

October 21, 2005

Dr. James Reede, Project Manager  
California Energy Commission  
1516 9th Street, MS 2000  
Sacramento, CA 95814

**Re: Pastoria Energy Facility 160 MW Expansion Project (05-AFC-1) Applicant's  
Response to the Preliminary Staff Assessment**

Dear Dr. Reede:

On September 20, 2005, the Energy Commission Staff published its Preliminary Staff Assessment (PSA) for the Pastoria Energy Facility 160 MW Expansion Project (PEF Expansion [PEFE]). As presented during the October 4, 2005 PSA Workshop, the Applicant has carefully reviewed the Staff's recommendations and proposed Conditions of Certification (COC's) and is generally pleased with the status of the processing of 05-AFC-1 to date, as well as the productive dialog that occurred during the PSA Workshop.

As discussed during the Workshop, the Applicant had numerous concerns with the PSA COC's. However, after productive discussions with CEC Technical Staff, the Applicant is generally in agreement with the proposed COC's, except as noted below. While the Applicant believes that there was general agreement on the COC language, we have provided our requested COC modifications in Attachments A and B to this letter. Additionally, this letter also presents some general and specific comments regarding the text of the PSA, addresses each of the issue areas where we raised comments during the PSA Workshop, and notes the extent to which we believe we have reached general consensus with CEC staff on the COC language.

**GENERAL COMMENTS**

During the PSA Workshop, a significant portion of the discussion was related to whether construction of the PEFE would occur within soils that had not been excavated during construction of the existing PEF. The Applicant understands that this information is important for determining the extent of potential impacts to cultural and paleontological resources. Therefore, information on soil excavation for the existing PEF is being submitted to address questions raised during the PSA Workshop. While final confirmation of grading



Dr. James Reede  
California Energy Commission  
October 21, 2005  
Page 2 of 7

depths will only occur as part of final design engineering, we are providing the following information regarding grading depths in the area of the PEFE.

In order to understand the as-built conditions, two drawings are attached to this letter in Attachment C. The first drawing (Pastoria Energy Facility Overall Site Plan, Utility Engineering Dwg D010173-LSIL101) shows the PEFE layout with pre-existing contours. The pre-existing contours were approximately 1060 feet along the northern fence line and approximately 1080 feet along the southern fence line. The finish grade elevation is approximately 1069 feet, so some areas of the PEFE site required filling, while other areas required cutting. The drawing also has a sketch showing the combustion turbine foundation depths, roughly two feet below the finish grade. The minimum level of disturbance to create the existing top of gravel is about 18 inches (or to a level of 1067.50 feet). The second drawing (Kvaerner Plant Construction Excavation Plan 00-V-014R2, Kvaerner Dwg 00-V-014) shows the construction excavation plan. This drawing shows the extent and depth of excavation during the PEFE construction. This drawing shows that the corridor for the existing circulating water piping from the west cooling tower was excavated approximately 18 feet to a rough grade elevation of 1052 ft in the area of the PEFE. This corridor crosses between the PEFE combustion turbine foundation and its exhaust stack foundation. So, based on these drawings, it is anticipated that a portion of the PEFE excavations would likely extend into previously undisturbed soils.

#### **SPECIFIC COMMENTS ON THE TEXT OF THE PSA**

The following specific comments are the same as the comments raised during the PSA Workshop (with the exception of the addition of the response to the question on construction water quantities raised at the PSA Workshop).

1. Project Description: Page 3-2 first paragraph, please clarify that the PEFE will use the existing facilities at the PEF and that none of the facilities listed are new with the exception of the 2-acre development within the 31-acre existing power plant site and utilization of 12-acres of the existing 25-acre construction laydown area.
2. Project Description: Page 3-3 Water Supply, please clarify that the existing PEF holds two water contracts. The primary water supply contract is with the Wheeler Ridge-Maricopa Water Storage District. The back-up water supply contract is with the Kern Water Bank Authority.
3. Cultural Resources: Page 4.3-22, please correct the references as follows:



Dr. James Reece  
California Energy Commission  
October 21, 2005  
Page 3 of 7

PEF (Pastoria Energy Facility/Thompson Hatoff) 2000d. Confidential Document Cultural Resources Test Plan. Submitted to the California Energy Commission March 29, 2000

PEF (Pastoria Energy Facility/Thompson Hatoff) 2000x. Confidential Final Results: Cultural Resources Testing. Submitted to the California Energy Commission May 31, 2000

4. Soil and Water Resources: Page 4.9-3 please correct the reference to the Pastoria Energy Facility, Limited Liability Corporation (PEF, LLC) to Calpine Corporation.
5. Soil and Water Resources: Page 4.9-17 under the section titled Conclusions, here are the responses to staff's questions

**CEC Staff Question:** Specify the source of water to be used during construction of the project.

**Calpine Response:** Most of the water used during construction is for dust suppression. This water will be supplied either by the construction contractors (from off-site) or by the existing PEF's raw water supply. Potable water used during construction by the construction workers will be provided by the construction contractors (from off-site).

**CEC Staff Question:** Provide an estimate of the anticipated increase in the potable water demand during the construction phase of the project.

**Calpine Response:** The demand for potable water during construction is conservatively estimated to be up to 150 gallons per day. Note that the potable water used during construction will be provided by the construction contractors (from off-site).

The following question was raised during the PSA Workshop.

**CEC Staff Question:** Regarding construction water demand, the daily allotment and yearly allotment do not add up. The stated amounts are 7,650 gallons/day and 1.5 million gallons/year. This translates to roughly 196 days when the 7,650 gallons/day limit is used. Please clarify these numbers.

**Calpine Response:** The daily and yearly allotments are correct. While the overall construction period is roughly 12 months, we do not expect to use the maximum daily allotment for 365 days. The water usage will vary over the construction period from an emphasis on dust suppression in the early stages to hydrotesting of piping in the later stages of construction. The estimated daily and yearly allotments are sufficiently conservative to meet our demand over the entire construction period.



Dr. James Reede  
California Energy Commission  
October 21, 2005  
Page 4 of 7

6. Traffic and Transportation: Page 4.10-13 second to last sentence top of page, general construction and operation deliveries are expected to occur during 7:00 AM to 5:00 PM, however, there are infrequent deliveries that may occur outside of these hours.

## **AIR QUALITY**

The Applicant proposed modifications to the AQ COCs, as presented in Attachment B, are related to fugitive dust control and review and approval procedures to comply with COCs. After productive discussions with CEC Technical Staff, we believe that we are in agreement with CEC staff regarding our requested changes. The only issue that remains unresolved at this time, is related to the CEC and EPA comments on the SJVUAPCD PDOC regarding the method to calculate inter-pollutant trades for air emission offsets. The Applicant has no objection to the SJVUAPCD method for determining the ratios for inter-pollutant trades, while the CEC and EPA disagree with different aspects of the calculation. This issue is discussed in further detail in Attachment B.

## **BIOLOGICAL RESOURCES**

During the PSA Workshop, the Applicant requested modifications to proposed Biological Resources COCs that would have required reliance upon the Designated Biologist and compliance plans for the existing PEF. However, following the productive discussion with CEC Technical staff at the PSA Workshop, the Applicant is now requesting modifications that we believe are consistent with the resolutions reached during the PSA Workshop. These modifications are included in Attachment A.

