to identify the presence of noise or interference caused by KMCC's transmission lines; KMCC shall request that SCE conduct noise measurements, as specified below, on Trona Railroad Company's (TRC) railway signal circuits:

   60 and 30 days before start of construction, and
   30 and 60 days after the line is energized.

   If such measurements show that noise or interference is present due to KMCC's transmission, KMCC shall inform TRC that KMCC will make funding available for modifications to TRC's communications and signal system. KMCC shall pay funds to TRC upon receipt of TRC's signed contract for the mitigatory and corrective work to its communication and signal system.

   Verification: Upon completion of the noise measurements, KMCC shall provide the CEC CPM with the results of the noise measurements. If mitigation is required because of the noise, KMCC shall send to the CEC a proof of payment of funding to TRC.

7. KMCC shall request that SCE keep each transmission line pole site free of waste material, rubbish and vegetation, as required by regulations.

   Verification: KMCC shall request that SCE submit to the CEC CPM at least every six months a record of the inspection, clean-up and fire prevention activities around the transmission line poles. (14 CAC sections 1250-1258; PRC Section 4292; Division II UFC, section 11.201).

8. KMCC shall request that SCE file FAA Form 7460-1 "Notice of Proposed Construction or Alteration" with the Federal Aviation Administration (FAA) thirty days before construction begins.

   Verification: KMCC shall forward a copy of the filing, and FAA approval of the proposed construction, to the CEC CPM within fifteen days of receiving approval. (14 CRF, Part 77; FAA AC 70/7460-1G; 14 CFR, Part 91).

V. CEQA ALTERNATIVES

Title 14 of the California Administrative Code section 15126(d), requires an evaluation of reasonable alternatives to the the proposed project, including a "no project" alternative, which are capable of eliminating any significant adverse environment effects or reducing them to acceptable levels. The following discussion summarizes the general merit and acceptablility of identified alternatives to the proposed project, as well as their ability to meet project objectives.

1. No Project

Although the no-project alternative would eliminate any environmental impacts of the proposed project, it would not meet the objectives of supplying additional steam for the expansion of the chemical processing operations and electricity for sale to SCE while demonstrating the CFB coal combustion technology. If the proposed project is not developed, the additional jobs and county revenues associated with the project will not occur. Moreover, the reduction in cancer risk and net emissions in the Searles Valley which is associated with the ACE project would not be realized (March FSA, 30-2).

2. Alternative Locations

In order to meet project objectives of providing additional process steam to the KMCC chemical production operations, the proposed project must be located close to the KMCC plant. Alternative plant site locations close to the ACE

site were rejected as they would cause greater impacts than would the proposed plant site (March FSA, 30-2).

3. Alternative Technologies

The alternative technologies considered by KMCC were 1) gas turbine/heat recovery steam generator, 2) gas-fired boiler/steam-driven turbine generator, 3) oil-fired boiler/steam-driven turbine generator, and 4) pulverized coal/coke-fired boiler/steam-driven turbine generator. Regarding fuel costs, the gas and oil fired plants are less favorable than coal because of their higher current costs and uncertain long-term availability and prices. The pulverized coal/coke-fired boiler/steam-driven turbine generator would require more costly emission controls, and fewer sources of coal can be used than for the CFB coal combustion plant (March FSA, 30-3).

There is little difference among the CFB coal combustion technology and the four alternatives with regard to most environmental impacts except wastewater, disposal, transportation and air quality. A gas or oil turbine system would use much less water than the CFB coal combustion technology; however, there are adequate resources of brackish water for the project (March FSA, 30-4).

The CFB will take about twice as long to construct resulting in a longer period of construction traffic than would construction of the alternatives. However, as discussed in the Traffic and Transportation section of this Report, this traffic can be easily accommodated by existing roadways (March FSA, 30-3).

The CFB will emit higher quantities of non-criteria pollutants than would a natural-gas-fired turbine facility. Nonetheless, the CFB facility is not likely to result in the exceedence of ambient air quality standards. In addition, mitigation of air quality impacts would differ very little between the ACE project and the combustion alternatives (March FSA, 30-4).

Water and Electrical Transmission Alternatives

The proposed water and electrical transmission lines follow existing water an powerline corridors, and require little new right-of-way. Applicant provided an alternative water line segment which will result in less habitat loss for sensitive species. (See also discussions in the "Biological Resources" portion of this Report).

VI. COGENERATION DEFINITION

This review addresses whether the proposed project qualifies as a cogeneration facility conforming to the applicable statutory criteria, and whether the project will meet Applicant's performance objectives and criteria.

Public Resources Code section 25134 contains a threshold definitional requirement for a project seeking to qualify as a cogeneration facility:

> "Cogeneration means the sequential use of energy for the production of electrical and useful thermal energy. The sequence can be thermal use followed by power production or the reverse, subject to the following standard:
>
> (a) At least 5 percent of the cogeneration project's total annual energy output shall be in the form of useful thermal energy."

Federal law also provides criteria for qualifying cogeneration facilities. The applicable rule is at Title 18, Code of Federal Regulations section 292.205(a)(1):

> "For any topping-cycle[2] cogeneration facility, the useful thermal energy output of the facility must, during any calendar year period, be no less than 5 percent of the total energy output."

A project complying with the federal definition of "cogeneration" thus also meets the State standard set forth in the Public Resources Code section 25134(a).

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2. Title 18 of the Code of Federal Regulations (CFR) §292.202 defines a topping-cycle cogeneration facility in which the energy input is first used to preoduce useful power output and the reject heat from power production is then used to provide thermal energy. The ACE project is a topping-cycle project.

The proposed ACE project will use a circulating fluidized bed boiler (CFB) and a single automatic-extraction turbine-generator to provide 36,000 lb/hr process steam and a net electrical output of 92.4 MW 86 percent of the time. When one of the existing Argus boilers is off-line for maintenance, the ACE plant will provide its maximum cogenerated steam output of 650,000 lb/hr and a net electrical output of 20.8 MW. Based on the response to data request 79e, the proposed project annual average operation results in an annual average operating standard of 16.4 percent, exceeding the statutorily required standard of 5 percent (March FSA 11-3,11-5).

The ACE project is designed to maximize process steam production for use by the KMCC Argus-Trona chemical plant and as a result will have an electrical output in excess of that needed to meet process steam flow requirements. The ACE project is therefore not a thermally matched facility; however, a thermally matched project would not practically meet the performance objectives of providing a wide range of process steam demand (March FSA 11-3, 11-6).

FINDINGS:

Based upon the evidence of record, the Committee finds:

1. With the implementation of the Conditions of Certification, below, the ACE project will comply with the applicable federal and state cogeneration definition.
2. The proposed ACE project is not a thermally matched facility.
3. The proposed ACE project is expected to meet the Applicant's performance objectives/criteria.

CONDITIONS OF CERTIFICATION

1. Over the operating lifetime of the ACE project, the facility shall be operated on an annual basis as a cogenerating system in accordance with the definition of cogeneration contained in Public Resources Code section 25134(a) and Title 18 CFR section 292 and 205(a)(1). Note that the requirement for operation as a cogenerating system is made on an annual-average basis only.

   The project shall be operated throughout its life, on an annual basis, so that a maximum of 5 percent of steam produced in the ACE plant is used in mechanical drive turbines in the Argus plant.

   The project shall be operated on an annual basis so that the steam produced in the ACE plant will not be used to generate electricity in turbine-generators in the Argus plant.

   Semi-annual reports shall contain monthly average values of the following plant operating parameters which are required to establish and verify plant efficiency effects and to calculate the Operating Standard (OS) and overall project efficiency (PE).

   a. Megawatts of electricity (MWE gross) as the generator terminals.

   b. Operating hours

   c. Plant auxiliary load, MW

   d. 1. Process steam produced, lb/hr

      2. Total steam produced, lb/hr

      3. Demand hours

      4. Process steam temperature (°F), pressure (PSIAs), quality (%), and enthalpy (BTU/lb) at the ACE plant boundary.

      5. Process steam to process mechanical drives and utility steam turbine-generators, lb/hr

      6. Return condensate temperature, (°F) at the ACE plant boundary.

   e. 1. Process steam from each of the existing Argus boilers, lb/hr

      2. Each of the existing Argus boilers' operating hours

   f. Fuel input

      1. Rate, lb/hr

      2. Type, including proximate and ultimate analysis

3. Frequency and duration

4. Average low heating value, BTU/lb

Semi-annual average OS and PE shall be calculated by KMCC and reported. Methods of calculation of OS and PE are contained in Appendix C, Cogeneration Definition Conformance and System Analysis-Commercial (FSA, KMCC ACE, 1987).

This report shall also provide information for each month on any partial or total power and/or process steam production curtailment, duration of curtailment and reason for curtailment. The report shall be certified by the Plant Manager.

Verification: KMCC will submit to the CEC Compliance Project Manager (CPM) semi-annual reports during the life of the plant operation, commencing at the start of the ACE project component and subsystem testing.

2. KMCC shall notify the CEC of each instance in which permission to operate the ACE project in a non-cogeneration mode is requested from the San Bernardino County APCD (SBCAPCD) pursuant to the Final Determination of Compliance.

Verification: Such notification and justification shall be provided to the CEC Compliance Project Manager within 10 working days of any such request to the SBCAPCD.

3. No change in the ACE plant baseline design, physical configuration or mode of operation as defined in the AFC and its supplement (May 16, 1986), Heat balance diagrams (Figures 13 through 17, in section 15 of the AFC) and the AFC proceedings (i.e. docket file) shall be made either prior to or subsequent to certification without CEC concurrence if those changes could result in operating characteristics which could not or would not comply with the operational requirements identified in Requirement 11-1.

Verification: KMCC shall file a petition to the CEC addressed to the Compliance Project Manager for approval of any changes to design or operating characteristics as described above. Any petition shall be filed in accordance with procedures identified in Appendix A, Compliance Plan General Provisions, Amendments to the Decision.

VII. DECOMMISSIONING

In order to ensure that the eventual decommissioning of the ACE project does not create adverse impacts on public health, safety and the environment, this action should be preceded by considering available options and the applicable local and/or regional plans in effect at that time. The following Condition of Certification provides for the filing of a decommissioning plan which shall identify and discuss decommissioning alternatives and compliance with applicable laws, ordinances and standards (March 1987 FSA, 29-2).

FINDING

Based on the evidence of record, the Committee finds:

1. With the implementation of the Condition of Certification, the decommissioning of the ACE project can be anticipated, and a plan developed, in order to ensure that the decommissioning will have no significant impact on public health and safety or the environment, and that reasonable efforts will be made to ensure such action is in compliance with the laws, ordinances, regulations and standards applicable at that time.

CONDITIONS OF CERTIFICATION

1. Prior to commencing decommissioning activities for the ACE facility, KMCC shall file a decommissioning plan with the California Energy Commission (CEC) Compliance Project Manager. The decommissioning plan shall:

   a. Identify and discuss the proposed decommissioning activities and schedule for the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project.

   b. Identify all applicable laws, ordinances, regulations, standards, (LORS) and local/regional plans applicable at the time of decommissioning.

   c. Discuss how the specific proposed decommissioning activities will comply with those LORS and local/regional plans.

   d. Contain an analysis of all decommissioning alternatives considered, including restoration of the site to a natural state.

e. Discuss reasons for selecting the proposed alternative.

Prior to submittal of the decommissioning plan, a prefiling workshop shall be held with KMCC and CEC staff for the purpose of determining the specific contents of the plan. KMCC shall be responsible for requesting the CEC staff to schedule the prefiling workshop to determine the specific content of the plan.

In the event that significant issues are associated with the plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, the CEC may hold workshops and/or public hearings as part of its approval procedure.

KMCC shall not commence decommissioning activities of the ACE project until approval of the decommissioning plan is obtained from the CEC, and KMCC shall comply with any requirements the CEC may incorporate as a condition of the decommissioning plan.

Verification: At least 12 months prior to commencing decommissioning activities at the ACE facility, KMCC shall file the decommissioning plan with the CEC Compliance Project Manager. At least six months prior to filing the decommissiong plan, KMCC shall request in writing that staff schedule a prefiling workshop to determine specific contents of the decommissioning plan.

VIII. DEMONSTRATION PROJECT

KMCC filed an Application for Certification (AFC) for its ACE project before the California Energy Commission (CEC) in January, 1986.

Based on its objectives for the proposed addition of a third boiler, KMCC chose the circulating fluidized bed technology for utilization in the ACE project. KMCC asserted the construction of the proposed cogeneration facility will carry with it a number of major benefits for KMCC and for the state. Because coal is a less costly fuel than natural gas or oil, the ACE project will be able to produce electricity at a lower variable cost than a gas burning cogenerator. The plant will also provide a source of process and backup steam for KMCC, a source of electricity and voltage support for local communities, and the potential for converting existing fly ash from the Argus boilers to a useful and saleable product. Other advantages to KMCC of the ACFB boiler will include relatively low emissions, fuel flexibility, and low-cost operation. The primary disadvantage of the ACFB technology is that there is no operational experience at this scale (i.e. 1,000,000 lbs/hr of steam) for either the ACFB technology itself or some of the auxiliary systems to be utilized (such as the ammonia injection for NO_x control).

Based on the asserted unproven nature of the technology, KMCC filed the ACE project's AFC under the provisions of Public Resources Code section 25540.6(e), which provides for the exemption of certain classes of powerplants from the demand conformance requirements of Public Resources Code section 25524. Public Resources Code section 25540.6(e) states:

> "A thermal powerplant designed to develop or demonstrate technologies which have not previously been built or operated on a commercial scale. Such research, development, or commercial demonstration project may include, but not be limited to, use of renewable or alternative fuels, improvements in energy conversion efficiency, or use of advanced pollution control systems. Such facility may not exceed 300 megawatts unless the commission, by regulation, authorizes a greater capacity. The provisions of Section 25524 shall not apply to any such powerplant and related facility or facilities."

The 1985 Electricity Report (ER V) incorporates this statutory mandate by stating:

> "The [demand conformance] tests below do not apply to demonstation facilities that are filed pursuant to Public Resource Code Section 24450.6(e) (sic) and which are not included in the list of commercially available technologies in Appendix 7.4." (ER-V, p.87)

On July 28, 1986 the Committee conducted a Conference on the Applicant's request for a demonstration project exemption from demand conformance. The Committee granted Applicant's motion at the conclusion of the hearing and, on August 27, issued an Order granting the ACE project an exemption from the demand conformance provisions of Public Resources Code section 25524 as a demonstration project under Public Resources Code section 25540.6(e). In pertinent part, the COMMITTEE ORDER RE DEMONSTRATION STATUS, provided (p.2):

> "... Applicant further characterized its project as a demonstration at modular utility scale of circulating fluidized bed combustion with Thermal DeNox and ammonia injection for air pollution control. (RT 19:13-25). Circulating fluidized bed combustion does not appear on Table 7.4-1 of ER 5 Appendix 7.4 as a commercially available technology.

> The Committee believes there is good cause to grant the project demonstration status pursuant to Public Resources Code section 25540.6(e) based on the terms of ER 5, and since the proposal is the first demonstration of these technologies before the Commission, and the demonstration of these technologies and this combination of technologies at this size is useful to California.

In making this determination, the Committee directed Kerr-McGee to submit a document prior to the project's certification discussing how the demonstration-related information gathered from the ACE project would be made available for use by the CEC. In conformance with that directive, Kerr-McGee prepared a Demonstration Plan (dated December 15, 1986) which set forth a planning process and data collection framework for the gathering and distribution of relevant operational and performance data from the ACE project.

A. Demonstration Plan

KMCC's Demonstation Plan (December 1986) will serve as the basis for the demonstration[3] of the ACFB technology at the ACE Project, including its design, data collection, reporting, and analysis. The plan provides, among other goals and objectives, for:

- Determination of the total fixed and variable costs associated with operating a large ACFB facility;

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3. KMCC hopes to achieve commercial levels of operation upon commencement of operation and thus the facility would be "commercial" for its lifetime. However, for clarity, the Proposed Decision refers to the demonstration phase as the period subject to the Demonstration Plan and the period following the completion of the demonstration phase as the "commercial phase."

- Identification of any issues interfering with achievement of high operational availability and reliability;

- Confirmation of Pyropower Corporation's projected performance results based on fuel type, operating constraints, environmental conditions, etc.;

- Demonstration of the ability of the ACFB technology to simultaneously control SO_2 and NO_x emissions to the very low levels required in the SBCAPCD's Determination of Compliance (DOC) for the ACE project;

- Determination of the optimal operational characteristics of an ACFB boiler for emissions control purposes;

- Evaluation of the impacts of load dispatching on ACFB performance with respect to pollutant emissions and other performance parameters;

- Demonstration of a new hydrocarbon-based NO_x control technology on KMCC's existing Argus PC boilers;

- Evaluation of the long-term performance of the ACFB baghouse, which will employ a technology not previously applied to this ACFB technology;

- Detection of unforeseen structural problems related to the significant scale-up in technology size reflected by the ACE project, e.g. potential problems with steam capacity, mechanical functioning, refractory longevity, component longevity, etc.;

- Evaluation of the ACFB's ability to use a range of coal/coke mixtures while still complying with air quality standards;

- Demonstration of the ACFB's ability to reduce the carbon content in fly ash to a point where the ash can be sold as a commercial product;

Flexibility is a key aspect of the Demonstration Plan. The demonstration process must remain responsive to change in order to allow the most relevant demonstration-related information to be derived from the ACE project. Thus the Demonstration Plan shall be periodically updated by KMCC to reflect changes in the ACE Project, such as changes in plans, schedules, methods, processes and procedures.

In addition, the Demonstration Plan provides for operating the ACE Project under a range of conditions to evaluate different fuels and alternative abatement technologies.

KMCC will provide periodic Demonstration Reports pursuant to the Demonstration Plan which will include data and results from tests and operations of the ACE Project.

In order to assure that the informational benefits of the demonstration process benefit the State of California, the demonstration process shall include a series of informational seminars conducted by KMCC and its vendors/contractors to discuss the design and operation of the facility and the achievement of the goals of the Demonstration Plan. Moreover, KMCC and the CEC staff shall jointly cooperate in the establishment of a demonstration group, whose purpose will be to provide recommendations to KMCC as to the types of information to be collected during the demonstration process, to review and comment on the periodic updates and reports prepared pursuant to the Demonstration Plan, to assist Staff in determining whether Demonstration Plan goals and objectives have been achieved, and lastly to participate in the informational seminars and provide such other assistance as is needed by KMCC or Staff.

For the Commission, the evaluation of the ACFB technology for application in California and dissemination of information thereon constituted the quid pro quo for exemption from the otherwise required finding of demand forecast conformance. The Commission recognizes the potential commercial benefit to

KMCC and its vendors/contractors from commercialization of this technology. Such a benefit is an appropriate incentive for developing the technology. In association with the development of the technology, there may arise matters which the developers deem proprietary and thus not appropriate for public dissemination.

While the Commission will honor any legitimate need to keep proprietary information confidential, the Commission also recognizes that there is a statewide interest in disseminating the information to California utilities and industry concerning the economic and technical feasibility of ACFB technology. Whether ACFB technology is a workable option for burning coal is a vital determination for both the public and private sectors in California for energy planning into the next century.

B. Term of Demonstration Project

KMCC's Demonstration Plan reflects the Commission's commitment to provide a flexible demonstration process. Rather than be for a fixed period of time, the demonstration process is intended to last only long enough to achieve the goals and objectives of the Demonstration Plan, as it may be amended and updated.

Thus, the demonstration process contemplates that if the project is successfully demonstrated, it will pass from a demonstration phase to a commercial phase of operation wherein those operational and reporting requirements which are unique to demonstrating the technology are no longer appropriate.

Consequently, at the conclusion of the demonstration process, KMCC shall so notify the Commission. Upon a determination by the Commission that the demonstration phase has been completed and all required data and reports have been submitted, the demonstration phase shall be terminated and the demonstration phase conditions shall lapse[4] and a commercial phase shall commence.

The Commission believes that the exemption from Public Resources Code section 25524 (demand forecast conformity) extends for the life of the facility certified pursuant to Public Resource Code section 25540.6(e), since the public benefit from the demonstration project continues after the termination of the demonstration phase. Therefore, no post-certification proceedings are necessary upon termination of the demonstration phase to require the applicant to establish conformity to the demand forecast in effect at that time.

C. Demonstration Phase Variances

As previously stated, KMCC will be conducting tests and evaluations of alternative fuels and abatement configurations for the ACE Project. As discussed in other sections herein, the ACE Project is expected to comply with all applicable laws, ordinances, regulations and standards (LORS).

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4. If any commercial phase conditions are inconsistent with demonstration phase conditions, the demonstration phase conditions shall control until the demonstration phase is terminated.

If to fulfill the goals and objectives of the Demonstration Plan consistent with this Decision KMCC may cause a short-term non-compliance with LORS, KMCC shall request a short-term variance therefrom. In the event such a matter affects compliance with the terms and conditions of the Determination of Compliance, KMCC shall obtain, as well, the prior approval of the San Bernardino County Air Pollution Control District.

The ACE Project shall be in compliance with applicable LORS in order to terminate the demonstration phase. Any permanent project amendment shall be submitted to the Commission for approval at the time it is proposed.

FINDING

1. A Demonstration plan is necessary to effectuate the terms of Public Resources Code section 25540.6(e) and the Applicant's December 15, 1986 Demonstration Plan is reasonable and adequate for that purpose.

CONDITIONS OF CERTIFICATION

1. Kerr-McGee Chemical Corporation (KMCC) shall design, construct, and operate the Argus Cogeneration Expansion (ACE) facilities in a manner consistent with its commercial demonstration nature and with the goals and objectives specified in KMCC's Demonstration Plan in order to demonstrate whether commercial operational capacity can be achieved in California for the Circulating Fluidized Bed Combustion (CFBC) technology as configured into the ACE cogeneration project and as defined by the project's operating environment.

   In addition to and consistent with the provisions of the above paragraph KMCC shall:

   a. Comply with the applicable air emission limits contained in the adopted conditions of certification during start-up and operation of the Argus facilities.

   b. Evaluate the ACE project's operational capability to achieve KMCC's design objectives in the areas of efficiency, reliability and economics when using the selected performance fuel/ash mixture. KMCC shall identify problems and operational conditions which interfere with achievement of these objectives.

c. Evaluate the ability of the CFBC technology to simultaneously control SO_2 and NO_x under normal plant operating conditions and consistent with the emission limits specified by the adopted conditions of certification.

d. Retrofit Argus 25 and 26 boilers, as required by the adopted conditions of certification, using an air emission control system selected from KMCC's evaluation of the following alternatives: (1) hydrocarbon injection based NO_x reduction technology; or (2) SCR technology; or (3) low NO_x burner technology; or (4) other technologies.

e. Evaluate, consistent with adopted permitting constraints, the lowest uncontrolled NO_x emission level obtainable without ammonia injection for the ACE project.

f. Operate the ACE project in compliance with adopted permits and laws, ordinances, regulations and standards (LORS), while evaluating the technology's ability to produce steam and electricity in conformance with process steam requirements and the power purchase agreement, while meeting KMCC design and performance objectives in the areas of efficiency, reliability, and economics.

Verification: KMCC shall submit periodic Demonstration Plan updates that contain decriptions of plans, schedules, methods, processes and procedures, as provided for in the Demonstration Plan, related to checkout/startup and operations of the ACE project.

As provided for in the Demonstration Plan, KMCC shall provide Demonstration Reports which include data and results from tests and operations performed during the period of checkout through startup and operation as covered by this Condition in conformance with the Demonstration Plan and its updates.

2. KMCC shall design, construct, and operate the ACE project in a manner, consistent with its commercial demonstration nature and with the goals and objectives specified in KMCC's Demonstration Plan and its periodic updates, which over the long term will:

a. Generate economic and operational performance data as defined in KMCC's Demonstration Plan, as updated, to provide industry with technology, design, performance, economic, and reliability data and results.

b. Collect and make available ACE project information and results to the Electric Power Research Institute (EPRI) and the CEC for use in databases on the application of circulating fluidized bed combustion systems to power generation.

c. Identify and evaluate significant unforeseen structural and performance problems related to the materials of construction or technology factors involved in the scale-up to commercial size,

including, but not limited to, potential problems with steam capacity, mechanical functioning, refractory longevity, component longevity, baghouse performance, and cyclone performance.

Verification: KMCC shall provide periodic Demonstration Plan updates that contain descriptions of plans, schedules, methods, processes and procedures, related to operation of the ACE facility. KMCC shall provide periodic Demonstration Reports containing data developed from demonstration activities and plant operations defined by the Demonstration Plan and its periodic updates.

3. In accordance with KMCC's Demonstration Plan, and to the extent permitted by the adopted conditions of certification, KMCC shall evaluate and define the ability of the CFBC systems technologies to operate using performance fuels, alternative fuels (coal, coke mixtures) and alternative SO_x sorbent material (lime vs. limestone, subject to availability) measuring the operational, economic and performance parameters and resultant air emissions.

   Verification: KMCC shall provide periodic Demonstration Plan updates to the CEC that contain descriptions of plans, schedules, methods, processes and procedures related to determination of performance of the ACE facilities using alternative fuels and SO_2 sorbent materials in conformance with the terms of this condition. KMCC shall provide appropriate studies, data and monitoring results to the CEC necessary to determine conditions of operation required to comply with adopted conditions of certification for air emission limits and other LORS as appropriate. Upon CEC Staff verification of compliance with the adopted conditions of certification and LORS, KMCC shall conduct the demonstration tests, acquire test/operation data and submit reports and results as provided for in the KMCC Demonstration Plan.

4. As provided for in the KMCC Demonstration Plan, KMCC shall evaluate and report upon the salability of the waste-ash generated by the ACE project.

   Verification: Through the periodic Demonstration Reports provided for in the KMCC Demonstration Plan, KMCC shall report on the chemical composition and sales achieved for the ACE project waste ash. Alternatively, KMCC shall report its plans for disposal of this waste-ash in a manner which complies with the adopted conditions of certification and applicable LORS.

5. KMCC shall submit periodic updates of the ACE Demonstration Plan (KMCC 1986c) maintaining consistency with Conditions 1 through 4. KMCC shall consider any relevant changes in the status of the CFBC technology, Staff comments as presented in Appendix A, and the Commission's decision in preparing the initial plan update. The KMCC Demonstration Plan as updated will describe the plan for reporting, methodology, process and overall data acquisition scheme for execution of the demonstration tasks described therein. KMCC shall conduct the Demonstration Program as presented in the Demonstration Plan as updated in a manner directed at achievement of the goals and objectives as defined by the Demonstration

Plan (KMCC 1986c). KMCC shall determine when all of the goals and objectives of the Demonstration Plan have been accomplished. KMCC shall upon completion of all goals and objectives request a determination of completion of demonstration status and approval to function as a commercial cogeneration project.

Verification: KMCC shall include in each monthly summary project status report: a revised schedule for release of periodic Demonstration Plan updates; a brief discussion of the planned content of the update; and a brief summary of demonstration events conducted in the preceding month. KMCC shall submit the periodic Demonstration Plan updates to the CEC, with the initial update to be submitted within 180 days of certification. Upon completion of individual demonstration goals and objectives, KMCC shall report on such completion through Demonstration Reports as provided for in the Demonstration Plan. The completion of individual goals may be the focus of discussions at periodic seminars held to review the Demonstration Program.

6. KMCC shall initiate, within 180 days after certification, and continue on a schedule mutually agreeable to KMCC and Staff through the completion of the Demonstration Program, an informational seminar process to be used as a forum to discuss and disseminate information concerning any relevant changes to the status of the CFBC technology including scale-up, design, and operational factors relating to the ACE CFBC scale, the start-up and operations of the ACE project, its achievement of the goals and objectives established for the ACE project by KMCC, and other topics as raised by seminar participants. Seminar discussions shall be used as the basis for reports, documentation of results, and transfer of information between interested parties. As provided for in the Demonstration Plan, KMCC shall submit demonstration reports as specified in KMCC's Demonstration Plan semi-annually subsequent to initiation of project start-up activities.

   Verification: KMCC and Staff shall develop within 90 days after certification the formats and procedures to be used for the publicly noticed informational seminars. KMCC shall provide and Staff will use the seminar information, the Demonstration Plan updates, and the Demonstration Reports as a basis for evaluation of the project status and KMCC's progress toward completing the Demonstration Program. Staff shall provide periodic summary status reports of the Demonstration Program's progress to the Siting and Procedures Committee.

7. To comply with the goals and objectives of the KMCC Demonstration Plan (KMCC 1986c), KMCC shall submit to the CEC, as needed, project amendments and mitigation plans needed to assure relevant permit and LORS compliance. If there are physical or performance changes which modify ACE project compliance with adopted LORS or permits or which cause environmental impacts which were not considered during the AFC process and/or were not mitigated during the plant construction process, then KMCC shall return to the Commission requesting a short-term variance or an amendment to its certification, as appropriate.

Verification: KMCC shall submit on a timely basis project amendments and mitigation plans needed to assure compliance with relevant permits and adopted LORS, and which are required to carry out the activities defined in the Demonstration Plan. Staff will schedule workshops, conference, and hearings as needed through the Siting and Procedures Committee to expedite permits and application approvals, if any revisions to AFC approved conditions are required.

8. KMCC shall, through the appropriate design, specification and selection procedures, incorporate a Control and Data Acquisition System (CDAS) into the ACE project which is capable of monitoring and collecting the on-line operational information and data required by KMCC's goals and objectives and Demonstration Plan (KMCC 1986c). KMCC shall provide within 180 days after certification and consistent with the first demonstration update as defined by the Demonstration Plan (KMCC 1986c) a complete description of the Process and Instrumentation System and Control and Data Acquisition System (CDAS).

Verification: KMCC shall submit in writing a full description of the CDAS planned and to be installed in the initial construction of the ACE project, certifying that the CDAS is consistent with the needs of the Demonstration Plan. KMCC shall indicate how staff comments were accommodated in this description. KMCC shall indicate any temporary CDAS components to be used in the demonstration tests. The seminars and Demonstration Reports will be used by KMCC to describe the quality and value of the CDAS data obtained and will be used in assessing the demonstration task results.

9. KMCC and CEC Staff shall jointly cooperate in establishment of an ACE commercial demonstration group. The Group will:

a. Provide recommendations to KMCC with respect to the types of information most appropriate to be collected in order to best serve the commercial demonstration nature of the project.

b. Review and comment on KMCC's Demonstration Plan updates, monthly summary reports, and periodic Demonstration Reports as appropriate.

c. Assist the CEC Staff in certifying the achievement or lack of achievement of ACE project commercial demonstration goals and objectives as specified in the Demonstration Plan (KMCC 1986c).

d. Participate in the periodic informational seminars, and be available for consultation with KMCC or Staff during interim periods.

Verification: KMCC and CEC Staff shall mutually establish the composition of the demonstration group consistent with this Condition at least 60 days prior to the first informational seminar. Staff shall implement this plan on a time schedule consistent with the first informational seminar.

PART THREE -- MISCELLANEOUS FINDINGS

I. DEVELOPMENT RIGHTS

FINDINGS

1. KMCC will construct and operate its ACE Cogeneration Project and related facilities in a manner that will protect public health and safety, and therefore, is not required to acquire, by grant or contract, the right to prohibit development of privately owned lands in the areas surrounding the facilities in order to protect public health and safety pursuant to Public Resources Code section 25528.

II. PROHIBITED SITES

FINDINGS

1. KMCC's ACE Cogeneration Project and its related facilities are not proposed for a site which is subject to the terms of Public Resources Code section 25527.