## **CULTURAL RESOURCES**

During the PSA Workshop, the Applicant requested modifications to proposed Cultural Resources COCs that would have required reliance upon the Cultural Resource Specialist and compliance plans for the existing PEF. However, following the productive discussion with CEC Technical staff at the PSA Workshop, CEC Technical Staff forwarded revised COCs for review by the Applicant. The revised COCs presented in Attachment A, with minor edits, reflects the CEC revised COCs.

## **HAZARDOUS MATERIALS**

During the PSA Workshop and subsequent discussion with CEC Staff, the Applicant requested modifications to COCs HAZ-5 and HAZ-7. After further review of the existing emergency water spray system in the area of the ammonia tanks, the Applicant is no longer requesting modification to HAZ-5. The Applicant continues to request modifications to



Dr. James Reece  
California Energy Commission  
October 21, 2005  
Page 5 of 7

HAZ-7 as noted in Attachment A. The Applicant is also willing to accept the provision of HAZ-7 requiring background checks for employees and routine on-site contractors as long as the COC language is clarified to that this requirement will apply to those on-site contractors who visit the site more than two times a month within a six-month period. In addition to the explanation for changing HAZ-7 in Attachment A, the Applicant has collected the following information regarding the feasibility of this measure.

First, based upon the information presented in the article included in Attachment D titled, "Sensor Fence: A New Approach to Large-Perimeter Security" the Applicant believes that the potential costs of \$165 feet for approximately 3000 feet of existing fencing is economically infeasible.

Second, Harry Scarborough, PEF Plant Manager, spoke with Commander Keith Nelson, Kern County Sheriff Department Homeland Security Division, about the CEC proposed requirement for some type of breach system for the perimeter fencing. Mr. Nelson adamantly said that he would not recommend this type of system because of the high volume of expected "false" alarms (he stipulated that after approximately eleven false alarms, the department would probably not respond). He also said that he expected that the system would receive numerous "false" alarms due to the abundance of wildlife in the area. Further, he said that this type of system is usually installed in areas of high "human" traffic, and that the location of the existing PEF, in a very remote and isolated area, would not warrant such measures.

Third, Barbara McBride, Calpine's Safety, Health, and Environment Manager, spoke with Mark Kehoe from GWF, who said that GWF has motion detectors on the fence lines of all of their facilities. The main reason that GWF added the motion detectors was because they have several unmanned peaker sites. They also expanded the motion detector systems to their baseload operations because they have had specific problems with intruders at particular locations. All of these plants are small facilities in close proximity to populations. PEF is a remote facility and has had no incidents involving intruders or other operating experiences that would warrant the installation of this device.

## **NOISE AND VIBRATION**

During the PSA Workshop, the Applicant requested modifications to COC's NOISE-4 to revert the proposed PSA COC to be consistent with the requirements of NOISE-6 from the existing PEF. At the Workshop, CEC Staff accepted this modification.



Dr. James Reede  
California Energy Commission  
October 21, 2005  
Page 6 of 7

## **SOIL AND WATER RESOURCES**

During the PSA Workshop, there was discussion related to ensuring that the CEC Staff have a better understanding of the existing back-up water supply agreement for the PEF, that would also supply the PEF. The Applicant forwarded a copy of the back-up water supply agreement to the CEC on October 19, 2005. The Applicant continues to request modification to SOIL & WATER-4 to be consistent with the requirements of SOIL & WATER-5 from the existing PEF with modifications to confirm that the same reporting for the existing PEF would be submitted for the PEF. Following the discussion at the PSA Workshop, the Applicant is no longer requesting that SOIL & WATER-6 from the existing PEF be used. Instead, the Applicant has added language to proposed SOIL & WATER-5 to confirm the method for achieving compliance for this COC.

## **WORKER SAFETY**

During the PSA Workshop, the Applicant requested a minor modification to WORKER SAFETY-2 to clarify that the existing PEF Project Operations and Maintenance and Safety and Health Program could be used to comply with this COC and the CEC Staff accepted this modification. After further review of WORKER SAFETY-3 and WORKER SAFETY-4, the Applicant is now requesting that the CEC Staff replace these COCs with a new WORKER SAFETY-3 COC as shown in Attachment A that reflects the language adopted on the Inland Empire Energy Center.

## **PALEONTOLOGICAL RESOURCES**

During the PSA Workshop, the Applicant requested modifications to proposed Biological Resources COCs that would have required reliance upon the Paleontological Resources Specialist and compliance plans for the existing PEF. However, following the productive discussion with CEC Technical staff at the PSA Workshop, the Applicant is now requesting modifications that we believe are consistent with the resolutions reached during the PSA Workshop. These modifications are included in Attachment A.

## **ENERGY EFFICIENCY**

Following initial discussions raised during the September 9, 2005 Information Hearing and Site Visit, the Applicant is proposing the addition of a new COC ENERGY RESOURCES-1.



Dr. James Reede  
California Energy Commission  
October 21, 2005  
Page 7 of 7

### **GENERAL CONDITIONS OF CERTIFICATION**

During the PSA Workshop, the Applicant requested modifications to COC COMPLIANCE-1 to clarify that reference to construction milestones for project linears should be deleted and the CEC Staff accepted this modification.

### **CLOSING**

On behalf of Calpine Corporation and the Calpine PFFF Team, I would like to thank you for the opportunity to present these comments. Please feel free to contact me at (805) 964-6010 or Andrew Whittome from Calpine at (925) 479-6789 should you have any questions or concerns.

Sincerely,

**URS Corporation**

Jennifer Scholl  
AFC Project Manager

Attachments

cc: All parties of record

# **ATTACHMENT A**

## **CEC PRELIMINARY STAFF ASSESSMENT CALPINE PROPOSED CHANGES TO DRAFT CONDITIONS OF CERTIFICATION**

### **PASTORIA ENERGY FACILITY 160 MW EXPANSION PROJECT (05-AFC-1)**

# ATTACHMENT A

## CEC PRELIMINARY STAFF ASSESSMENT CALPINE PROPOSED CHANGES TO DRAFT CONDITIONS OF CERTIFICATION

### PASTORIA ENERGY FACILITY 160 MW EXPANSION PROJECT (05-AFC-1)

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#### BIOLOGICAL RESOURCES

#### DESIGNATED BIOLOGIST SELECTION

**BIO-1** The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Compliance Project Manager (CPM) for approval.

The Designated Biologist must at least meet the following minimum qualifications:

1. Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field; and
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and
3. At least one year of field experience with biological resources found in or near the project area.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

**Verification:** The project owner shall submit the specified information at least 90 days prior to the start of any site (or related facilities) mobilization. No site or related facility activities shall commence until an approved Designated Biologist is available to be on site.