III. OPERATION STANDARDS

FINDING

1. No standards of efficiency for operation of the facility have been adopted by the Commission pursuant to Public Resources Code section 25402(d)

IV. CALIFORNIA ENVIRONMENTAL QUALITY ACT

During the proceedings, changes or alternatives have been required in, or incorporated into, the proposed facility which mitigate or avoid potential significant environmental effects of the facility. There are no specific

economic, social, or other considerations which make infeasible the mitigation measures.

FINDINGS

1. The project, by itself, will not result in significant adverse environmental impacts if mitigated as provided herein.

2. The Presiding Member's Report is certified to have been prepared in compliance with the California Environmental Quality Act and all applicable state and Commission regulations and guidelines.

V. APPLICATION OF FORCE MAJUERE CLAUSE

The KMCC ACE Project Application for Certification is the first demonstration project (Pub. Resources Code § 25540.6(c)) to be filed at the Commission.

As a consequence, additional time was necessary in this regulatory process for the conceptualization and preparation of the Demonstration Plan. As previously stated in the Proposed Decision, the demonstration of the technologies as proposed will benefit the State of California and a well-conceived Demonstration Plan is essential for a thorough evaluation of the project.

For the foregoing reasons, the Commission recognizes the potential that this project may not produce and deliver electricity to SCE in a timely manner pursuant to the terms of their power purchase agreement. Thus, should KMCC seek to invoke the force majeure clause of the power purchase agreement, the Commission finds and declares:

1) The construction and operation of the KMCC ACE Demonstration Project is in public interests;

2) Through the proceeding, KMCC has acted in good faith to expedite the proceeding, to provide necessary data, to mitigate identified impacts, and to prepare the Demonstration Plan;

3) The unique circumstances of this proceeding, i.e., the first demonstration project proceeding pursuant to Public Resources Code section 25540.6(c), have caused the unusual protraction of the proceeding; and

4) For the foregoing reasons, under such circumstances, the application of the force majeure clause is warranted.

PART FOUR -- CONCLUSIONS

Conclusions

1. Since this ACE Cogeneration Project qualified for review under the provisions of Public Resources Code section 25540.6(e), the provisions of Public Resources Code section 25524, requiring an affirmative showing of conformity to the demand forecast, are not applicable.

2. With the application of the mitigation measures herein the proposed ACE Cogeneration Project and the associated transmission line can be constructed and operated to comply with all applicable federal, state, regional, and local laws, regulations and standards.

3. The conditions and mitigation measures herein are all necessary and reasonable for public health and safety and environmental protection pursuant to Public Resources Code sections 25523(a) and 25535.

PART FIVE --ORDER

1. KMCC's Application for Certification for the ACE Cogeneration Project and associated transmission line is granted.

2. The Application for Certification is granted subject to the timely performance of all the conditions enumerated herein and expressly incorporated herein. The conditions herein and expressly incorporated herein constitute the entirety of conditions applicable hereto, are integrated and not severable, and are binding upon KMCC or any successor in interest. While the project's owner may delegate the performance of any condition, its duty to perform all conditions is not delegable.

3. For purposes of reconsideration pursuant to Public Resources Code section 25530, this Decision is adopted when filed with the Commission Docket Unit.

   For purposes of Public Resources Code section 25531, this Decision is final (1) 30 days after it is adopted as provided hereinabove in the absence of the filing of a petition for reconsideration or (2) upon the adoption and filing of an order upon reconsideration with the Commission Secretary.

4. The Executive Director of the Commission is directed to transmit a copy of this Decision and accompanying documents pursuant to Public Resources Code section 25537 and section 1768 of the Commission Regulations.

Adopted: January 6, 1988

ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

CHARLES R. IMBRECHT, Chairman

BARBARA CROWLEY, Vice Chair
and Presiding Committee Member

WARREN D. NOTEWARE, Commissioner

RICHARD BILAS, Commissioner
and Committee Member

ROBERT MUSSETTER, Commissioner

APPENDIX A

COMPLIANCE PLAN GENERAL PROVISIONS

Kerr-McGee Chemical Corporation
Argus Cogeneration Expansion Project (86-AFC-1)

Section 25532 of the Public Resources Code provides that the California Energy Commission (CEC) shall establish a monitoring system to assure that a certified facility is constructed and operated in compliance with air and water quality, public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the CEC and specified in the written Decision on the Application for Certification (AFC). The project compliance plan is formulated to satisfy that directive.

The CEC's jurisdiction extends only to the power plant and related facilities, the transmission tap line to the point of interconnection with the power grid and the fuel system from the major distribution system or existing storage facility.

Significant features of the plan include:

- Utilization of delegate agencies, where possible, to monitor specific elements of the compliance plan,
- A compilation of all compliance conditions of certification,
- Compliance verification of each condition by a qualified professional,
- Periodic compliance reports filed by KMCC,
- An annual compliance report filed by KMCC, and
- A dispute resolution procedure.

Organization of the Plan

The compliance requirements are organized by technical discipline. Every requirement or mitigation measure stated in the Commission decision is included in the Compliance Plan. The sources of the requirements and implementing authority are listed for each requirement. Where requirements are applicable to more than one technical discipline or phase of the project, the requirement and corresponding verification procedure is listed in only one section and that section is referenced in the other sections having the same requirement.

Delegate Agencies

The Warren-Alquist Act provides the CEC with exclusive siting authority for thermal power plants and related facilities 50 MW or greater. To the extent permitted by law, the CEC shall delegate authority for compliance verification to various state and local agencies who have expertise in subject areas where specific requirements have been established as a condition of certification. If a delegate agency is unwilling or unable to participate in this program, the CEC shall establish an alternative method of verification. Whenever an agency's responsibility for a particular area is transferred by law to another entity, all references to the original agency shall be interpreted to apply to the successor entity.

Compliance Project Manager

The CEC shall designate a Compliance Project Manager (CPM). The assigned CPM shall be responsible for implementing the approved compliance plan after certification, for documenting and tracking compliance plan filings, for maintaining the compliance record files, and for initiating the dispute resolution procedure, if required.

All compliance submittals and correspondence pertaining to compliance matters shall include reference to the appropriate compliance requirement and be addressed as follows:

Compliance Project Manager (86-AFC-1C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

All submittals relating to compliance with the Demonstration Plan, shall be submitted as directed above, with the Docket Reference (86-AFC-1D).

Verification of Compliance

Each condition of certification described in the compliance section is followed by a means of verification. The verifications are not intended to be a part of the conditions, but are the CEC Compliance Unit's procedures to ensure post certification compliance with adopted conditions. As such the verification procedures may be modified by Staff as necessary to carry out the compliance monitoring mandate, without Commission approval. Verification of compliance with the terms and conditions of certification will be accomplished by: periodic compliance reports filed by KMCC; appropriate letters from delegate agencies verifying compliance; auditing project records; or by inspecting the power plant site and related facilities. The CEC Compliance Project Manager, or other designated CEC Staff

and associates, shall be guaranteed and granted access to the power plant and related sites at times reasonable to conduct audits, surveys, or general site visits.

Periodic Compliance Reports

Periodic compliance reports as required by the compliance plan are to be submitted by KMCC to the CEC and shall be filed at least once each quarter within 45 days after the end of the reporting quarter. These reports shall be numbered consecutively, and contain as a minimum:

- The current project construction or operating status;
- A listing of compliance plan requirements scheduled during the reporting period, with a corresponding description of the status of the requirements, i.e., completed, not started, or in progress;
- For those compliance plan requirements which KMCC had expected to satisfy during the reporting period but which were not satisfied, include a statement of how and when KMCC intends to satisfy the requirements;
- A listing of any changes to compliance activities which have resulted from negotiations between KMCC and the CEC or its delegate agencies (changes to conditions of certification or compliance requirements must be approved by the CEC prior to implementation), and
- Notification of any filings made with other governmental agencies having permitting authority over any aspect of the project.

Noncompliance

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the CEC and can result in proceedings pursuant to Title 20, California Administrative Code, section 1230 et seq.

Enforcement

The CEC's legal authority to enforce its Empliance Plan is specified in the California Public Resources Code, sections 25532, 25534, and 25900. Moreover, to ensure compliance with the terms and conditions of certification and applicable laws, ordinances, regulations, and standards, delegate agencies, as set forth in this document, are authorized to take any action allowed by law in accordance with their statutory authority, regulations, and administrative procedures.

Compliance Record

KMCC shall maintain, for the life of the project, files of all "as-built" documents referenced in this report. Staff of the CEC and delegate agencies shall, upon reasonable notification, be given access to the files.

The CEC shall maintain as a public record:

- All attestments to the fulfillment of legal requirements;
- All periodic and annual compliance reports filed by KMCC; and
- All documents relative to complaints of noncompliance filed with the CEC.

Confidential Information

Any information which KMCC deems proprietary shall be submitted to the Executive Director pursuant to Title 20, California Administrative Code, section 2505(a). Any information which is determined to be confidential shall be kept confidential as provided for in Title 20, California Administrative Code, section 2501 et seq.

Dispute Resolution Procedure

The following mediation procedure is designed to informally resolve, when possible, disputes concerning interpretation of compliance with the requirements of the Compliance Plan. KMCC, the CEC, or any other party may initiate this procedure when time is critical in resolving a problem or when the alleged noncompliance does not appear significant enough to warrant a more formal investigation and proceeding.

The procedure is not intended to be a substitute for, or prerequisite to, the more formal complaint and investigation procedure specified in Title 20, California Administrative Code, section 1230 et seq. Nor may the procedure be used to change the terms and conditions of certification as approved by the CEC.

The procedure encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be referred to the CEC for consideration.

- Request for Informal Investigation -- Any individual, group, or agency may request the CEC to conduct an informal investigation of an alleged noncompliance with

the CEC's terms and conditions of certification. All requests for an informal investigation shall be made to the designated CEC Compliance Project Manager (CPM).

Upon receipt of a request for investigation, the CPM shall promptly notify KMCC, by telephone and subsequently by letter, of the allegation. All known and relevant information of the alleged noncompliance shall be provided to KMCC and to the CEC Staff. KMCC shall promptly investigate the matter and within seven working days provide a written report of the results of the investigation, including corrective measures proposed or undertaken, to the CPM. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request KMCC to provide an initial report, within 48 hours, followed by a written report filed within 7 days.

- Request for Informal Meeting -- In the event that either the party requesting an investigation or the CEC staff is not satisfied with KMCC's report, investigation of the event, or corrective measures undertaken, either party may request, by written request to the CPM, a meeting with KMCC. Such request shall be made within 14 days of KMCC's filing of its written report. Upon receipt of such a request, the CPM shall:

  - Immediately schedule a meeting with the requesting party and KMCC, to be held at a mutually convenient time and place;

  - Secure the attendance of appropriate CEC Staff and staff of any other agency with general jurisdiction and expertise in the subject area of concern as necessary;

  - Conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner; and

  - Promptly after the conclusion of such a meeting, prepare a memorandum which fairly and accurately identifies the positions of all parties and any conclusions reached and distribute copies to all attendees.

- Request for Commission Hearing -- If either KMCC, CEC Staff, or the party requesting an investigation is not satisfied with the results of said informal meeting, such party may, within 10 working days, request in writing, a hearing before the Commission's Siting and

Regulatory Procedures Committee. The Committee shall, upon receipt of a written request stating the basis of the dispute and the attempt at informal resolution thereof, grant a hearing on the matter, consistent with the requirements of noticing provisions, and shall have the authority to consider all relevant facts involved and make any appropriate orders consistent with its jurisdiction.

Amendment to Decision

Any proposed change to the Conditions of Certification, with the exception of the verifications, as contained in the Commission Decision will require an amendment to the Decision. Such changes shall be made according to the following procedure:

The CEC Staff, power plant developers or other parties shall be required to submit, in writing, to the Compliance Project Manager, any request for a post certification change to conditions of certification. All requested changes shall require final analysis and approval by this Commission.

Upon receiving a request, the CPM shall notify interested parties to allow them the opportunity to comment on the proposed change.

Staff shall investigate the request and upon completion of its investigation submit its recommendation on the request to the Commission for consideration and Commission action. Any approval of changes to conditions of certification will come from this Commission.

AIR QUALITY

Federal

o Title 40, Code of Federal Regulations (CFR) Part 52, Prevention of Significant Deterioration (PSD). The PSD Program is designed to protect areas that have better air quality than that specified by the NAAQS, i.e., attainment areas. The requirements apply to new major stationary sources or major modifications to existing stationary sources located in these areas. A source is considered major if emissions of any pollutant exceed either 100 tons/year for 28 listed source types or 250 tons/year for any other source type. If a source is defined as major, PSD review may be required for all attainment pollutants that exceed the pollutant significance levels specified in Air Quality: Table 7.

  Once a source is determined to be subject to PSD review, the following requirements may apply on a pollutant-by-pollutant basis:

  - The emissions must be controlled using Best Available Control Technology (BACT).

  - The air quality impacts in combination with other PSD sources must not exceed maximum allowable incremental increases for SO2 and PM.

  - The air quality impacts of all sources in the area plus ambient pollutant background levels cannot exceed the NAAQS in Air Quality: Table 5.

  - Pre- and/or post-construction air quality monitoring may be required.

  - The air quality impacts on soils, vegetation, and nearby PSD Class I areas must also be addressed. National parks and wilderness areas are designated as Class I areas, where practically any deterioration in air quality is considered significant. Class II applies to areas where moderate, well controlled industrial growth could be permitted. Class III areas allow for greater industrial growth. No Class III areas exist nationally at this time.

o Title 40 CFR, Part 60, New Source Performance Standards (NSPS), contains two categories of NSPS that apply to the proposed solid fuel fired cogeneration plant:

  Section 60.250, et seq. - Standards of Performance for Coal Preparation Plants. This regulation limits a visual plume to 20 percent opacity for coal processing and conveying equipment, coal storage systems, and transfer and loading systems.

  Section 60.40a, et seq. - Standards of Performance for Electric Utility Steam Generating Units. The ACE project would meet the definition of an electric utility steam generating unit since more than one-third of the unit's potential electrical output and more than 25 megawatts of

electrical output would be supplied to a utility power distribution system for sale. This regulation puts a limit on pollutant emission rates per energy unit. A limit also exists for the opacity of air pollutants.

AIR QUALITY: TABLE 7
Prevention of Significant Deterioration (PSD)
Significant Emission Levels
(Tons Per Year)

Pollutant	Significant Increase Level
Sulfur dioxide	40
Nitrogen oxides	40
Carbon monoxide	100
Ozone (or Volatile Organic Compounds)	40
Particulate matter	25
Lead	0.6
Asbestos	0.007
Beryllium	0.004
Mercury	0.1
Vinyl chloride	1
Fluorides	3
Sulfuric acid mist	7
Hydrogen sulfide	10
Total reduced sulfur (including H2S)	10
Reduced sulfur compounds (including H2S)	10

Source: 40 CFR 52.21

Continuous emission monitoring and reporting requirements also exist for SO2, PM, NOx, CO, oxygen (O2), and opacity. For the ACE boiler, these requirements are discussed in 40 CFR sections 60.47a (Emission monitoring), 60.48a (Compliance determination procedures and methods), and 60.49a (Reporting requirements). Coal handling systems requirements are discussed in Title 40 CFR section 60.253.

State

- California Health and Safety Code, section 41700, requires that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property". Since the state and federal ambient air quality standards are established to protect public health, an applicant's project shall not emit quantities of air pollutants that show an impact greater than these standards to an area where the public has

access.