If a Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM at least ten working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and

approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

## DESIGNATED BIOLOGIST DUTIES

**BIO-2** The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist may be assisted by the approved Biological Monitor(s), but remains the contact for the project owner and CPM. The Designated Biologist will:

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources Conditions of Certification;
2. Consult on the preparation of a revision to the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) for the existing PEF, to be submitted by the project owner;
3. Be available to supervise, conduct and coordinate mitigation, monitoring, as needed,, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species or their habitat;
4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
5. Coordinate with the onsite Construction/Operation Manager to inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (i.e. parking lots) for animals in harms way;
6. Notify the project owner and the CPM of any non-compliance with any biological resources Condition of Certification;
7. Respond directly to inquiries of the CPM regarding biological resource issues;

8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Report; and
9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training and all permits.

**Verification:** The Designated Biologist shall submit in the Monthly Compliance Report to the CPM copies of all written reports and summaries that document biological resources activities. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless their duties are ceased as approved by the CPM.

#### **BIOLOGICAL MONITOR QUALIFICATIONS**

**BIO-3** The project owner's CPM approved Designated Biologist shall submit the resume, at least three references and contact information, of the proposed Biological Monitors to the CPM for approval. The resume shall demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks.

Biological Monitor(s) training by the Designated Biologist shall include familiarity with the Conditions of Certification and the ~~Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)~~, WEAP and all permits.

**Verification:** The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any site (or related facilities) mobilization. The Designated Biologist shall submit a written statement to the CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction the specified information shall be submitted to the CPM for approval ten days prior to their first day monitoring activities.

#### **DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY**

**BIO-4** The project owner's Construction/Operation Manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources Conditions of Certification.

If required by the Designated Biologist and Biological Monitor(s) the project owner's Construction/ Operation Manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist.

The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;
2. Inform the project owner and the Construction/Operation Manager when to resume activities; and
3. Notify the CPM if there is a halt of any activities, and advise the CPM of any corrective actions that have been taken, or will be instituted, as a result of the work stoppage.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

**Verification:** The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (and no later than the following morning of the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure will be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner will be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

#### **WORKER ENVIRONMENTAL AWARENESS PROGRAM**

**BIO-5** The project owner shall revise the develop and implement a CPM approved Worker Environmental Awareness Program (WEAP) for the existing PEF, as appropriate, in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or any related facilities during site mobilization, ground disturbance, grading, construction,

operation, and closure are informed about sensitive biological resources associated with the project.

The revised WEAP must:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media is made available to all participants;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas;
3. Present the reasons for protecting these resources;
4. Present the meaning of various temporary and permanent habitat protection measures;
5. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
6. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

A competent individual acceptable to the Designated Biologist can administer the specific program.

The WEAP training program previously approved for the PEF shall be presented for the PEFE. It may be presented in the form of a video or power point presentation in lieu of in-person training.

**Verification:** At least 60 days prior to the start of any site (or related facilities) mobilization, the project owner shall provide to the CPM two copies of the proposed revised WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program. The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. At least ten days prior to site and related facilities mobilization submit two copies of the CPM approved materials.

The signed training acknowledgement forms from construction shall be kept on file by the project owner for a period of at least six months after the start of commercial operation.

During project operation, signed statements for active project operational personnel shall be kept on file for six months following the termination of an individual's employment.

## **BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN (BRMIMP)**

**BIO-6** The project owner shall submit two copies of the proposed revised BRMIMP to the CPM (for review and approval) and to the USFWS (for review and comment) and shall implement the measures identified in the approved revised BRMIMP.

The revised BRMIMP shall be prepared in consultation with the Designated Biologist and shall identify:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources Conditions of Certification identified as necessary to avoid or mitigate impacts;
3. All biological resources mitigation, monitoring, and compliance measures required by staff and the USFWS;
4. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation and closure;
5. All required mitigation measures for each sensitive biological resource;
6. A detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
7. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
8. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
9. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;

10. All remedial measures to be implemented if performance standards are not met;
11. A preliminary discussion of biological resources related facility closure measures;
12. Restoration and revegetation plan for the laydown area; and
13. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval.

**Verification:** The project owner shall provide the specified document at least 60 days prior to start of any site (or related facilities) mobilization.

The CPM will determine the revised BRMIMP's acceptability within 45 days of receipt. Ten days prior to site and related facilities mobilization the revised BRMIMP shall be resubmitted to the CPM.

The project owner shall notify the CPM no less than five working days before implementing any modifications to the approved revised BRMIMP to obtain CPM approval. Any changes to the approved revised BRMIMP must also be approved by the CPM in consultation with the USFWS and appropriate agencies to ensure no conflicts exist.

Implementation of revised BRMIMP measures will be reported in the Monthly Compliance Reports by the Designated Biologist (i.e. survey results, construction activities that were monitored, species observed). Within thirty (30) days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction closure report identifying which items of the revised BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases, and which mitigation and monitoring items are still outstanding.

## **CLOSURE PLAN MEASURES**

**BIO-7** The project owner shall append, as necessary, to incorporate into the permanent or unexpected permanent closure plan required for the existing PEF and the revised BRMIMP, measures that address the local biological resources.

The planned permanent or unexpected permanent closure plan shall address the following biological resources related mitigation measures (typical measures are):

1. Removal of transmission conductors when they are no longer used and useful;
2. Removal of all power plant site facilities and related facilities;
3. Measures to restore wildlife habitat to promote the re-establishment of native plant and wildlife species; and
4. Revegetation of the plant site and other disturbed areas utilizing appropriate seed mixture.

**Verification:** Any revisions to the dDraft permanent or unexpected closure measures for the existing PEF shall be made part of the revised BRMIMP. At least 12 months prior to commencement of closure activities, the project owner shall address all biological resources related issues associated with facility closure, and provide final measures as part of the in a Biological Resources Element of Facility Closure Plan for the existing PEF. The Biological Resources Element shall be incorporated into the Facility Closure Plan and include a complete discussion of the local biological resources and proposed facility closure mitigation measures.

## CULTURAL RESOURCES

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**CUL-1** Prior to the start of construction-related vegetation clearance, or earth-disturbing activities or project site preparation; or the movement or parking of heavy equipment onto or over the project surface, the project owner shall provide the California Energy Commission (Energy Commission) Compliance Project Manager (CPM) with the name and statement of qualifications for its designated cultural resource specialist and alternate cultural resource specialist, if an alternate is proposed, who will be responsible for implementation of all cultural resources conditions of certification. No ground disturbance shall occur prior to CPM approval of the CRS, unless specifically authorized by the CPM.

The statement of qualifications for the designated cultural resource specialist and alternate shall include all information needed to demonstrate that the specialist meets at least the minimum qualifications specified by the National Park Service, Heritage Preservation Services. Alternatively, the archaeologist

shall be qualified by the Register of Professional Archaeologists (RPA). The minimum qualifications include the following:

- A. a graduate degree in archaeology, cultural resource management, or a comparable field;
- B. at least three years of archaeological resource evaluation, management, impact mitigation and field experience in California; and
- C. at least one year's experience in each of the following areas:
  1. leading archaeological resource field surveys;
  2. leading site and artifact mapping, recording, and recovery operations;
  3. marshaling and use of equipment necessary for cultural resource recovery and testing;
  4. preparing recovered materials for analysis and identification;
  5. determining the need for appropriate sampling and/or testing in the field and in the laboratory;
  6. directing the analyses of mapped and recovered artifacts of both Native American and historical origin;
  7. completing the identification and inventory of recovered cultural resource materials; and
  8. preparing appropriate reports to be filed with the receiving curation repository, the State Historic Preservation Officer (SHPO), and all appropriate regional information center(s) CHRIS.

The statement of qualifications for the designated cultural resource specialist shall include:

- A. a list of specific projects the specialist has previously directed;
- B. the role and responsibilities of the specialist for each project listed; and
- C. the names and phone numbers of contacts familiar with the specialist's work on these referenced projects.

If the designated specialist does not intend to personally supervise all surveys, studies, monitoring, or excavations, the principal shall designate the name and qualifications of a comparably qualified alternate cultural resource specialist. The specialist shall also provide the names and qualifications of any potential consultants such as historian or architectural historian who may participate.

**Verification:** At least 30 days prior to the start of construction-related vegetation clearance, or earth-disturbing activities or project site preparation, or the movement or parking of heavy equipment onto or over the project surface, the project owner shall submit the name and statement of qualifications of its designated cultural resource specialist and alternate cultural resource specialist, if an alternate is proposed, to the CPM for review and approval.

At least ten (10) days but no more than thirty (30) days prior to the start of any ground-disturbing action, the project owner shall confirm in writing to the CPM that the approved designated cultural resource specialist will be available at the start of earth-disturbing activities and is prepared to implement the cultural resources conditions of certification.

At least ten (10) days prior to the termination or release of a designated cultural resource specialist or field director, the project owner shall obtain CPM approval of the replacement professionals by submitting to the CPM the name and resume of the proposed new designated individuals.

**CUL-2** Prior to the start of any construction-related vegetation clearance, or earth-disturbing activities or project site preparation, or the movement or parking of heavy equipment onto or over the project surface, the project owner shall provide the designated cultural resources specialist and the CPM with maps and drawings showing the footprint of the areas disturbed by the PEFEE power plant and all linear facilities. Maps provided will include the USGS 7.5 minute topographic quadrangle map and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting individual artifacts. If the designated cultural resource specialist requests enlargements ~~strip maps for linear facility routes~~, the project owner shall provide them. In addition, the project owner shall provide a set of these maps to the CPM at the same time that they are provided to the specialist. If the footprint of the power plant ~~or linear facilities~~ changes, the project owner shall provide maps and drawings reflecting these changes, to the CRS cultural resources specialist and the CPM within five days. Maps shall show the location of all areas where surface disturbance may be

associated with construction of the PEFE project related access roads, and any other project components.

**Verification:** At least 25 days prior to the start of construction-related vegetation clearance, or earth-disturbing activities or project site preparation on the project, or the movement or parking of heavy equipment onto or over the project surface, the project owner shall provide the designated cultural resources specialist and the CPM with the maps and drawings. Copies of maps or drawings reflecting changes to the footprint of the power plant and/or linear facilities shall be submitted to the cultural resources specialist and the CPM within five days of the changes.

**CUL-3** Prior to the start of construction-related vegetation clearance or earth-disturbing activities, or project site preparation, or the movement or parking of heavy equipment onto or over the project surface, the designated ~~CRS~~cultural resources specialist shall prepare, and the project owner shall submit to the CPM for review and written approval, a Cultural Resources Monitoring and Mitigation Plan (CRMMP), identifying general and specific measures to minimize potential impacts to cultural resources within areas subject to project related earth disturbance. Approval of the CRMMP by the CPM shall occur prior to any vegetation clearance or other earth-disturbing activities of construction or site preparation. The Energy Commission approved PEF CRMMP shall be appended~~revised~~ to reflect cultural resources activities that will be necessary during the ground disturbance specific to the PEFE. Recommendations for programmatic treatment of designated resources may be included in an appendix~~the revision~~. The new CRMIMP revision shall be submitted as a separate document to be appended to the Energy Commission approved PEF CRMMP. No ground disturbance shall occur prior to CPM approval of the PEFE appendix to the PEF CRMIMP, unless specifically authorized by the CPM.

The ~~CRMIMP~~Cultural Resources Monitoring and Mitigation Plan shall include, but not be limited to, the following elements and measures for the PEFE project:

- A A proposed research design for both prehistoric and historical archaeology that includes a discussion of questions that may be answered by the mapping, data and artifact recovery conducted during monitoring and mitigation activities, and by the analysis of recovered data and materials. It shall provide details of the data needed to address the research issues and the methods proposed to obtain such data. The previously approved research design for the PEF shall be appended to the PEFE CRMIMP.

- ~~B~~ ~~A discussion of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the pre-construction, construction, and post-construction analysis phases of the project;~~
- GB. Identification of the person(s) expected to perform each of the tasks, a description of each team member's qualifications (please provide resumes) and responsibilities, the structure of the mitigation team, and the reporting relationships between project construction management and the monitoring and mitigation team. The cultural resources team shall include one member professionally qualified in historical or industrial archaeology;
- DC A discussion of the inclusion of Native American observers or monitors, the procedures to be used to select them, the areas where they will be needed, and their role and responsibilities;
- ED A discussion of measures such as flagging or fencing, to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during pre-construction, construction and/or operation, and identification of areas where these measures are to be implemented. The discussion shall address how these measures will be implemented prior to the start of earth-disturbing activities and how long they will be needed to protect the resources from project-related effects;
- ~~F~~ ~~A discussion of where monitoring of project activities is deemed necessary by the designated cultural resource specialist. Except in the following specified areas, the specialist will determine the size or extent of the areas where monitoring is to occur and will establish the percentage of the time that the monitor(s) will be present. Monitoring shall occur during earth-disturbing activities or site preparation in the vicinity of TR 3, TR 4, TR 5 and TR 6. Identification of the monitoring requirement(s) will include areas where other specialists, e.g., biologists, may be conducting their own mitigating programs.~~
- GE A discussion of the requirement that all cultural resources encountered will be recorded and mapped (may include photos) and all significant or diagnostic cultural resources as identified in the research design will be collected for analysis and eventual curation into a retrievable storage collection in a public repository or museum that meets the State of California Guidelines for the Curation of Archaeological Collections.
- HF A discussion of the availability and the designated specialist's access to equipment and supplies necessary for site mapping, photographing, and recovering any cultural resource materials encountered during earth-disturbing activities or construction; and
- IG Identification of the public institution that has agreed to receive any data and cultural resources recovered during project-related monitoring and mitigation work. Discussion of the requirements, specifications, or funding needed for the materials to be delivered for curation and how they will be met. Also include the name and phone number of the contact person at the institution.

**Verification:** At least ~~sixty (60)~~ 25 days prior to the start any construction-related vegetation clearance or earth-disturbing activities or project site preparation or the movement or parking of heavy equipment onto or over the project surface, the project owner shall provide the PEFE appendix to the approved PEF CRMIMP Cultural Resources Monitoring and Mitigation Plan, prepared by the designated CRS cultural resource specialist, to the CPM for review and approval.