Local

San Bernardino County Air Pollution Control District (SBCAPCD) Rules and Regulations are applicable. A brief summary of the applicable rules are:

- o Rule 201 requires authorization from the SBCAPCD before constructing a new air pollution source.
- o Rule 203 requires authorization from the SBCAPCD before operating a new air pollution source.
- o Rule 204 allows the SBCAPCD to impose conditions on any permit to assure compliance with all applicable regulations.
- o Rule 212 states that a permit to construct will be denied, unless an applicant shows that the equipment will be operated without emitting air contaminants in violation of sections 41700 and 41701 of the State Health and Safety Code or of the SBCAPCD rules.
- o Rule 218 requires stack monitoring of NOx and carbon dioxide (CO2) or O2 for steam generators with a heat input greater than 256 million British Thermal Units (MMBTU).
- o Rule 401 prohibits a source from emitting visible airborne pollutants as dark or darker in shade than Number 1 on the Ringelmann Chart for more than three minutes in any one hour.
- o Rule 402 prohibits a source from discharging emissions that could cause injury, detriment, nuisance, annoyance, or endanger the health of the public.
- o Rule 403 prohibits emissions of fugitive dust from any transport, handling, construction, or storage activity so that the dust remains visible beyond the emission source property line. Particulate matter (PM) concentrations shall not exceed 100 ug/m3 when determined as the difference between upwind and downwind collected on high volume samplers at the property line for a minimum of 5 hours.
- o Rule 404 restricts the PM concentration discharged into the atmosphere based on the gas volume discharged.
- o Rule 405 restricts the PM emission rate of a source, based on a process weight/hour. The maximum allowable PM emission rate for any source is 30 lb/hr.
- o Rule 406 prohibits the emission of sulfur compounds greater than 500 ppm by volume.
- o Rule 407 prohibits the emission of CO greater that 2000 ppm.

- Rule 409 prohibits the emission of combustion contaminants exceeding 0.23 gm/m3 (0.1 grain per cubic foot of gas) calculated to 12 percent of CO2 at standard conditions averaged over a minimum of 15 consecutive minutes.

- Rule 442 restricts the amount of volatile organic material that may be emitted into the atmosphere.

- Rule 474 prohibits the emission of NOx to exceed 225 ppm from any steam generating equipment, calculated at 3 percent O2 on a dry basis averaged over a minimum of 15 consecutive minutes.

- Rule 475 prohibits the emission of NOx to exceed 225 ppm from any equipment having a maximum heat input rate of more than 50 MMBTU used to produce electric power. Combustion contaminant emissions must also be less than 11 lb/hr and 23 milligrams per cubic meter (0.01 gr/SCF), calculated at 3 percent O2 on a dry basis averaged over a minimum of 15 consecutive minutes.

- Rule 476 has the same emission limit requirements as Rule 475, but pertains to steam generating equipment.

- Rule 902 provides information for performance emission testing required after a new source start-up to verify compliance with pollutant and visibility standards.

- Rule 903 prohibits emissions for new or modified fossil fuel-fired steam generating units of at least 250 MMBTU/hr heat input to exceed: 1) PM at 0.1 lb/MMBTU heat input 2) 20 percent opacity or greater except that a maximum of 40 percent opacity shall be permissible for not more than two minutes in any one hour. For solid fossil fuel, the following emissions are not to be exceeded: 1) SO2 at 1.2 lb/MMBTU 2) NO2 at 0.7 lb/MMBTU. Also included are provisions requiring stack emission monitoring.

Regulation 13 pertains to New Source Review:

- Rule 1301 sets forth the review requirements for new stationary sources or modifications to existing stationary sources to ensure that their construction will not interfere with the attainment or maintenance of the NAAQS or the CAAQS.

- Rule 1303 defines what type of source is reviewed by Regulation 13: a new stationary source or a modification to an existing stationary source which emits more than 250 lb/day of any criteria air pollutant or organic gases, or 750 lb/day of CO. A permit to construct will be denied unless all stationary sources owned or operated by the applicant in the state of California are in compliance with all applicable emission limitations and standards.

  The new or modified source will be constructed using BACT for each pollutant subject to this rule.

- Rule 1305 requires that new permits be obtained for sources to be used for emission offsets, and for permits to be surrendered for units being taken out of service for emission offsets.

- Rule 1306 sets guidelines for calculating emission increases or reductions to be used for emission offsets under Rule 1307 and for emission banking under Rule 1309. Emission reductions that require a source to comply with federal, state, or SBCAPCD laws, rules, or regulations shall be excluded from the accumulation of the total emission reduction credit for that source.

- Rule 1307 quantifies what type of source and pollutant that requires offsetting, and the amount of emission offsets required for a given emission increase.

- Rule 1308 identifies the eligibility of emission sources as offsets to be used in Rule 1307.

- Rule 1309 quantifies the banking of emission sources for offsets.

- Rule 1311 designates the SBCAPCD reviewing role for any power plant proposed to be constructed in the District for which an AFC has been accepted by the CEC.

- Rule 1313 outlines conditions for providing a permit to operate, including that all offset conditions (or emission reductions) required in the permit be finalized prior to operation of the new source.

BIOLOGICAL RESOURCES

Federal Laws and Policies

- Endangered Species Act of 1973, 16 USC 1531 et seq. and implementing regulations, 50 CFR part 17, designate federally threatened or endangered plants and animals and their critical habitat.

- Federal Land Policy and Management Act of 1976, 43 USC 1781 requires the Bureau of Land Management to prepare the California Desert Conservation Area Plan. The plan establishes guidance for the management of public lands of the California desert and allows BLM to designate "sensitive species".

State

- California Endangered Species Act of 1984, Fish and Game Code sections 2050-2098 designates California endangered, threatened and rare species. It requires state agencies to consult with the Department of Fish and Game on any project that is not categorically exempt from CEQA.

- Native Species Conservation and Enhancement Act, Fish and Game Code sections 1755-1756 provides for the preservation and protection of wildlife and native plants and the habitat necessary to ensure their continued existence.

- Fish and Game Code sections 5000-5002 provides for the protection of desert tortoise against harm, sale, or unauthorized possession.

- Fish and Game Code sections 1800-1801 provides for the conservation and maintenance of the state's wildlife resources including birds, mammals, and reptiles not raised in captivity.

- Title 14, California Administrative Code (CAC) section 670.5 lists animals of California declared to be rare or endangered.

- Title 14, California Administrative Code section 40.00 designates protected reptile species.

- Ecological Reserve Act of 1968 and implementing regulations, Fish and Game Code sections 1580-1584 enables the state Department of Fish and Game to establish ecological reserves for the purpose of protecting native plants and wildlife and limits activities within such preserves.

- Guidelines for Implementation of the California Environmental Quality Act of 1970, Title 14, CAC sections 15000-15387, are state regulations which provide for the implementation of the California Environmental Quality Act (CEQA): Public Resources Code Section 2100 et seq. The guidelines include specific reference to direct, indirect, and cumulative impacts on endangered species, and requires analysis of potential significant impacts and incorporation of mitigation measures prior to project approval.

CIVIL ENGINEERING

Federal

- Title 29, Code of Federal Regulations (CFR) Part 1910, Occupational Safety and Health Standards.

State

- Business and Professions Code section 6704. Requires state registration to practice as a civil engineer in California.

- Title 24, California Administrative Code (CAC), Parts 2-6. Adopts current edition of the Uniform Building Code (UBC) as minimum legal building standards.

- Title 8, CAC section 450 et seq. (Chapter 4, Division of Industrial Safety). Describes general construction safety orders, industrial safety orders, and work safety requirements and procedures.

- Title 8, CAC sections 340 and 341, Labor Code section 6500. California State Department of Industrial Relations, Division of Industrial Safety. Requires a permit for construction of trenches or excavations five feet or deeper where personnel have to descend.

- California Department of Transportation (CALTRANS), Standard Specification, 1984 edition, with updates. Contains specification standards and details of civil highway construction.

- Vehicle Code section 35780, CALTRANS requires a permit to transport heavy loads over state highways.

- General Order No. 95 (GO 95), California Public Utilities Commission (CPUC). Contains rules for Overhead Electric Line Construction.

County

- San Bernardino County Ordinance No. 2815. San Bernardino County Land Management Department requires a building permit for the construction of new structures or addition to existing structures and a grading permit for excavation and fill activities. This Ordinance adopts the 1982 edition of the Uniform Building Code as the County's standard.

- California Vehicle Code (CVC) section 3500 et seq. (Division 15). San Bernardino County Transportation Department requires the following pursuant to the requirements of Division 15 of the CVC:

  - An encroachment permit for construction of access roads to county roads or for activities which occupy right-of-way within any County right-of-way.

  - A transportation permit for transport of oversized loads on County

roads.

- Overload approvals for facilities requiring transportation of excessive loads over city streets and/or county roads.

Industry Codes, Standards and Specifications

o International Conference of Building Officials, "Uniform Building Code" (UBC), 1985 edition with Supplement/Standards.

o International Conference of Building Officials, International Association of Plumbing and Mechanical Officials, "Uniform Mechanical Code" (UMC), 1985 edition and Uniform Plumbing Code (UPC), 1985 edition.

o American Concrete Institute (ACI).

- "Building Code Requirements for Reinforced Concrete" (ACI 318-83)

- "Building Code Requirements for Structural Plain Concrete" (ACI 318.1-83)

o American Society for Testing and Materials (ASTM)

- ASTM A82-79 - Cold-drawn Steel Wire for Concrete Reinforcement;

- ASTM A185-79 - Welded Steel Wire Fabric for Concrete Reinforcement; and

- ASTM A615-82 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement with Supplement S1.

o American Water Works Association (AWWA)

- "Standards for Prestressed Concrete Pressure Pipe, Steel Cylinder Type for Water and Other Liquids - (AWWA C301)

- "Standard for Reinforced Concrete Water Pipe - Noncylinder Type, Not Prestressed" - (AWWA C302)

o Asphalt Institute Handbook

Additional LORS

In addition to KMCC's proposed laws, ordinances, regulations, and standards, staff finds that the following are also applicable to civil engineering:

o Title 40, CFR section 112 et seq., U.S. Environmental Protection Agency (EPA), requires a Spill Prevention Control and Countermeasure (SPCC) plan of facilities storing oil in excess of: 660 gallons in any single above ground storage tank; 1,320 gallons in aggregate tanks above ground; and 4,200 gallons below ground.

- o CALTRANS, California State Department of Transportation Standard Specifications, July 1984. Provides specifications for fencing and all materials related to roadway construction.

- o California Board of Professional Engineers Rule 145 requires that a California Registered Engineer work only within his or her area of professional competence.

Fences and Gates

- o American Society for Testing and Materials (ASTM).

  A121-81 - Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.

  A123-84 - Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products.

  A491-84 - Specification for Aluminum-Coated Steel Chain-Link Fence Fabric.

Concrete

- o American Society for Testing and Materials (ASTM)

  C31-84 - Method for Making and Curing Concrete Test Specimen in the Field.

  C33-85 - Specification for Concrete Aggregate

  C39-84 - Test Method for Compressive Strength of Cylindrical Concrete Specimens

  C42-84 - Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

  C150-85 - Specification for Portland Cement

Culverts and Storm Drains

- o American Society for Testing and Materials (ASTM)

  C76-85 - Reinforced concrete culvert, storm drain and sewer pipe

  C443-85 - Specification for Joints for Circular Concrete Sewer and Culvert Pipe Using Rubber Gaskets.

  C478-85 - Pre-cast Reinforced Concrete Manhole Sections

Structural Backfill, Embankments and Liners

- American Society for Testing and Materials (ASTM)

  D422-632 - Particle Size Analysis of Soils

  D1556-82 - In-Place Density of Soils by the Sand-cone Method

  D1557-78 - Test method for Moisture-Density Relations of Soils and Soil Aggregate Mixtures, using a 10-lb. Rammer and 18- inch Drop.

  D2487-69 - Soil Classifications

  D2922-81 - Test Method for In Place Moisture Content and Density of Soils and Soil Aggregates by Nuclear Methods

Truck Loads

- American Association of State Highway and Transportation Officials (AASHTO):

  HB-12-77 - Standard Specifications for Highway Bridges, Twelfth Edition, 1977. HS20-44 Loading is used to develop the loading patterns for design of underground utilities.

CULTURAL RESOURCES

- 43 U.S. Code section 1737 et seq., concerning conditions of operation and rights-of-way on federal land

- Public Resources Code section 5097.98, concerning the disposition of Native American human remains and grave goods.

ELECTRICAL ENGINEERING

State

- Title 24, California Administrative Code, Parts 2 through 8. Contains regulations governing building construction (State Building Code, Electrical Code, Mechanical Code, Plumbing Code, Special Building Regulations, Elevator Safety Code, Historical Building Code).

Codes, Standards and Specifications

- Institute of Electrical and Electronic Engineers (IEEE). Contains requirements for electrical equipment.
- Insulated Cable Engineers Association (ICEA). Contains requirements for cables.
- National Electrical Manufacturers Association (NEMA). Contains requirements for electrical equipment.
- National Electric Code (NEC). Determines the practical safeguarding of persons and property from hazards arising from the use of electricity.
- Underwriters Laboratory (UL). Establishes safety standards for electrical equipment and components.

ENGINEERING GEOLOGY

- California Business and Professions Code, sections 7830 and 7835. Requires registration for geologists and specialty geologists (including engineering geologists) who practice for others and that all geologic plans, specifications, reports or documents shall be prepared by a registered certified specialty geologist or by a subordinate employee under his direction. In addition, they shall be signed by the registered specialty geologist, indicating his responsibility for them.

- Title 24, California Administrative Code, Part 2, sections 2-2901 et seq. and 2-7002 et seq., Uniform Building Code (UBC), 1985 edition, Chapters 29 (Foundations) and 70 (Excavation and Grading). Sets minimum technical and administrative requirements for foundations and for excavation and grading.

LAND USE

Federal

o Bureau of Land Management, California Desert Conservation Area Plan, 1980

The Desert Plan provides development policies, standards, and requirements associated with BLM administered lands in the project area as required by 43 USC 1781.

o Bureau of Land Management, 43 USC 1737 et seq.

This section of the federal code addresses approval of operations and right-of-way on federal land.

Local

o San Bernardino County, Joint Utility Management Plan (JUMP), 1973

The JUMP provides standards regulating location and development of utilities in the county.

o San Bernardino County, San Bernardino County General Plan and Implementation System, 1979

The San Bernardino County General Plan designates generalized uses for land areas of the county and specifies goals and policies for development.

o San Bernardino County, Zoning Ordinance, 1985

The zoning code implements the general plan by identifying what uses are permitted within various zoning classifications and designating zoning for land areas in the county.

o Inyo County Planning Department, County of Inyo General Plan: Land Use Element and Map (#15) of Valley Wells, 1984; Conservation and Open Space Element, 1981

The Inyo County General Plan and plan elements present the county's official policies for development and designates generalized use areas which are implemented through county zoning.

MECHANICAL ENGINEERING

Federal

- OSHA Regulations - The provisions of OSHA as stipulated in Title 29, Code of Federal Regulations (CFR), Part 1910, "Occupational Safety and Health Standards".