~~At least 25 days prior to the start of ground disturbance, revisions to the Energy Commission approved CRMMP that reflect cultural resources activities planned for the PEFE shall be provided to the CPM for review and approval.~~

**CUL-4** Prior to the start of any construction-related vegetation clearance, or earth-disturbing activities or project site preparation or the movement or parking of heavy equipment onto or over the project surface, the designated cultural resources specialist shall prepare an employee training program. The project owner shall submit the cultural resources training program to the CPM for review and approval.

The training program shall discuss the potential to encounter cultural resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. The program shall include the set of resource reporting procedures and work curtailment procedures that workers are to follow if previously unknown cultural resources are encountered during project activities. The training program shall be presented by the designated cultural resource specialist or qualified individual(s) approved by the CPM, and may be combined with other training programs prepared for biological resources, paleontologic resources, hazardous materials, or any other areas of interest or concern. The training program previously approved for the PEF shall be presented for the PEFE. It may be presented in the form of a video.

**Verification:** At least 25 days prior to the start of construction-related vegetation clearance or earth-disturbing activities or project site preparation, or the movement or parking of heavy equipment onto or over the project surface, the project owner shall submit to the CPM for review and approval, the proposed employee training program, the set of reporting procedures, and the work curtailment procedures that the workers are to follow if previously unknown cultural resources are encountered during earth-disturbing activities or construction. The project owner shall provide the name and "resume" of the individual(s) performing the training.

**CUL-5** Prior to the start of construction-related vegetation clearance, or earth-disturbing activities or project site preparation or the movement or parking of heavy equipment onto or over the project surface and throughout the project construction period, ground disturbance as needed for all new employees, the project owner shall ensure that the designated cultural resource trainer(s) provide(s) the CPM-approved cultural resources training to all project managers, construction supervisors, and workers during ground disturbance. The project owner shall ensure that the designated trainer provides the workers with the CPM-approved set of procedures for reporting any sensitive resources that may be discovered during project-related ground disturbance and the work curtailment procedures that the workers are to follow if previously unknown cultural resources are encountered during earth-disturbing activities or construction.

**Verification:** Within seven (7) days of the start of construction-related vegetation clearance, or earth-disturbing activities or project site preparation or the movement or parking of heavy equipment onto or over the project surface, the project owner shall provide the CPM with documentation that the designated cultural resources trainer(s) has/have provided the CPM-approved cultural resources training and the set of reporting and work curtailment procedures to all project managers, construction supervisors, and workers hired before the start of earth-disturbing activities.

In each Monthly Compliance Report after the start of earth-disturbing or earth moving activities, the project owner shall provide the CPM with documentation that the designated cultural resource trainer(s) has/have provided to all project managers hired in the month to which the report applies the CPM-approved cultural resources training and the set of reporting and work curtailment procedures.

**CUL-6** The designated cultural resource specialist, alternate cultural resource specialist or the specialist's delegated monitor(s) shall have the authority to halt or redirect earth-disturbing activities or construction, if previously unknown cultural resource sites or materials are encountered or if an unforeseen impact to an identified cultural resource is recognized during project-related land clearing, grading, augering, excavation or other earth-disturbing activities. Cultural resources monitors shall be members of the cultural resources team with a background and experience appropriate to the project area being monitored.

If such resources are found or an unforeseen impact is recognized, the halting or redirection of earth-disturbing activities or construction shall remain in effect until:

- A. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of eligibility, and recommendations for mitigation of any cultural resource discoveries.
- B. The CRS and the project owner have consulted with the CPM and the CPM has concurred with the recommended eligibility of the discovery and proposed data recovery or other mitigation; and
- B.C. any needed data recovery and mitigation has been completed.

The designated cultural resources specialist, the project owner, and the CPM shall confer within five working days of the notification of the CPM to determine what, if any, data recovery or other mitigation is needed.

If data recovery or other mitigation measures are required, the designated cultural resource specialist and team members shall monitor earth-disturbing and construction activities and implement the agreed upon data recovery and mitigation measures, as needed.

All required data recovery and mitigation shall be completed expeditiously unless all parties agree to additional time.

**Verification:** Thirty (30) days prior to the start of construction-related vegetation clearance, or earth-disturbing activities or project site preparation or the movement or parking of heavy equipment onto or over the project surface, the project owner shall provide the CPM with a letter confirming that the designated cultural resources specialist, and/or alternate cultural resource specialist and delegated monitor(s) have the authority to halt earth-disturbing or construction activities in the vicinity of a cultural resource find.

~~For any cultural resource encountered, the project owner shall notify the CPM within 24 hours unless there is an intervening weekend. If there is an intervening weekend, the project owner shall notify the CPM on the Monday following the weekend.~~

**CUL-7** Prior to the start of any construction-related vegetation clearance, or earth-disturbing activities or project site preparation or the movement or parking of heavy equipment onto or over the project surface, and each week throughout the project construction period, the project owner shall provide the designated cultural resource specialist with a current schedule of anticipated project activity in the following month. The schedule shall include a map indicating the area(s) where ground disturbing or construction activities will occur or where other specialists may be conducting mitigation measures. The designated cultural resources specialist shall consult weekly with the project superintendent or construction field manager to confirm the area(s) to be worked on the next day(s).

**Verification:** At least 10 days prior to the start of project construction-related vegetation clearance, earth-disturbing activities or project site preparation or the movement or parking of heavy equipment onto or over the project surface, and in each Monthly Compliance Report thereafter, the project owner shall provide the CPM with a copy of the weekly schedule of the construction activities. The project owner shall notify the CPM when all ground disturbing activities, including landscaping, are completed.

**CUL-8** The project owner shall ensure that the CRS, alternate CRS, or CRMs shall monitor ground disturbance (including grading and landscaping) in the vicinity of the PEFE, to ensure that there are no impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner. In the event that the CRS determines that full-time monitoring is not necessary in certain locations, a letter or e-mail providing a detailed justification for the decision to reduce the level of monitoring shall be provided to the CPM for review and approval prior to any reduction in any monitoring.

Throughout the ~~pre-construction reconnaissance surveys and the monitoring~~ and mitigation phases of the project, the designated CRS ~~cultural resources specialist and/or alternate CRS cultural resources specialist~~ and delegated monitor(s) shall keep a daily log of any resource finds, and the progress or status of the resource monitoring, collections, mitigation, preparation, identification, and analytical work being conducted for the project. The daily logs shall indicate by tenths of a post mile, where and when monitoring has taken place, where monitoring has been deemed unnecessary, and where cultural resources were found.

The designated specialist shall prepare a weekly summary of the daily logs on the progress or status of cultural resource-related activities.

The designated resource specialist and delegated monitor(s) may informally discuss the cultural resource monitoring and mitigation activities with Commission technical staff.

**Verification:** Throughout any construction-related vegetation clearance, or earth-disturbing activity or project site preparation or the movement or parking of heavy equipment onto or over the project surface, and the project construction period, the project owner shall ensure that the daily logs prepared by the designated cultural resource specialist and delegated monitor(s) are available for periodic audit by the CPM.