State

- California Occupational Safety and Health Act, 1973 (Cal/OSHA), Labor Code section 6300 et seq.
- Structural Engineers Association of California "Recommended Lateral Force Requirements," 1980 Recommendations and Commentary.
- Regulations of the following State agencies:
  - Department of Transportation
  - Department of Labor and Industry Regulations
  - Bureau of Fire Protection
  - Department of Public Health
  - Water and Power Resources
- Title 8, California Administrative Code (CAC), section 450 et seq. Unfired Pressure Vessel Safety Orders.
- Title 24, California Administrative Code (CAC), Parts 2, 5 and 6 (State Building Standards Code).
- Business and Professions Code, section 6700 et seq.
- California Labor Code sections 6500, 7300, 7621, 7680, 7683
- Title 8, CAC sections 500-512, 3203, 5415-5420, 5426-5439, 5445-5461, 5465-5498, 5583-5612, Anhydrous Ammonia
- Title 24, CAC, sections 4-403, 4-404, 4-407, 4-414, 4-415, 4-417, 4-423, 4-1004, 4-1006, 4-1007, 4-1009, Mechanical

Local

- San Bernardino County Ordinance No. 2815
- San Bernardino County Subdivision Standards
- San Bernardino County Subdivision Ordinances

Industry

- American Institute of Steel Construction (AISC), Support Steel Structures
  - "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings"
  - "Code of Standard Practice for Steel Buildings and Bridges"
  - "Specifications for Structural Joints using ASTM A325 or A490 Bolts"
- Standards of Tubular Exchanger Manufacturers Association (TEMA)
- Heat Exchanger Institute (HEI)
- American Petroleum Institute (API) Standard 650, Welded Steel Tanks for Oil Storage
- Hydraulic Institute Standards (HI) Pump and Piping Design
- Heating, Ventilating and Air Conditioning Guide
  - American Society Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Four Volumes;
    - Fundamentals,
    - Systems,
    - Equipment,
    - Applications
- Uniform Plumbing Code (UPC)
- American Society of Mechanical Engineers (ASME)
  - Section VIII Unfired Pressure Vessels
  - Section IX Welding Qualifications
- Standards of the American Society for Testing Materials (ASTM)
- National Fire Protection Association Standards (NFPA), NFPA 904, NFPA 101
- Steel Structures Painting Council Standards (SSPC)
- American National Standards Institute (ANSI)
  - B31.1 Power Piping
- American National Standards Institute (ANSI)
  - B16.25 Butt Welding Ends

- o National Electric Code (NEC)
- o Underwriters Laboratories (UL)
- o Uniform Mechanical Code (UMC)
- o American Iron and Steel Institute (AISI) Specification for the Design of Cold-Formed Structural Members, Parts 1 and 2
- o American Welding Society (AWS)
  - "Structural Welding Code" (AWS D1.1)
- o American Water Works Association (AWWA)
  - "Standards for Welding Steel Tanks", (AWWA D100, with Appendix D).
  - "Standard for Prestressed Concrete Pressure Pipe, Steel Cylinder Type for Water and Other Liquids" - (AWWA C301).
  - "Standard for Reinforced Concrete Water Pipe - Noncylinder Type, Not Prestressed" - (AWWA C302).
- o Applied Technology Council, Tentative Provisions for Development of Seismic Regulations for Buildings" (ATC-3-06). Amended, 1982.
- o American Society of Non-Destructive Testing (SNT-TC-1A)
- o American Society for Testing Material (ASTM) for Refractory Material

  ASTM C-16 Hot Load Subsidence
  ASTM C-113 Permanent Linear Change
  ASTM C-133 Cold Modulus of Rupture
  ASTM C-417 Thermal Conductive
  ASTM C-583 Hot Modulus of Rupture
  ASTM C-704 Abrasion Loss

- o Air Conditioning and Refrigeration Institute Standards (ACRI)
- o American Conference of Government Industrial Hygienists, Committee on Industrial Ventilation (ACGIH) Publication: A Manual of Recommended Practice, Industrial Ventilation (Latest Edition)
- o Air Diffusion Council (ADC), published Codes and Standards for air distribution devices
- o Air Moving and Conditioning Association (AMCA) Bulletin #210, centrifugal fan ratings
- o Sheet Metal and Air Conditioning Contractor's National Association (SMACNA), standards for duct designs and constructions

- American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code
  - Section I Power Boilers
  - Section II Welding Rods
- American Gear Manufacturers Association (AGMA)
- American National Standards Institute (ANSI)
  - Pipes (ANSI A524-80), Valves (ANSI B16.5-81) and Fittings (ANSI B16.34-81)
  - Refrigeration Piping Code (ANSI B31.5)
  - Refinery Code (ANSI B31.3)
- National Fire Protection Association Standards (NFPA) NFPA 20 Centrifugal Fire Pumps, NFPA 24 Fire Mains

Equipment	Design Criteria
- Steam Turbines	- API 611 - API 614 - API 612
- Centrifugal Pumps	- API 610 - ANSI B73.1 - ANSI B73.2 - API 614
- Lube Oil, Seal Oil and Control Systems for Package Units	- API 614
- Gear Units	- API 613
- Couplings -	- API 671
- Tubular Heat Exchangers	- ASTM Section VIII - API 660 - TEMA - ASME Section I - ASME Section II
- Coal-Fired Circulating Fluid Bed (CFB) Steam Generator	- ASME Section I, II, - ANSI B31.1 - ASTM C-64 - ASTM C-401 - ASTM C-612 - AWS D1.1

- Storage Tanks	- API 620
- Safety Requirements for Storage and Handling of Anhydrous Ammonia	- ANSI K61.1

NOISE

County

- The Noise Element of San Bernardino County's General Plan. This element establishes qualitative goals and policies but contains no quantitative noise and land use compatibility guidelines. It recommends the use of the CNEL or Ldn descriptor in land use planning.

- San Bernardino County Code, Volume 2, section 87.1305. This code establishes noise performance standards for noise from any source as it affects adjacent properties (Noise: Table 4). This section only applies to Community Plan Land Use districts. The County Department of Environmental Health Services uses this section as "de facto" noise standards and typically requires conformance with them as a condition of approval whether or not the noise-sensitive receptors are located in a Community Plan Land Use district (Williams, 1987).

State

- California Occupational Safety and Health Administration (Cal/OSHA) Occupational Noise Exposure Regulations; Title 8, California Administrative Code (CAC), sections 5095-5100, (Article 105), General Industrial Safety Orders. These regulations apply to workers on site. They establish an enforceable limit of 90 dB for an 8-hour period and reduce the allowable exposure time in half for each 5 dB increase in the A-weighted noise level above 90 dB (Noise: Table 5).

Federal

- Occupational Safety and Health Act (OSHA) of 1970, Title 29, Code of Federal Regulations, Part 1910. These regulations establish worker noise exposure standards which are basically the same as the Cal/OSHA regulations (Noise: Table 5).

PUBLIC HEALTH

Federal

- The 1977 Amendments to the Clean Air Act, 42 USC section 7412, 40 CFR part 61, National Emission Standards for Hazardous Air Pollutants (NESHAPS). Under the terms of these amendments, the EPA is required to assess the potential risks to the public from exposure to certain noncriteria pollutants and establish acceptable exposure levels as well as regulations for their control. To this end, the EPA has published health assessment documents for many pollutants such as arsenic, nickel, chromium, beryllium, manganese, cadmium, benzene, toluene, polycyclic aromatic hydrocarbons, chloroform, and dioxins and furans. To date, however, the EPA has not adopted regulations or standards for many of the potentially harmful pollutants that may be associated with this proposed project. These include arsenic, beryllium, cadmium, chromium, manganese, nickel, PAHs, and several other noncriteria pollutants.

State

- The Warren-Alquist Act, Public Resources Code section 25523(a). This act requires the California Energy Commission to ensure, through its licensing process, that thermal power plants are constructed and operated to protect environmental quality and assure public health and safety.

- California Health and Safety Code sections 39650 through 39674. This law mandates the California Air Resources Board and the California Department of Health Services (DHS) to establish safe exposure limits for toxic air pollutants and identify pertinent Best Available Control Technologies (BACT). It also requires that the New Source Review (NSR) Rule for each air pollution district include regulations that require new or modified procedures for controlling the emission of toxic air contaminants. Once each district has established measures to control toxic air contaminants, these measures are incorporated into the district's rules and become legally enforceable. At this time the health effects of benzene, ethylene dibromide, ethylene dichloride, asbestos, dioxins, furans, chromium, and cadmium have been fully reviewed and characterized by the CARB and DHS. Only benzene, ethylene dibromide, ethylene dichloride, and hexavalent chromium have been listed by CARB as toxic air contaminants.

- California Health and Safety Code section 41700. This law requires that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property".

County

- San Bernardino County Air Pollution Control District Rule 212: Standards for Approving. This rule states that in granting a permit to construct

and operate any facility, an emission source shall not be in violation of Sections 41700 of the State Health and Safety Code.

Hazardous Wastes

- Health and Safety Code sections 25100 to 25245. These sections mandate the Department of Health Services to establish regulations necessary to ensure that the generators of hazardous wastes employ proper technology and waste management practices for the handling, treatment, recycling or destruction of their hazardous wastes prior to disposal. These sections also establish the strict liability of the generator for injuries caused by exposure to any of the hazardous wastes that he may produce.

SAFETY

Federal

- OSHA Regulations - The provisions of OSHA as stipulated and identified in Title 29, Part 1910, "Occupational Safety and Health Standards".
- Environmental Protection Agency Spill Prevention Control and Countermeasure Regulation, 40 CFR, Parts 112, 300 and 302.
- DOT, Transportation, 49 CFR, Parts 171, 172, 173, 177, and 178.
- 49 CFR, sections 173.245, 173.302, 178.36, 178.37, 178.118a.
- 29 CFR, section 1910.111, "Storage and Handling of Anhydrous Ammonia".

State

- Title 8, CAC, section 450 et seq. [Chapter 4, Division of Industrial Safety (Industrial Safety Orders) and applicable subsections.]
- Title 22, CAC, Division 4 Chapter 30 - Minimum Standards for the Management of Hazardous and Extremely Hazardous Wastes.
- Title 8, CAC, Part 1, Chapter 4, Subchapter 7 - General Safety Orders for Protection of Workers From Hazardous Substances.
- Title 24, CAC, Parts 2 through 6 (State Building Code, Electrical Code, Mechanical Code, Plumbing Code and Special Building Regulations).
- Business and Professions Code, Section 6700 et seq.
- Regulations of the following State agencies:
  - Department of Transportation
  - Department of Labor and Industry Regulations
  - Bureau of Fire Protection
  - Department of Public Health
  - Water and Power Resources
- California Occupational Safety and Health Act 1973 (California OSHA), Labor Code Section 6300 et seq.
- Title 13 sections 1160 et seq., 1161 et seq., 1202.1.
- California Health & Safety Code sections 25160, 25161, 25163, 25168.
- California Vehicle Code sections 2530, 2531, 2532, 34500 et seq.

Local and Local Adopted Codes

- National Fire Safety Codes.

- National Electric Code.
- Uniform Building Code.
- Uniform Plumbing Code.
- Uniform Mechanical Code.
- San Bernardino County Ordinance No. 2815.
- San Bernardino County Subdivision Standards (Div. 8 of San Bernardino County Development Code, Sections 881120 through 881125).
- San Bernardino County Subdivision Ordinance No. 3030.
- San Bernardino Uniform Fire Code Ordinance No. 3054 and 3055.

Industry Codes and Standards

- American Society of Mechanical Engineers (ASME) Boilers and Pressure Vessel Code.
  - Section I, Boiler Codes
  - Section II, Material Specifications
  - Section VIII, Pressure Vessels
  - Section IX, Welding and Brazing Qualifications
- ASME TDP-1 - 1980 Recommended Practices for the Prevention of Water Drainage to Steam Turbines Used for Electrical Power Generation.
- American National Standards Institute (ANSI).
  - ANSI B31.1, Power Piping Code
  - ANSI Standards for Materials
  - ANSI Safety Codes for Elevators, Dumbwaiters, Escalators and Moving Walks
- American Petroleum Institute (API) Standard 650, Welded Steel Tanks for Oil Storage.
- Structural Engineers Association of California "Recommended Lateral Force Requirements", 1980 Recommendation and Commentary.
- Applied Technology Council, "Tentative Provision for the Development of Seismic Regulations for Buildings", (ATC-3-06), Amended December, 1982.
- Standards of Tubular Exchanger Manufacturers Association (TEMA).
- Heat Exchanger Institute.
- Hydraulic Institute Standards.

- o Heating, Ventilating and Air Conditioning Guide by American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).
- o American Institute of Steel Construction (AISC) Specifications.
- o Standards of the American Society for Testing Materials (ASTM).
- o National Fire Protection Association Standards (NFPA).
- o National Fire Protection Association Standards 850-1, Recommended Practice for Fire Protection for Fossil Fueled Steam Electric Generating Plants, dated December 30, 1985 and issued in 1986.
- o Institute of Electrical and Electronic Engineers (IEEE).
- o National Electrical Manufacturers Association (NEMA).
- o Insulated Power Cable Engineer Association (IPCEA).
- o American Society of Nondestructive Testing (SNT-TC-1A).
- o Underwriters Laboratories (UL).
- o International Conference of Building Officials, International Association of Plumbing and Mechanical Officials, "Uniform Mechanical Code" (UMC).
- o American Institute of Steel Construction (AISC).
  - "Specifications for Structural Joints Using ASTM A325 or A490 Bolts".
- o American Welding Society (AWS) "Structural Welding Code" (AWS D1.1).
- o American Concrete Institute (ACI).
  - "Code Requirements for Nuclear-Safety-Related Structures", Appendix B, (Steel Embedments only) (ACI 349).
- o American Water Works Association (AWWA).
  - "Standards for Welding Steel Tanks", (AWWA D100, with Appendix D).
- o National Electrical Code (NEC).
- o American National Standards Institute (ANSI), per latest Catalog of Publication listings.

-ANSI K61.1-1981, Safety Requirements for the Storage and Handling of Anhydrous Ammonia
-ANSI-UL 193-1980, Safety Standards for Alarm Valves for Fire-Protection Service
-ANSI-NFPA 72E-1984, Automatic Fire Detectors

-ANSI-UL 1481-1979, Power Supplies for Fire Protection Signaling Systems

- NFPA 10-1984, Portable Fire Extinguisher.
- NFPA 11, Low Expansion Foam and Combined Agent Systems.
- NFPA 12, Carbon Dioxide Extinguishing Systems.
- NFPA 12A-1980, Halon Fire Extinguishing Systems.
- NFPA 13, Sprinkler Systems.
- NFPA 14-1983, Standpipe and Hose Systems.
- NFPA 15, Water Spray Fixed.
- NFPA 17, Dry Chemical Extinguishing Systems.
- NFPA 20-1983, Centrifugal Fire Pumps.
- NFPA 22, Water Tanks for Private Fire Protection.
- NFPA 24-1984, Private Fire Service Mains and Their Appurtenances.
- NFPA 26, Supervision of Valves.
- NFPA 30-1984, Flammable and Combustion Liquids Code.
- NFPA 37-1984, Stationary Combustion Engines and Gas Turbines.
- NFPA 50A, Gaseous Hydrogen System at Consumer Sites.
- NFPA 54-1984, National Fuel Gas Code.
- NFPA 70-1984, National Electrical Code.
- NFPA 72E-1984, Automatic Fire Detector.
- NFPA 214-1983, Water Cooling Towers.
- NFPA 496-1982, Purged and Pressurized Enclosures for Electrical Equipment in Hazardous (Classified) Locations.
- NFPA 21, Fire Flow Testing and Marking of Hydrants.
- NFPA 1961, Standards for Fire Hoses.
- NFPA 1962, Standards for Fire Hose Case Use.
- NFPA 1963, Standards for Fire Hose Connections.
- NFPA/NEC Class I, Division II, Group D, Hazardous Area Designation.

- API 614, Lubrication of Shaft Sealing and Control Oil Systems for Special Purpose Applications.

- API 615, Sound Control of Mechanical Equipment for Refinery Services.

- API RP-520, Design and Installation of Pressure Relieving Systems in Refineries (in 2 parts).

- API RP-521, Guide for Pressure Relieving and Depressuring Systems

SOIL CONSERVATION

- Warren-Alquist Act, Public Resources Code sections 25003, 25216.3 and 25523.2. Includes requirements for environmental protection as part of the planning process for future electrical generating and transmission facilities. Provides for specific standards to be met in designing or operating facilities and ensures that all facilities are operated in accordance with the standards. Specifies that the facility be designed, sited, and operated in order to protect environmental quality.

- California Environmental Quality Act, Public Resources Code section 21000(e), (f), and (g).

  (e) Every citizen has a responsibility to contribute to the preservation and enhancement of the environment.