Requests for a reduction in the level of cultural resource monitoring shall be submitted to the CPM for review and approval at least 24 hours prior to the sate of planned reduction.

~~**CUL-9** In addition to the areas specified in CUL-3 (f), the designated cultural resource specialist or designated monitor(s) shall be present at all times the specialist deems appropriate to monitor construction-related grading, excavation, trenching, augering, or other disturbance of existing surface in the vicinity of previously recorded archaeological sites and in areas where cultural resources have been identified or are potentially present. Full-time cultural resources and Native American monitoring shall occur during ground disturbance activities.~~

~~If the designated cultural resource specialist determines that full-time monitoring is not necessary in certain portions of the project area; except in the areas specified in Cul-3 (f), the designated specialist shall notify the project owner of the changes. The designated cultural resource specialist shall use post-mile markers and boundary stakes placed by the project owner to identify areas where monitoring is being reduced or is no longer deemed necessary.~~

~~**Verification:** Throughout the project pre-construction and construction period the project owner shall include in the Monthly Compliance Reports to the CPM copies of the weekly summary reports prepared by the designated cultural resource specialist regarding project-related cultural resource monitoring.~~

~~**CUL-10** If the project owner obtains a section 404 permit from the U.S. Army Corps of Engineers (USACE), the project owner shall ensure that the designated cultural resource specialist obtains any archaeological resource permit(s) which may be required by the U.S. Army Corps of Engineers. If cultural resources should be encountered in an area covered by such permit(s), the project owner and cultural resource specialist will consult with the USACE~~

~~regarding compliance with Section 106 of the National Historic Preservation Act.~~

~~Verification: A copy of any archaeological resource permit(s) obtained by the cultural resource specialist shall be provided to the CPM in the next Monthly Compliance Report following its receipt or renewal. If cultural resource management and/or data recovery are necessary under any archaeological resource permit(s), copies of any reports required under the permit(s) shall be submitted to the CPM in the next Monthly Compliance Report following completion of such reports.~~

**CUL-119** The project owner shall ensure that the designated cultural resource specialist performs the supervision, recovery, preparation for analysis, analysis, preparation for curation, and delivery for curation of all cultural materials encountered and collected during surveys, monitoring, testing, data recovery, mapping, and mitigation activities related to the project, as identified in the research design.

**Verification:** The project owner shall maintain in its compliance files, copies of signed contracts or agreements with the museum, university, or other appropriate research specialists responsible for cultural resource services. The project owner shall maintain these files for the life of the project, and the files shall be available for periodic audit by the CPM. The specific locations of sensitive cultural resource sites shall be kept confidential and accessible only to qualified cultural resource specialists.

**CUL-102** The project owner shall ensure that the designated cultural resources specialist prepares a Cultural Resources Report. The project owner shall submit the report to the CPM for review and approval.

The Cultural Resources Report shall include (but not be limited to) the following:

A. For all projects:

1. a description of pre-project literature search, surveys, and any testing activities;
2. maps showing areas surveyed or tested;
3. description of any monitoring activities;
4. maps depicting areas monitored and site locations on 7.5 minute USGS topographic base; and

5. conclusions and recommendations.
- B. For projects in which cultural resources were encountered, include the items above and also provide:
1. records and maps for sites and isolates;
  2. description of any testing and determinations of significance, and potential eligibility
  3. discussion of research questions raised or addressed by data from the project.
- C. For projects for which cultural resource data were recovered, include a. and b. above, plus the following:
1. description of the methods used in the field and laboratory;
  2. verbal description and graphic illustration of recovered cultural materials;
  3. results and findings of any special analyses conducted on recovered cultural materials;
  4. catalogue of recovered cultural materials; interpretation of the site(s) with regard to the research design; and
  5. the name and location of the qualified public repository receiving the recovered cultural resources for curation.

The Cultural Resources Report for the PEFE shall be appended to the Cultural Resources Report for the PEF.

**Verification:** The project owner shall ensure that the designated CRS cultural resource specialist completes the PEFE appendix Cultural Resources Report within ninety (90) days following completion of the collections analysis. Within seven (7) days after completion of the report, the project owner shall submit the Cultural Resources Report to the CPM for review and approval.

**CUL-113** The project owner shall submit an original copy, an original-quality copy, and a computer disc copy (or other electronic format required by the repository) of the CPM-approved Cultural Resource Report to the public repository to receive the recovered data and materials for curation, with copies to the State

Historic Preservation Officer (SHPO) and to the appropriate regional archaeological information center(s). Any disc files must meet SHPO requirements for format and content.

The copies of the Cultural Resource Report to be sent to the curating repository, the SHPO, and the regional information center shall include the following:

- A. originals or original-quality copies of all text;
- B. originals of any topographic maps showing survey, site, and monitored resource locations;
- C. originals or original-quality copies of drawings of significant or diagnostic materials found during survey, monitoring, testing or mitigation, and subject to analysis and evaluation; and
- D. photographs of the cultural resource site(s) and the various cultural resource materials recovered during project monitoring and mitigation and subjected to post-recovery analysis and evaluation. The project owner shall provide the curating repository with a set of negatives for all of the photographs.

**Verification:** Within thirty (30) days after receiving approval of the Cultural Resources Report, the project owner shall provide to the CPM documentation that the report has been sent to the public repository receiving the recovered data and materials for curation, the SHPO, and the appropriate archaeological information center.

For the life of the project, the project owner shall maintain in its compliance files copies of all documentation related to the filing of the CPM-approved Cultural Resources Report with the public repository receiving the recovered data and materials for curation, the SHPO, and the appropriate CHRIS information center.

**CUL-124** Except for those materials subject to PRC 5097.99, following the filing of the CPM-approved Cultural Resource Report with the appropriate entities specified in CUL-13 above, the project owner shall ensure that all cultural resource materials, maps and data collected during survey, testing, and data recovery and mitigation for the project, as identified in the research design, are delivered to a public repository that meets the State of California Guidelines for the Curation of Archeological Collections for the curation of cultural resources. The project owner shall pay any fees for curation required

by the repository. Collections and documents will be prepared to satisfy the requirements of the designated repository.

**Verification:** The project owner shall ensure that all recovered cultural resource materials are delivered for curation within thirty (30) days after providing the CPM-approved Cultural Resource Report to the entities specified in Cul-13.

For the life of the project, the project owner shall maintain in its compliance files, copies of signed contracts or agreements with the public repository to which the project owner has delivered for curation all cultural resource materials collected during cultural resource services for the project, except for materials subject to PRC 5097.99.