  (f) The interrelationship of policies and practices in the management of natural resources and waste disposal requires systematic and concerted efforts by public and private interests to enhance environmental quality and to control environmental pollution.

  (g) It is the intent of the Legislature that all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the quality of the environment, shall regulate such activities so that major consideration is given to preventing environ- mental damage, while providing a decent home and a satisfying living environment for every Californian.

- Title 20, California Administrative Code sections 1742(b), 1744, 1748.5. Section 1742(b) requires that upon filing of an application (i.e., AFC) pursuant to section 1709, the CEC staff and all concerned environmental agencies shall review the application and assess whether the report's list of environmental impacts is complete and accurate, whether the mitigation plan is complete and effective, and whether additional or more effective mitigation measures are reasonably necessary, feasible, and available. Section 1744 addresses an applicant's compliance with all pertinent laws, ordinances, regulations, and standards (LORS) and the responsibility of CEC and other state agencies to assure compliance with the appropriate LORS. Section 1748.5 delineates CEC staff responsibility to assess environmental effects of a proposed project and to formalize its findings in a staff report.

- Porter Cologne Water Quality Control Act, California Water Code sections 13260-13284. "Waste Discharge Requirements for Nonsewerable Waste Disposal to Land" describes waste discharge requirements that could be invoked to protect soils from accelerated erosion. Requires adequate protection of water quality by appropriate design, sizing, and construction of erosion and sediment control devices.

- Uniform Building Code, 1982 Edition, Chapter 70. Sets minimum technical and administrative requirements for foundations, excavations, grading, and

erosion control. This code is used by the County of San Bernardino during project inspections and plan reviews.

- Inyo County Standard specifications. Includes standards for grading and compaction in county road rights-of-way.

STRUCTURAL ENGINEERING

Federal

- Title 29, Code of Federal Regulations, Part 1910, Occupational Safety and Health Standards.

- Walsh-Healy Public Contracts Act (P.L. 50-204.10).

State

- Business and Professions Code section 6704, et seq.; section 6730 and 6736. Requires state registration to practice as a Civil Engineer or Structural Engineer in California.

- Vehicle Code section 35780, et seq. Requires a permit from Caltrans to transport heavy loads on state roads.

- Labor Code section 6500, et seq. Requires a permit for construction of trenches or excavations five feet or deeper where personnel have to descend. This also applies to construction or demolition of any building, structure, false work, or scaffolding which is more than three stories high or equivalent.

- Streets and Highways Code section 708. Requires authorization from Caltrans if a new transmission line crosses a state highway.

- Title 24, California Administration Code (CAC) section 2-111, et seq.; sections 3-100, et seq.; section 4-106 et seq.; section 5-102, et seq.; section 6-T8-769, et seq.; section 6-T8-3233, et seq.; section 6-T8-3270, et seq.; section 6-T8-5138, et seq.; section 6-T8-5465, et seq.; section 6-T8-5531, et seq.; and section 6-T8-5545, et seq. Adopts current edition of Uniform Building Code (UBC) as minimum legal building standards.

- Title 8, CAC, section 1500, et seq.; section 2300, et seq.; and section 3200, et seq. Describes general construction safety orders, industrial safety orders, and work safety requirements and procedures.

- Regulations of the following state agencies as applicable:

    1. Department of Labor and Industry Regulations.

    2. Bureau of Fire Protection.

    3. Department of Public Health.

    4. Water and Power Resources.

- California Public Utilities Commission, General Order No. 95 - applies to transmission line construction.

- Title 8, CAC section 450, et seq. and section 750, et seq. Adapts

American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME B & PVC) and other requirements for unfired and fired boilers.

County

- San Bernardino County Ordinance NO. 2815.

Industry Codes and Standards

- International Conference of Building Officials, "Uniform Building Code" (UBC), 1985 Edition with Supplement.
- Structural Engineers Association of California "Recommended Lateral Force Requirements," 1980 Recommendation and Commentary.
- Applied Technology Council, "Tentative Provision for the Development of Seismic Regulations for Buildings," (ATC-3-06), Amended December, 1982.
- American Institute of Steel Construction (AISC)
  - "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" - AISC, 1978
  - "Code of Standard Practice for Steel Buildings and Bridges" - AISC-76
  - "Specifications for Structural Joints Using ASTM A325 or A490 Bolts" - AISC - 76
  - Manual of Steel Construction, 8th Edition, AISC-80.
- American Iron and Steel Institute (AISI) "Specification for the Design of Cold Formed Steel Structural Members," Parts 1 and 2, 1968.
- American Welding Society (AWS) "Structural Welding Code" (AWS D1.1-80).
- American Concrete Institute (ACI).
  - "Building Code Requirements for Reinforced Concrete" (ACI 318-83)
  - "Building Code Requirement for Structural Plain Concrete' (ACI 318.1-83)
  - "Code Requirements for Nuclear Safety Related Structures," Appendix B, (Steel Embedments only) (ACI 349), 1980
  - "Concrete-Masonry Structures - Design and Construction," ACI 531
  - "Specification for the Design and Construction of Reinforced Concrete Chimneys," ACI 307-69 (Existing Chimney)
- American Institute of Timber Construction (AITC), "Timber Construction Manual," 2nd Edition.

- National Forest Products Association, "National Design Specification for Wood Construction."

- American Society for Testing and Materials (ASTM). The following codes and standards shall be included as a minimum:

  - ASTM A36-81A -Specification for Structural Steel
    ASTM A53-83 -Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless
  - ASTM A276-83 -Specification for Stainless and Heat Resisting Seel Bars and Shapes
  - ASTM A500-82 -Specification for Cold-formed Welded and Seamless Carbon Steel Structural Tubing
  - ASTM A695-82 -Specification for Coating of Zinc Mechanically Deposited on Iron and Steel
  - ASTM A307-83 -Specification for Steel Bars, Carbon, Cold Finished, Standard Quality
  - ASTM A123-78 -Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated for Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strip
  - ASTM A153-82 -Specification for Zone Coating (Hot-Dip) on Iron and Steel Hardware
  - ASTM A82-79 -Cold-drawn Steel Wire for Concrete Reinforcement;
  - ASTM A185-79 -Welded Steel Wire Fabric for Concrete Reinforcement; and
  - ASTM A615-82 -Deformed and Plain Billet-Steel Bars for Concrete Reinforcement with Supplement S1.

- American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code:

  - Section I - Power Boilers - July 1986
  - Section VIII - Pressure Vessels - July 1986
  - Section IX - Welding Qualifications - July 1986

- International Conference of Building Officials, International Association of Plumbing and Mechanical Officials, "Uniform Mechanical Code" (UMC).

- Masonry Institute of America, "Reinforced Masonry Engineering Handbook."

- American Water Works Association (AWWA)

  - "Standards for Welding Steel Tanks," (AWWA D100, with Appendix D), 1979

  - "Standard for Prestressed Concrete Pressure pipe, Steel Cylinder Type for Water and Other Liquids - (AWWA C301)

  - "Standard for Reinforced Concrete Water Pipe - Noncylinder Type, Not Prestressed" - (AWWA C302).

- Standards of Tubular Exchanger Manufacturers Association (TEMA)

- Heat Exchanger Institute
- American Petroleum Institute (API) Standard 650, Welded Steel Tanks for Oil Storage, 1980.
- Hydraulic Institute Standards.
- Heating, Ventilating, and Air Conditioning Guide by American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE).
- Uniform Plumbing Code (UPC).
- National Fire Protection Association Standards (NFPA), 1983.
- Steel Structures Painting Council Standards (SSPC).
- American National Standards Institute, ANSI B31.1, Power Piping, 1980 with 1985 Addenda.
- American National Standards Institute, ANSI B16.25, Butt-Welding Ends, 1972.
- Instrument Society of American (ISA).
- Asphalt Institute Handbook.
- Asphalt Institute, Pacific Coast Division.
- American Society of Nondestructive Testing (SNT-TC-1A).

Concrete

- American Concrete Institute (ACI). In addition to the Applicant's proposed codes and standards, the following industry standards used for the construction of concrete work should also be included as a minimum to obtain a satisfactory concrete product. They supplement the Uniform Building Code and ACI 318.
  - ACI 212.2R -Guide for use of admixtures in concrete.
  - ACI 302.IR-80 -Guide for concrete floor and slab construction.
  - ACI 350R-77 - Concrete sanitary engineering structures.

Structural and Miscellaneous Steel

- American Society for Testing and Material (ASTM).
  - ASTM A569 -Specifications for Steel Carbon (0.15 maximum percent) Hot-Rolled Sheet and Strip, Commercial Quality.

Timber

- Cooling Tower Institute (CTI)
  - CTI - Standard 114
  - CTI - Standard 103

Hoisting Equipment

- Cranes - CMAA #70

TRAFFIC

State

- Streets and Highways Code sections 117, 660-711 require an encroachment permit from the State Department of Transportation for facilities that require construction, maintenance or repairs on or across state highways. (This could include water lines or transmission lines constructed across state highways.)

- California Vehicle Code section 35780; Streets and Highways Code, 660-711; Title 21 CAC sections 1411.1-1411.6 state that overload approvals from the State Department of Transportation are required for transportation of excessive loads over state highways.

San Bernardino County

- California Vehicle Code, section 35000 et seq. states that a Moving Permit from the San Bernadino County Department of Transportation is required if vehicles exceed legal limits of length, width, height or weight.

- San Bernardino County Code section 51.016 states that an Excavation Permit from the San Bernardino County Department of Transportation is required for any excavation within the county road right-of-way limits, including power poles or water lines.

  (San Bernardino County information obtained from Mr. D. Wells, Permit Engineer, Department of Transportation, telephone interview on 9/25/86.)

Inyo County

- County of Inyo, Title 12, Roads and Parks, Articles 08.010 through 08.080 specify that an Application for Encroachment Permit is required for haul of over-legal loads, encroachment of highways, placement of underground utilities and excavation within road rights-of-way or county parks.

  (Inyo County information obtained from M. Clair, Civil Engineer Assistant, Public Works of Inyo County, telephone interview on 10/06/86.)

Kern County

- California Vehicle Code section 35780; Streets and Highways Code, 660-711, require that a Transportation Permit from Kern County Public Works, Roads Department be acquired for transportation of vehicles that exceed legal limits of length, width, height or weight.

TRANSMISSION LINE ENGINEERING

The California Public Utilities Commission's (CPUC) General Order 95 is the applicable transmission line engineering standard for the construction and operation of overhead transmission lines.

TRANSMISSION LINE SAFETY AND NUISANCE

State

o Aviation Safety

Federal

o Aviation Safety

- Advisory Circular (AC) No. 70/7460-1G. "Obstruction Marking and Lighting." Describes the Federal Aviation Administration's (FAA) standards for marking and lighting of obstructions as identified by Federal Aviation Regulations (FAR) Part 77.

- Title 14 Code of Federal Regulations (CFR) Part 77. "Objects Affecting Navigable Airspace." Establishes standards for determining obstructions in navigable airspace, sets forth the requirements for notice to the administrator of certain proposed construction or alteration and provides for aeronautical studies of obstructions to air navigation, to determine their effect on the safe and efficient use of airspace.

- Title 14 CFR, Part 91. "Air Traffic and General Operating and Flight Rules." Prescribes aircraft speed restrictions, minimum safe altitudes, and basic visual flight rules (VFR) governing the operation of aircraft, including helicopters, within the United States.

- Title 49 United States Code Annotated (USCA) section 1348, Subdivision (a). Authorizes and directs the Secretary of Transportation to develop plans for and formulate policy with respect to the use of navigable airspace; assign by rule, regulations or order the use of navigable airspace under such terms, conditions and limitations as deemed necessary to ensure the safety of aircraft and efficient utilization of such airspace.

o Communications Interference

- Title 47 CFR, section 15.25. "Operating Requirements, Incidental Radiation." Prohibits operations of any device emitting incidental radiation that causes harmful interference to communications. The regulation also requires mitigation for any device which causes interference.

State

o Aviation Safety

- Public Utilities Code, sections 21656 - 21660. Discusses the permit requirement for construction of possible obstructions in the vicinity of aircraft landing areas, to navigable airspace, and near the boundary of airports.

- General Order 95 (GO 95) California Public Utilities Commission (CPUC). "Rules For Overhead Electric Line Construction." Formulates uniform requirements for overhead line construction, the application of which will ensure adequate service and secure safety to persons engaged in the construction, maintenance, operation or use of overhead electric lines and to the public in general.

o Communications Interference

- GO-52 CPUC governs the "Construction and Operation of Power and Communications Lines." Applies to the prevention or mitigation of inductive interference.

o Design and Construction

- GO-95 CPUC, "Rules for Overhead Electric Line Construction." Covers clearances, grounding, maintenance and inspection.

- Title 8 California Administrative Code (CAC) section 2700 et seq. "High Voltage Electrical Safety Orders." Establishes essential requirements and minimum standards for installation, operation and maintenance of electrical installation and equipment to provide practical safety and freedom from danger.

o Fire Hazard

- Title 14 CAC sections 1250-1258. "Fire Prevention Standards for Electric Utilities." Provides specific exemptions from electric pole and tower firebreak and electric conductor clearance standards and specifies when and where standards apply.

- Public Resources Code (PRC) sections 4292-4296. "Mountainous, Forest-, Brush-, and Grass-Covered Lands." Provides fire prevention measures for buildings or structures in, upon or adjoining any mountainous area or forest-, brush-, or grass-covered lands or any land covered with flammable material.

o Hazardous Shock

- Title 8 CAC section 2940. Covers construction, safety, operation and maintenance of electrical installations and equipment.

<u>County</u>

o Noise

- San Bernardino Development Code Performance Standards Section 87.1305, Noise Standards

<u>Industry Code or Standard</u>

- o Fire Hazard

  - Division II, Uniform Fire Code (UFC), section 11-201. Defines measures to prevent the accumulation of waste materials.

- o Nuisance Shock

  - National Electric Safety Code (NESC), ANSI C2, section 9, Article 92, Paragraph E; Article 93, Paragraph C, No. 6. Covers basic provisions for safeguarding of persons from hazards arising from the installation, operation and maintenance of (1) conductors and equipment in electric supply stations, and (2) overhead and underground, electric supply and communication lines.

VISUAL RESOURCES

Federal

43 USC 1737 et seq., concerning operations and rights-of-way on federal land. Parts of the project cross federal land under the jurisdiction of the Bureau of Land Management's (BLM) Ridgecrest Resource Area.

WASTE MANAGEMENT

Federal

- Clean Water Act, 33 USC section 1251 et seq. Under this act, any point source waste discharges into waters of the United States require a National Pollution Discharge Elimination System (NPDES) permit. In California the Regional Water Quality Control Boards administer the federal NPDES program. The proposed project will be under the jurisdiction of the Lahontan Regional Water Quality Control Board (LRWQCB).

- Resource Conservation and Recovery Act (RCRA) of 1976, 40 CFR section 260. This federal legislation was reauthorized and strengthened by the Hazardous and Solid Waste Amendments of November 1984. The law defines the types of solid and liquid materials that are considered hazardous and nonhazardous and establishes specific criteria for handling, storing, transporting, treating, and disposing of those wastes. RCRA also specifies the minimum reporting and monitoring requirements for hazardous waste generators.

  The U.S. Environmental Protection Agency (EPA) has the authority to enforce the provisions of RCRA nationally. This authority to administer a RCRA program can be delegated to a state (40 CFR section 271). The California Department of Health Services (DHS) was the lead agency and had interim authority for the program under RCRA until January 31, 1986. Administering RCRA is currently the joint responsibility of the EPA and DHS.

- Safe Drinking Water Act (SDWA) 1974, 42 USC section 300h. Underground Injection Control (UIC) Program of 1974, 40 CFR section 146 et seq. This act requires the Environmental Protection Agency (EPA) to establish a program that provides for the safety of the country's drinking water. One part of the Act, Underground Injection Control, was established to prevent contamination of underground sources of drinking water due to improper design, construction and operation of injection wells. In California, the EPA administers the UIC program.

State

- The Porter Cologne Water Quality Control Act 1967, Water Code, section 13020 et seq. Under this Act, the Regional Water Quality Control Boards (RWQCB) are required to adopt waste discharge requirements to protect the waters of the state for the use and enjoyment of the people of California.

  The owner or operator of any facility which discharges waste that may affect the quality of water of the state (including groundwater) must obtain waste discharge requirements from the RWQCB. If a facility discharges wastes to navigable surface waters of the United States, the owner or operator must obtain a National Pollutant Discharge Elimination System (NPDES) permit rather than obtain waste discharge requirements

from the RWQCB. The NPDES program is administered by the appropriate RWQCB.

The proposed ACE project will require waste discharge requirements from the Lahontan Regional Water Quality Control Board. Since KMCC is not proposing to discharge any wastewater directly to a navigable surface water body, an NPDES permit will not be required.

- Title 22, California Administrative Code (CAC) section 66001 et seq. sets state minimum standards for the management of hazardous and extremely hazardous wastes. According to KMCC (KMCC, 1986) wastes that will be classified as hazardous, under Title 22 of CAC, will be generated during the construction and operation of the proposed project. Therefore, KMCC needs to obtain an identification number from the EPA as a generator of hazardous wastes. Kerr McGee Chemical Corporation could apply for the number directly to EPA or through the California Department of Health Services (DHS). However, since KMCC already possesses an EPA identification number for the existing Argus facility, the same number can be used for the management of hazardous wastes from the proposed ACE project. As a generator of hazardous wastes, KMCC must comply with the generator requirements as stated in Title 22. However, since KMCC does not intend to store hazardous wastes for more than 90 days on site (KMCC, 1986a, data response No. 25), they will not need to obtain a Hazardous Waste Storage Facility permit from DHS.

- Title 23, California Administrative Code (CAC) section 640 et seq. establishes criteria for the classification of wastes and waste disposal units and also establishes waste management requirements for waste treatment, storage, or disposal in landfills, surface impoundments (ponds), waste piles, and land treatment facilities.

Local

- The San Bernardino County Department of Environmental Health Services serves as the local enforcement agency for the operation of municipal solid waste disposal facilities under Title 14, CAC section 18051. The County's Department of Environmental Health Services has responsibility for permitting, inspecting and enforcing regulations related to municipal solid waste disposal facilities. Permitting of these disposal facilities must be done with concurrence from the California Waste Management Board.

- San Bernardino County Code, Chapter 5. This code specifies requirements for establishing and permitting septic systems within San Bernardino County.

WATER RESOURCES

Water Supply

- California Water Code section 461 articulates the Department of Water Resources Water Use Policy "...that the primary interest of the people of the state in the conservation of all available water resources requires the maximum reuse of waste water in the satisfaction of requirements for beneficial uses of water".

- California Water Code section 100, prohibits the waste or unreasonable use, method of use, or method of diversion of water.

- California Administrative Code, Title 23, sections 4999 through 5008, requires the filing of water extractions in excess of 25 AFY from San Bernardino County groundwater basins.

- State Water Resources Control Board (SWRCB) Resolution 75-58, Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling states that the loss of inland waters through evaporation in power plant cooling facilities may be considered an unreasonable use of inland waters when general shortages occur.

- San Bernardino County Codes, Division 6, Chapters 1, 2, and 3 require a Purveyor's Permit from the San Bernardino County Department of Health Services.

Water Quality

- Federal

  - The Clean Water Act, 33 USC section 1251 et seq. states that any point source waste that discharges into waters of the United States requires a National Pollution Discharge Elimination System (NPDES) permit. In California the Regional Water Quality Control Boards administer the federal NPDES program. The proposed project will be under the jurisdiction of the Lahontan Regional Water Quality Board (LRWQCB).

  - 42 USC section 300h, Regulations for State Programs, provide that regulations be promulgated for state underground injection control programs. Further regulations for this Program can be found in 40 CFR section 146 et seq. The Underground Injection Control (UIC) Program was established to prevent contamination of underground sources of drinking water due to improper design, construction and operation of injection wells. For KMCC operations at Trona, the EPA administers the UIC Program for injection of process water into the brine aquifer (EPA, 1986).

- State

  - The Porter-Cologne Water Quality Control Act 1967, Water Code section 13020 et seq. provide that the Regional Water Quality Control Boards

(RWQCB) are required to adopt waste discharge requirements to protect the waters of the state for the use and enjoyment of the people of California.

The owner or operator of any facility which discharges waste that may affect the quality of water of the state (including groundwater) must obtain waste discharge requirements from the RWQCB. If a facility discharges wastes to navigable surface waters or waters of the United States, the owner or operator must obtain a National Pollutant Discharge Elimination System (NPDES) permit rather than obtain waste discharge requirements from the RWQCB. The NPDES program is administered by the appropriate RWQCB.

The ACE project will be required to adhere to waste discharge requirements from the Lahontan Regional Water Quality Control Board. Since KMCC is not proposing to discharge any wastewater directly to a navigable surface water body, an NPDES permit will not be required.

- Title 22, California Administrative Code (CAC) section 64401 et seq. establishes standards for domestic water quality and monitoring.

- Title 23, California Administrative Code section 2510 et seq. sets forth regulations pertaining to water quality aspects of waste discharge to land.

o Local

- San Bernardino County Code, Chapter 5 specifies requirements for establishing and permitting septic systems within San Bernardino County.

APPENDIX B

ELECTRICAL ENGINEERING
APPLICABLE CODES AND REGULATIONS

APPENDIX B

ELECTRIC ENGINEERING
APPLICABLE CODES AND REGULATIONS
(Testimony of Daniel N. Folan)

List of Tables

APPENDIX B

ELECTRICAL ENGINEERING: TABLE B-1

Equipment with Applicable Codes

EQUIPMENT	CODE/STANDARD	REFERENCE
Generator Units and Accessories	National Electric Code	NFPA 70
	Safety Standard for Panelboards	ANSI C33.8
	Switchgear Assemblies	ANSI C37.20
	Guide for Surge Withstand Capability (SWC) Tests	ANSI C37.90A
	Requirements for Electrical Analog Indicating Equipment	ANSI C39.1
	Direct-Acting Electrical Recording Instruments	ANSI C39.2
	Lightweight Shock-Testing Mechanism Electrical Measuring and Controlling Instrumentation	ANSI C39.5
	Automatic Digital Voltmeters and Ratio Meters	ANSI C39.6
	Requirements for Cylindrical Rotor Synchronous Generators	ANSI C50.1
	Test Procedure for Single-Phase Induction Motors and Generators	ANSI C50.21
	Test Procedure for Polyphase Induction Motors and Generators	IEEE 112A
	Grounding of Industrial and Commercial Power Systems	IEEE 142
	Rubber Insulated Wire and Cable	ICEA SI-19
	Motors and Generators	NEMA MG-1
Electrical and Mechanical Controls	National Electric Code	NFPA 70
	Industrial Control and Systems: General Standards	NEMA ICS-1
	Industrial Control Devices Controllers and Assemblies	NEMA ICS-2
	Enclosures for Industrial Controls and Systems	NEMA ICS-6
	Requirements for Electrical Control for AC High Voltage Circuit Breakers	ANSI C37-11
	Rated Control Voltage and Ranges for High Voltage Switches	ANSI C37-33

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Battery and Battery Chargers	Determination of Ampere hour and Watt-hour Capacity of Lead-Acid Industrial Storage Batteries for Stationary Service	NEMA IB 4
	Gray Finishes for Industrial Apparatus and Equipment	ANSI Z55.1
	Recommended Practice for Maintenance, Testing and Replacement of Large Lead Storage Batteries	IEEE 450
	Recommended Practice for Installation Design and Installation of Large Lead Storage Batteries for Generating Stations and Substations	IEEE 484
	Practices and Requirements for Semi-conductor Power Rectifier	ANSI C34.2
	Safety Standard for Rubber-Insulated Wires and Cables	ANSI/UL 44
	Molded Case Circuit Breakers	NEMA AB 1
	Constant-Potential-Type Electric Utility (Semiconductor Static Converter) Battery Charger	NEMA PV 5
Cable; Low Voltage Control and Power; High Voltage Power	Specification for Soft or Annealed Copper Wire	ASTM B3
	Concentric Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft	ASTM B8
	Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes	ASTM B189
	Concentric-Lay-Stranded Aluminum Conductors	ASTM B231
	Specification for Aluminum-Alloy 1350 Redraw Rod for Electrical Purposes	ASTM B233
	Aluminum Wire, EC-H16 or H26, for Electrical Purposes	ASTM B262
	Heat-Shrinkable Tubing Testing	ASTM D267
	Test for Rubber Deterioration in an Air Oven	ASTM D573
	Test for Flash and Fire Points by Cleveland Open Cup	ASTM D92
	Rubber-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy	ICEA S-19-81 NEMA WC-3
	Rubber-Insulated Wires and Cables	UL 44
	Flexible Cord and Fixture Wire	UL 62
	Thermoplastic-Insulated Wires	UL 83

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Cable; Low Voltage Control and Power; High Voltage Power (Continued)	Ethylene-Propylene-Rubber-Insulated Cable for the Transmission and of Electrical Energy	ICEA S-68-516
	Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy	NEMA WC-8 ICEA S-61-402
	Protective Coverings for Wire and Cable Reels	NEMA WC-25
	Standard Test Method for Measuring the Smoke Generated by Solid Materials	NFPA 258
	Guide for Preparation of Test Procedures for the Thermal Evaluation of Temperature Index and Establishment of Solid Electrical Insulation Materials	IEEE 98
	Standard for Statistical Analysis of Thermal Life Test	IEEE 101
	Ethylene Propylene Rubber Insulated Shielded Power Cables, Rated 5 through 69 kV	AEIC CS6
	Nonreturnable Reels	NEMA WC-21
	Drum Diameters of Reels for Wire and Cables	NEMA WC-6
Cable Trays	Steel Sheet, Carbon, Cold-Rolled, Commercial Quality	ANSI/ ASTM A366
	Zinc Coating (Hot-Dip) on Assembled Steel Products	ANSI ASTM A386
	Zinc-Coated (Galvanized). General Requirements for Steel Zinc-Coated (Galvanized) by the Hot-Dip Process	ANSI/ ASTM A525
	Steel Sheet Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality	ANSI/ ASTM A526
	Steel, Carbon (0.15 Maximum Percent), Hot-Rolled Sheet and Strip, Commercial Quality	ASTM A569
	Zinc Coating (Hot-Dip) on Iron & Steel Hardware	ASTM A-153
	Electrodeposited Coating of Zinc on Steel	ASTM A-164
	Recommended Practice for Providing High Quality Zinc Coating (Hot Dip)	ASTM A-385
	Cable and Tray Systems	NEMA VE-1

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Cathodic Protection Equipment	Unified Inch Screw Threads	ANSI B1.1
	Pipe Threads	ANSI B2.1
	Gray Finishes for Industrial Apparatus and Equipment	ANSI Z55.1
	Corrosion-Resistant High Silicon Cast Iron	ASTM A518
	Cast and Wrought Galvanic Zinc Anodes for Use in Saline Electrolytes	ASTM B418
	Molded Case Circuit Breakers	NEMA AB-1
	Industrial Controls and Systems	NEMA ICS
	Semiconductor Rectifiers, Cathodic Protection Units	NEMA MR-20
	Dry Type Transformers for General Applications	NEMA ST-20
	Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy	NEMA WC-5, ICEA S-61-402
	Cross-Linked-Thermosetting, Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy	NEMA WC-7 ICEA SS-66-524
High Voltage Circuit Breakers	National Electrical Safety Code	ANSI C2
	Rating Structure for AC High-Voltage Circuit Breakers, including Supplements C37.04a, C37.04b, and C37.04c	ANSI C37.04
	Methods for Determining the Values for a Sinusoidal Current Wave and a Normal-Frequency Recovery Voltage for AC High-Voltage Circuit Breakers	ANSI C37.05
	Schedules for Preferred Ratings and Related Required Capabilities for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	ANSI C37.06
	Interrupting Capability Factors for Reclosing Service for AC High-Voltage Circuit Breakers including Supplement C37.07a	ANSI C37.07
	Requirements for Line Closing Switching Surge Voltage Control for High-Voltage Circuit Breakers	ANSI C37.071

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
High Voltage Circuit Breakers (Continued)	Rated on a Symmetrical Current Basis (362 kV and above, Rated Maximum Voltage), including Supplement C37.071a	
	Requirements for Transient Recovery Voltage for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	ANSI C37.072
	Application Guide for Transient Recovery Voltage for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	ANSI C37.0721
	Schedules for Preferred Transient Recovery Voltage Ratings and Related Required Capabilities for AC High-Voltage Circuit Basis, including Supplement C37.0722a	ANSI C37.0722
	Requirements for Capacitance Current Switching For AC High-Voltage circuit Breakers Rated on a Symmetrical Current Basis	ANSI C37.07
	Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis, including Supplement C37.0731a	ANSI C37.0731
	Schedule of Preferred Ratings for Capacitance Current Switching for AC High-Voltage Circuit Breaker Rated on a Symmetrical Current Basis	ANSI C37.0732
	Requirements for Switching-Impulse Voltage Insulation Strength for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (362 kV and above)	ANSI C37.074
	Requirements for Pressurized Components of AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	ANSI C37.076
	Requirements for External Insulation for Outdoor AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	ANSI C37.078

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
High Voltage Circuit Breakers (Continued)	Schedule of Dielectric Test Values for Outdoor AC High-Voltage Circuits Breaker External Insulation Rated on a Symmetrical Current Basis	ANSI C37.0781
	Tests for AC High-Voltage Circuit Breakers Rated on a Symmetrical Basis When Rated for Out-of-Phase Switching	ANSI C37.079
	Test Procedure for AC High-Voltage Circuit Breakers, including Supplement C37.09a	ANSI C37.09
	Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis, including Supplement C37.010a	ANSI C37.10
	Requirements for Electrical Control AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis and a Total Current Basis	ANSI C37.11
	Guide Specifications for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis and a Total Current Basis	ANSI C37.12
	Requirements for Instrument Transformers	ANSI C37.13
	Relays and Relay Systems Associated with Electrical Power Apparatus, including Supplement C37.90a	IEEE 313 ANSI C37.90
Conduit	Intermediate Metal Conduit	UL 1242
	Rigid Steel Conduit	UL 6, ANSI C80.1
	Electric Metallic Tubing	UL 797 ANSI C80.3
	PVC and ABS Plastic Utilities Duct for Underground Installation	NEMA TC-6
	Fittings for ABS and PVC Plastic Utilities Duct for Underground Installation	NEMA TC-9
	Rigid Aluminum Conduit	UL 6, ANSI C80.3
	Fittings	UL 514, ANSI C80.4

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Conduit (Continued)	Hazardous Area Fittings	UL 886
	Flexible Steel Conduit	UL 1
	Flexible Liquid Tight Conduit	UL 360
	Electrical Rigid Nonmetallic Conduit	UL 651
	Fittings for Electrical Rigid Nonmetallic Conduit	NEMA TC2, UL 514
Disconnect Switches	Definitions and Requirements for High-Voltage Air Switches, Insulators, and Bus Supports	ANSI/IEEE C37.30
	Schedules of Preferred Ratings, Manufacturing Specifications, and Application Guide for High Voltage Air Switches, Bus Supports, and Switch Accessories	ANSI C37.32
	Rated Control Voltages and Their Ranges for High-Voltage Air Switches	ANSI C37.33
	Test Code for High-Voltage Air Switches	ANSI/IEEE C37.34
	Guide for the Application, Installation, Operation, and Maintenance of High-Voltage Air Disconnecting and Load Interrupter Switches	ANSI C37.5
	Loading Guide for AC High-Voltage Air Switches	ANSI/IEEE C37.37
Distribution Panels	Low Voltage Cartridge Fuses, 600V or Less	ANSI C97.1
	Gray Finishes for Industrial Apparatus and Equipment	ANSI Z55.1
	Molded Case Circuit Breakers	NEMA AB1
	Panelboards	NEMA PB1
	Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy	NEMA WC-3 ICEA S-19-81
	Electrical Cabinets and Boxes	UL 50
	Panelboards	UL 67
	Industrial Controls and Systems	NEMA ICS
	Enclosed Switches	NEMA KSI