**CUL-135** ~~Prior to the start of any vegetation clearing or other earth-disturbing activity related to site preparation, construction, a Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts may be discovered. Information lists of concerned Native Americans and Guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the areas that shall be monitored. or site testing, the project owner and designated cultural resources specialist shall consult with the Native American tribal representatives to develop agreement(s) for qualified monitors as specified in the NAHC Guidelines for Monitoring. The monitor(s) shall be considered as member(s) of the cultural resource team and shall be present during pre-construction and construction phases of the project whenever cultural resources monitoring is occurring. The monthly cultural resources summary, prepared by the CRS shall be mailed or e-mailed to the Tejon Indian Tribe.~~

**Verification:** ~~At least thirty (30) days prior to initiating any ground clearing or surface disturbing activity, One week prior to ground disturbance in areas where there is a potential to discover Native American artifacts, the project owner shall send notification to the CPM identifying the person(s) retained to conduct Native American monitoring. The project owner shall also provide a plan identifying the proposed monitoring schedule and information explaining how Native Americans who wish to provide comments will be allowed to comment. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor. Copies of monthly summaries mailed or e-mailed to the Tejon Indian Tribe shall be provided to the CPM. the project owner shall provide the CPM with a copy of all finalized agreements for Native American monitors. If efforts to obtain the services of qualified Native American~~

~~monitors prove unsuccessful, the project owner shall immediately inform the CPM who will initiate a resolution process. Copies of monthly summaries mailed or e-mailed to the Tejon Indian Tribe shall be provided to the CPM.~~

## HAZARDOUS MATERIALS

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**HAZ-7** The project owner shall prepare a site-specific Security Plan for the operational phase and shall be made available to the CPM for review and approval. The project owner shall implement site security measures addressing physical site security and hazardous materials storage. The level of security to be implemented shall in no case be less than that described as below (as per NERC 2002).

The Operation Security Plan shall include the following:

1. Permanent full perimeter fence or wall, at least 8 feet high;
2. Main entrance security gate, either hand operable or motorized;
3. Evacuation procedures;
4. Protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;
5. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;
6. Site personnel background checks, of including employee and routine on-site contractors shall be conducted for those on-site contractors who visit the site more than two times a month for six or more consecutive months. [Site personnel background checks are limited to ascertaining that the employee's claims of identity and employment history are accurate. All site personnel background checks shall be consistent with state and federal law regarding security and privacy. The project owner can satisfy this condition for routine on-site contractors by requiring these checks in the contract with the contractor. [A routine on-site contractor is one who performs on-site services at least twice per month for six or more consecutive months.];
7. Site access controls for employees, contractors, vendors, and visitors;

~~8. Requirements for Hazardous Materials vendors to prepare and implement security plans as per 49 CFR 172.800 and to ensure that all hazardous materials drivers are in compliance with personnel background security checks as per 49 CFR Part 1572, Subparts A and B;~~

~~7.8. \_\_\_\_\_~~ Closed Circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) capable of viewing, at a minimum, the main entrance gate and the anhydrous ammonia storage tank; and

~~10.9. \_\_\_\_\_~~ Additional measures to ensure adequate perimeter security consisting of either:

a. Security guards present 24 hours per day, 7 days per week.

or

b. -Power plant personnel on-site 24 hours per day, 7 days per week and **all** of the following:

(1) The CCTV monitoring system required in number 9 above shall include cameras that are able to pan, tilt, and zoom (PTZ), have low-light capability, are recordable, and are able to view 100% of the perimeter fence, the anhydrous ammonia storage tank and transfer pad, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; **and**

~~(2) Perimeter breach detectors or on-site motion detectors.~~

The Project Owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to the security plans. The CPM may authorize modifications to these measures, or may require additional measures, such as protective barriers for critical power plant components (e.g., transformers, gas lines, compressors, etc.) depending on circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Dept. of Homeland Security, the U.S. Dept. of Energy, or the North American Electrical Reliability Council.

**Verification:** At least 30 days prior to commissioning the project owner shall notify the CPM that a site-specific Operations Site Security Plan is available for review and approval.

**CALPINE EXPLANATION FOR CHANGE (HAZ-7):** Calpine is strongly committed to maintaining a safe and secure facility. The measures above are recommended for deletion because it has not been shown that these measures are either necessary or effective for an existing facility that is operating in a remote rural location. In the case of the perimeter breach detectors, Calpine has numerous concerns described in the cover letter for this submittal, including a concern that wildlife in the vicinity of the plant (i.e., coyote, raccoons, ground squirrels, and birds) could result in many undue alarms requiring immediate response by the plant staff without creating a safer facility.

## **NOISE AND VIBRATION**

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### **NOISE RESTRICTIONS**

~~**NOISE-4** The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that operation of the project will not cause noise levels due to plant operation alone to exceed 46 dBA  $L_{eq}$  (41 dBA  $L_{eq}$  + 5 dBA threshold) measured at the residence along Laval Road (4.4 miles northeast of the proposed site).~~

~~The measurement of power plant noise for the purposes of demonstrating compliance with this Condition of Certification may alternatively be made at a location, acceptable to the GPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. However, notwithstanding the use of this alternative method for determining the noise level, the character of the plant noise shall be evaluated at the affected residential location (along Laval Road, 4.4 miles northeast of the proposed site) to determine the presence of pure tones or other dominant sources of plant noise.~~

~~No new pure tone components may be introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.~~

~~**A.** When the project first achieves a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at the monitoring site along Laval Road, or at a closer location acceptable to the GPM. This survey during power plant operation shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure tone noise components have been introduced.~~

~~B. If the results from the noise survey indicate that the power plant noise level ( $L_{eq}$ ) at the affected receptor site exceeds the above value for any given hour during the 25-hour period, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.~~

~~C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.~~

~~**Verification:** The survey shall take place within 30 days of the project first achieving a sustained output of 80 percent or greater of rated capacity. Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report will be a description of any additional mitigation measures necessary to achieve compliance with the above-listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.~~

~~Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.~~

**NOISE-4.** Within 30 days of the project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey, utilizing the same monitoring sites employed in the pre-project ambient noise survey as a minimum. The survey shall also include the octave band pressure levels to ensure that no new pure-tone noise components have been introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. Steam relief valves shall be adequately muffled to preclude noise that draws legitimate complaints. If the results from the survey indicate that the project noise levels are in excess of 46 dBA Leq (41 dBA Leq + 5 dBA threshold) at the residence along Laval Road (4.4 miles northeast of the proposed site), additional mitigation measures shall be implemented to reduce noise to a level of compliance with this limit.

**Verification:** Within 30 days after completing the survey, the project owner shall submit a summary report of the survey to the Kern County Environmental Health Services Department, and to the CPM. Included in the report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. Within 30 days of completion of installation of these measures, the project

owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this condition.

**CALPINE EXPLANATION FOR CHANGE (NOISE-4):** Calpine believes that the requirements of NOISE-6 from the current COCs for the existing PEF are also appropriate to the PEFE as noted by the replacement language above. Calpine is prepared to conduct surveys for the PEFE in the same manner as it did for the PEF, to facilitate comparison of results. Calpine believes that applying new or different noise survey requirements to the PEFE would be confusing and unnecessary.