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Grounding Materials	Specifications for Concentric-Lay Stranded Copper Conductors	ASTM B8
	Electrical Power Connectors for Substations	NEMA CC-1
	Connectors for Use between Aluminum or Aluminum-Copper Overhead Conductors	NEMA CC-3
Lighting Fixtures	Outdoor Floodlighting Equipment	NEMA FA1
	Fluorescent Luminaries	NEMA LE1
	Standard for Safety, Electric Lighting Fixtures	UL 57
	Standard for Safety, Emergency Lighting Equipment	UL 924
Lighting Arrestors	Surge Arrestors for AC Power Circuits	ANSI/IEEE C62.1
	Gray Finishes for Industrial Apparatus and Equipment	ANSI Z55.1
Heat Tracing	National Electric Code	ANSI C1, (NFPA 70)
	National Electric Safety Code	ANSI C2
	Safety Standard for Panelboards(UL67)	ANSI C33.38
	Requirements for Electrical Analog Indicating Instruments	ANSI C39.1
	Guide for Loading Dry-Type Distribution and Power Transformers	ANSI C57.96
	Dry-Type Transformers for General Application	ANSI C89.2
	Gray Finishes for Industrial Apparatus and Equipment (No. 61 Light Gray and No. 24 Dark Gray)	ANSI Z55.1
	Specification for Zinc Coatings on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strips	ASTM A123
	Cross-Linked-Thermosetting-Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electric Energy	ICEA S-66-524
	Ethylene-Propylene Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy	ICEA S-68-516

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Heat Tracing (Continued)	Recommended Practice for Testing, Design, Installation and Maintenance of Electric Resistance Heat Tracing for Industrial Applications.	IEEE 515
	Transformers, Regulators and Reactors	NEMA TR-1
	Enclosures for Control and Systems	NEMA IC-1
	Panelboards	PB 1
	Rubber-Insulated Wires and Cables	UL 44
	Electric Panelboards	UL 67
	Thermoplastic-Insulated Wires	UL 83
	Dead-Front Electrical Switchboards	UL 891
Load Centers (Unit Substations)	Low-Voltage AC Power Circuit Breaker Used in Enclosures	ANSI C37.13
	Preferred Ratings, Related Requirements and Application Recommendations for Low-Voltage Power Circuit Breakers and AC Power Circuit Protectors	ANSI C37.16
	Test Procedures for Low-Voltage AC Power Circuit Breakers Used in Enclosures	ANSI C37.50
	Conformance Testing of Metal-Enclosed Low-Voltage AC Power Circuit Breakers Switchgear Assemblies	ANSI C37.51
	Trip-Devices for AC and General Purposes DC Low-Voltage Power Circuit Breakers	ANSI C37.17
	Switchgear Assemblies Including Metal-Enclosed Bus	ANSI C37.20
	Guide for Evaluating the Effect of Solar Radiation on Outdoor Metal-Clad Switchgear	ANSI C37.24
	Relays and Relay Systems Associated with Electric Power Apparatus Including Supplement 37.90a	ANSI C37.90
	General Requirements for Liquid-Immersed Distribution Power and Regulating Transformers	ANSI C57.12.00
	General Requirements for Distribution, Power and Regulating Transformers (Thermal and Short Circuit Requirements)	ANSI C57.12.00 a & b
	General Requirements for Dry-Type Distribution and Power Transformers	ANSI C57.12.01

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Load Centers (Unit Substations) (Continued)	Requirements for Transformers, 138,000 Volts and Below, 501 through 10,000/13,333/16,667 kVA, Single-Phase, 501 through 30,000/40,000/50,000 kVA, Three Phase	ANSI C57.12.10
	Test Code for Distribution, Power, and Regulating Transformers	ANSI C57.12.90
	Distribution and Power Transformer Short Circuit Test Code	ANSI C57.12.90a
	Test Code for Dry-Type Distribution Power Transformers	ANSI C57.12.91
	Requirements for Instrument Transformers	ANSI C57.13
	Requirements, Terminology, and Test Code for Current-Limiting Reactors	ANSI C57.16
	Guide for Loading Dry-Type and Oil-Immersed Current-Limiting Reactors	ANSI C57.99
	Surge Arresters for Alternating-Current Power Circuits	ANSI C62.1
	American National Standard Techniques For Dielectric Tests (IEEE Std 4)	ANSI C68.1
	Gray Finishes for Industrial Apparatus and Equipment	ANSI Z55.1
	Requirements, Terminology, and Test Procedures for Neutral Grounding Devices	IEEE 32
	Guide for Surge Withstand Capability (SWC) Tests	IEEE 472
	General Requirements for Dry-Type Distribution and Power Transformers	ANSI/IEEE C57.12
	Test Code for Liquid Immersed Distribution, Power and Regulating Transformers	ANSI/IEEE C57.12.91
	Requirements for Instrument Transformers	ANSI C57.13
	Gray Finishes for Industrial Apparatus and Equipment	ANSI Z55.1
	Electrical Power Connectors for Sub-stations	NEMA CC-1
	Transformers, Regulators, and Reactors	NEMA TR-1
	General Standards for Industrial Control and Systems	NEMA ICS-1
	Primary Unit Substations	NEMA 201-1970
	Rubber-Insulated Wires and Cables	UL 44

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Load Centers (Unit Substations) (Continued)	Tests for Flammability of Plastic Materials for Parts in Devices and Appliances	UL 94
	National Electric Code	NFPA 70
Metal Clad Switchgear	Minimum Design Load in Buildings and Other Structures	ANSI A58.1
	Ratings Structure for AC High-Voltage Circuit Breakers on a Symmetrical Current Basis	ANSI C37.04
	Preferred Ratings and Related Required Capabilities for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	ANSI C37.06
	Switchgear Assemblies Including Metal-Enclosed Bus	ANSI C37.20
	Requirement for Instrument Transformers	ANSI C57.13
Transformers	General Requirements for Dry-Type Distribution and Power Transformers	ANSI U1
	Dry Type Transformers for General Application	NEMA ST20
	Standard for Safety, Specialty Transformers	UL 506
	General Requirements for Liquid-Immersed Distribution, Power and Regulating Transformers	ANSI/IEEE C57.12.00
	Transformers, Regulators, and Reactors	NEMA TR-1
	Requirements, Transformers 230 kV and below 833/958 kVA through 8333/10417 kVA, Single-Phase; and 750/862 kVA through 60/80/100 MVA Three-Phase	ANSI C57. 12.10 ANSI C57. 12.10A
	Requirements for Load Tap-Changing Transformers 230 kV and Below, 3750/4867 kVA through 60/80/100 MVA, Three-Phase	ANSI C57. 12.30
	General Requirements and Test Procedures for Outdoor Apparatus Bushings	ANSI/IEEE Std 21
	Standard Electrical Dimensional and Related Requirements for Outdoor Apparatus Bushings	ANSI/IEEE Std 24
	Requirements for Instrument Transformers	ANSI/IEEE C57.13

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Transformers (Continued)	Specifications for Mineral Insulating Oil Used in Electrical Apparatus	ANSI/ASTM D3487
	Gray Finishes for Industrial Apparatus and Equipment	ANSI Z55.1
	Test Code for Liquid-Immersed Distribution, Power and Regulating Transformers and Guide for Short-Circuit Testing of Distribution and Power Transformers	ANSI/IEEE C57.12.90
	Trial-Use-Standard Dielectric Test Requirements for Power Transformers for Operation at System Voltages from 115 kV through 230 kV	ANSI/IEEE C57.12.14
	Guide for Loading Mineral Oil-Immersed Power Transformers up to 100 MVA with 55C or 65C Winding Rise	ANSI/IEEE C57.92
Non Segregated Bus	Minimum Design Load in Buildings and and Other Structures	ANSI A58.1
	Test Methods for Electrical Power Insulator Adopted for Wet-Process Porcelain Insulators	ANSI C29.9
	Switchgear Assembles Including Metal-Enclosed Bus	ANSI C37.20
	Requirement for Instrument Transformers	ANSI C57.13
	Guide for Evaluating the Effects of Solar Radiation on Outdoor Metal-Clad Switchgear (General Information regarding the effects of solar radiation on outdoor equipment)	ANSI C37.24
	Electrical and Mechanical Characteristics of Indoor Apparatus Insulators	ANSI C37.31
	Requirements and Test Code for Outdoor Apparatus Bushings	ANSI C76.1
	IEEE Standard Electrical, Dimensional and Related Requirements of Outdoor Apparatus Bushings	ANSI C76.2
	Gray Finishes for industrial Apparatus and Equipment	ANSI Z55.1

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Non Segregated Bus (Continued)	Specification for Zinc Coatings on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strip	ASTM A123
	Specification for Copper Bus Bar, Rod and Shapes	ASTM B187
	Specification for Seamless Copper Bus Pipe and Tube	ASTM B188
	Specification for Aluminum Bar for Electrical Purposes (Bus Bar)	ASTM B236
	Specification for Aluminum-Alloy Extruded Bar, Rod, Pipe and Structural Shapes for Electrical Purposes (Bus Conductors)	ASTM B317
Motor Control Centers	Dry Type Transformers for NEMA General Purpose Applications	NEMA ST-20
	Gray Finishes for Industrial Apparatus and Equipment	ANSI Z55.1
	Molded Case Circuit Breakers	NEMA AB-1
	Panelboards	NEMA PB-1
	General Standards for Industrial Controls and Systems	NEMA ICS-1
	Industrial Control Devices, Controllers, and Assemblies	NEMA ICS-2
	Rubber-Insulated Wires and Cables	UL 44
	Electric Panel Boards	UL 67
	Tests for Flammability of Plastic Materials for Parts in Devices and Appliances	UL 94
	Molded Case Circuit Breakers and Circuit Breaker Enclosures	UL 489
	Industrial Control Equipment	UL 508
	Motor Control Centers	UL 845
	National Electric Code	NFPA 70
Electrical Motors	Motors and Generators	NEMA MG1
	Load Ratings and Fatigue for Roller Bearings	AFBMA 9 ANSI B3.15
	Load Ratings and Fatigue for Ball Bearings	AFBMA 11 ANSI B3.16
	Frame Assignment for Alternating Current Integral Horsepower Induction Motors	NEMA MG13

ELECTRICAL ENGINEERING: TABLE B-1
(Continued)

EQUIPMENT	CODE/STANDARD	REFERENCE
Electrical Motors (Continued)	Polyphase Induction Motors for Electric Power Generating Stations	ANSI/IEEE C50.41
	Test Procedure for Polyphase Induction Motors Generators	IEEE 112
	Motors and Generators	NEMA MG1
	Safety Standard for Construction and Guide for Selection Installation and Use of Electrical Motors and Generators	NEMA MG2
	Temperature Measuring Thermocouples	ANSI MC96.1
Grounding Resistors	Requirements and Test Codes for Outdoor Apparatus Bushings	ANSI C76.1
	Gray Finishes for Industrial Apparatus	ANSI Z55.1
	Requirements, Terminology, and Test Procedures for Neutral Grounding Devices	IEEE 32
	Electric Power Connectors	NEMA CC1
Relay Panels	Switchgear Assemblies Including Metal-Enclosed Bus	ANSI C37.20
	Relays and Relay Systems Associated with Electric Power Apparatus	ANSI C37.90
	Requirements for Electrical Analog Indicating Instruments	ANSI C39.1
	Safety Standard for Fuseholders	ANSI C33.10
	Safety Standard for Cabinets and Boxes	ANSI C33.65
	Definition, Specification and Analysis of Automatic, and Supervisory Station Control and Data Acquisition	ANSI C37.1
	Electrical Power System Device Function Numbers	ANSI C37.2
	Gray Finishes for Industrial Apparatus and Equipment (No. 61 Light Gray)	ANSI Z55.1
	Cross-linked-thermosetting-polyethylene-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy	ICEA S-66-524
	Guide for Surge Withstand Capability	IEEE 472

ELECTRICAL ENGINEERING TABLE B-2

Definition of Acronyms

ACRONYM	ORGANIZATION
AEIC	Association of Edison Illuminating Companies
AFBMA	Anti Friction Bearing Manufacturing Association
ANSI	American National Standards Institute
ASTM	American Society for Testing and Material
ICEA	Insulated Cable Engineering Association
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
UL	Underwriters Laboratory

ELECTRICAL ENGINEERING: TABLE B-3

Applicable Articles of the National Electric Code (NEC)

Item	Article
Listed or Labeled Equipment	110-3
Installation Integrity	110-7
Wiring Methods	110-8,112,300
Interrupting Ratings	110-9
Selective Coordination	110-10
Workmanship	110-12
Electrical Connections	110-14
Equipment Working Clearances	110-16
Guarding of Live Parts (600 Volts or less)	110-17-22
Guarding of Live Parts (over 600 Volts)	110-30-34
Branch Circuit Wiring	210, 430
Feeders-Calculations	220
Service	230
Overcurrent Protection	240
Grounding	250 (incl)
Surge Arrestors 280 (incl)	
Conductors for General Wiring	310 (incl)
Cable Trays	318
Open Wiring on Insulators	320
Messenger Supported Wiring	321
Integrated Gas Spacer Cable	325
Medium Voltage Cable	326
Flat Conductor Cable Type FCC	328
Mineral Insulated Metal-Sheathed Cable	330
Armored Cable	333
Metal Clad Cable 334	
Shielded Nonmetallic Sheathed Cable	337
Service Entrance Cable	338
Underground Feeder and Branch-Circuit Cable	339
Power and Control Tray Cable	340
Nonmetallic Extensions	342
Underplaster Extensions	344
Intermediate Metal Conduit	345
Rigid Metal Conduit	346
Rigid Nonmetallic Conduit	347
Electrical Metallic Conduit	348
Flexible Metallic Tubing	349
Flexible Metal Conduit	350
Liquidtight Flexible Conduit	351
Surface Raceways 352	
Multioutlet Assembly	353
Underfloor Raceways	354
Cellular Metal Floor Raceways	356
Cellular Concrete Floor Raceways	358
Wireways	362

ELECTRICAL ENGINEERING: TABLE B-3

(Continued)

Item	Article
Busways	364
Cable Bus	365
Electrical Floor Assemblies	366
Outlet, Device, Pull and Junction Boxes, Conduit Bodies and Fittings	370
Cabinets and Cutout Boxes	373
Auxiliary Gutters	374
Switches	380
Switch Boards and Panel Boards	384
General Purpose Electrical Equipment	400,402,410
Motors, Motor Circuits, Controllers	422,424,426, 430, 240
Emergency Generators	445
Transformers and Transformer Vaults	450
Capacitors	460
Storage Batteries	480
Hazardous (Classified) Locations	500-503,510 514-516,518 548
Office Furnishings	605
Cranes and Hoist 610	
Elevators	620
Data Processing Systems	645
Emergency Systems	700
Standby Lighting Systems	701
Low Voltage Equipment	720

ELECTRICAL ENGINEERING: TABLE B-4

Applicable Building Regulations

Regulation	Reference
California Administrative Code (CAC) State Building Standards, Basic Building Regulations, Lighting	Title 24, Part 2, Chapter 2-53, Division 9
CAC, State Building Standards, Special Electrical Systems	Title 24, Part 2, Chapter 2-61
CAC, State Building Standards, State Electric Code	Title 24, Part 3
San Bernardino County Ordinance, Adopting the 1981 NEC	Ordinance 2815