## **SOIL AND WATER RESOURCES**

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~~**SOIL&WATER-4:** Water used for project operation shall be State Water Project (SWP) water as obtained from the Wheeler Ridge-Maricopa Water Storage District's (WRMWS) excess water sold through the district's pool or banked water from Kern Water Bank (KWB) that is directly delivered or exchanged for SWP surface water. Water use for PEFE and PEFE combined shall not exceed the annual limit of 5,000 acre-feet. If no such water is available or if the PEFE water demand should cause water use to exceed the annual limit, the PEFE will not operate until such time as the Energy Commission has approved an amendment allowing for the use of an alternative supply or cooling technology.~~

~~— Prior to the use of any water by the PEFE, the project owner shall install and maintain metering device as part of the water supply system to monitor and record the volume of water supplied to the PEFE. The metering devices shall be operational for the life of the project.~~

~~— The project owner shall prepare an annual Water Use Summary, which will include the total water used by the project on monthly and annual basis in acre-feet. The annual summary shall be submitted to the CPM as part of the annual compliance report. The project owner shall coordinate reporting with PEF.~~

**Verification:** ~~At least 60 days prior to use of any water source at the PEFE, the project owner shall submit to the CPM evidence that a metering device has been installed and is operational water supply pipeline serving the project. The project owner shall provide a report on the servicing, testing and calibration of the metering devices in the annual compliance report.~~

~~The project owner, in the annual compliance report, shall provide a water accounting summary that states the source and quantity of water used at PEFE on a monthly basis in units of gallons per minute and an annual basis in units of acre-feet. The annual compliance report shall also indicate whether the water is obtained through the WRMWSD's district pool, direct pumping of KWB banked water for delivery to PEFE, or the result of surface water exchanges.~~

**SOIL & WATER 4.** Water used for project operation shall be SWP water as obtained from the WRMWSD excess water sold through the district's pool or banked water from KWB that is directly delivered or exchanged for SWP surface water. If no such water is available, the PEFE will not operate until such time as the Energy Commission has approved an amendment allowing for the use of an alternative supply or cooling technology. (Amended March 21, 2001)

**Verification:** The project owner, in the annual compliance report, shall provide a copy of the water accounting summary that states the source and quantity of water used at PEF + PEFE, consistent with the monthly reporting requirements for the existing PEF. The report shall indicate whether the water is obtained through the WRMWSD's district pool, direct pumping of KWB banked water for delivery to PEF or the result of surface water exchanges.

**CALPINE EXPLANATION FOR CHANGE (SOIL & WATER-4):** The PEFE will only slightly increase water consumption of the combined PEF and PEFE projects. The PEFE will not cause a significant adverse impact on water resources, therefore new mitigation or monitoring requirements are not warranted. Calpine believes that the requirements of SOIL & WATER-5 from the existing COCs for the PEF are appropriate for the combined project (PEF + PEFE), as noted by the replacement language above.

**SOIL&WATER-5:** Following the commencement of project operation, the project owner shall maintain a log of the volume of residual cake solid waste produced by the zero liquid discharge system. The project owner shall coordinate reporting with PEF.

**Verification:** Within 60 days following the commencement of project operations, the project owner shall submit to the CPM a report on the volume of residual cake solids generated by the PEF + PEFE. The tally sheets from the trucks disposing the cake will be used to confirm this information and attached to the CPM report. A status report on the volumes of residual cake solids generated and the landfills used for disposal, shall also be included in the annual compliance report submitted to the CPM.

**CALPINE EXPLANATION FOR CHANGE (SOIL & WATER-5):** This COC has been revised to add the method by which the PEFE will demonstrate compliance with this COC.

## **WORKER SAFETY**

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**WORKER SAFETY-2.** The project owner shall submit to the CPM a copy of the revised and updated Project Operations and Maintenance Safety and Health Program, if necessary, containing the following:

- An Operation Injury and Illness Prevention Plan;
- An Emergency Action Plan;
- Hazardous Materials Management Program;
- Fire Prevention Program (8 CCR § 3221); and
- Personal Protective Equipment Program (8 CCR §§ 3401-3411).

The Operation Fire Prevention Plan and the Emergency Action Plan shall also be submitted to the Kern County Fire Department for review and comment.

**Verification:** At least 30 days prior to the first start-up of the combustion turbine or the energization of any part of the project, the project owner shall submit to the CPM for approval a copy of the revised and updated Project Operations and Maintenance Safety & Health Program. The project owner shall provide a letter from the Kern County Fire Department containing their comments on the Operations Fire Prevention Plan and the Emergency Action Plan.

**WORKER SAFETY-3** The Project Owner shall ensure that a CPM-approved Safety Monitor(s) conducts an on-site safety inspection of the power plant at least once a week during construction of permanent structures and commissioning unless a lesser number of inspections is approved by the CPM. The CPM may also require a similar inspection and report concerning linear facilities.

The Safety Monitor shall keep the Chief Building Official (CBO) fully informed regarding safety-related matters and coordinate with the CBO concerning on-site safety inspections, and the final safety inspection prior to issuance of the Certificate of Occupancy by the CBO. The Safety Monitor will be retained

until cessation of construction and commissioning activities, and issuance of the Certificate of Occupancy, unless otherwise approved by the CPM.

The Safety Monitor(s) shall also:

- Correct any construction or commissioning problems that could pose a future danger to life or health, consulting with the CBO as necessary.
- Have the authority to temporarily stop construction or commissioning activities involving possible safety violations or unsafe conditions that may pose an immediate or future danger to life or health, until the problem is resolved to the satisfaction of the Safety Monitor and/or CBO.
- Consult with the CBO to determine when construction may resume unless the problem is corrected immediately, and to the satisfaction of the Safety Monitor and/or CBO.
- Inform the CPM within 24 hours of any temporary halt in construction or commissioning activities.
- Be available to inspect the site whenever necessary in addition to the minimum weekly basis during construction and commissioning as determined in consultation with the CBO and CPM.
- Develop a safety program for the Project that complies with Cal/OSHA & federal regulations related to power plant projects.
- Ensure that all federal and Cal/OSHA requirements are practiced during the construction and installation of all permanent structures (including safety aspects of electrical installations).
- Ensure that all construction and commissioning workers and supervisors receive adequate safety training.
- Conduct safety training (including fall protection, confined spaces, respiratory protection, hazard communication, etc.), or ensure that the Project owner, union hall, and/or contractors conduct adequate safety training.
- Maintain all Material Safety Data Sheets, storage of all hazardous materials and all other required documentation for Cal/OSHA.

- Complete all accident and incident investigations, emergency response reports for injuries and inform the CPM of OSHA Recordable and Lost Time incidents.
- Ensure that all the plans identified in **WORKER SAFETY-1** are implemented.

The Safety Monitor shall be qualified regarding the following:

- Safety issues related to equipment, pipelines, etc.
- LORS applicable to workplace safety and worker protection
- Workplace hazards typically associated with power production
- Lock out tag out and confined spaces control systems
- Site security practices and issues

**Verification:** The Project owner shall submit the Safety Monitor(s) resume(s) to the CPM for approval at least 30 days prior to site mobilization. One or more individuals may hold this position.

The Safety Monitor shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- Records of all employees trained for that month (all records shall be kept on site for the duration of the Project);
- A summary report of safety management actions that occurred during the month;
- A report of any continuing or unresolved situations and incidents that may pose danger to life or health;
- Reports of OSHA Recordable and Lost Time incidents and injuries that occurred during the month.

**WORKER SAFETY-3** ~~The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards, is capable of identifying workplace hazards relating to the construction activities, and has authority to take appropriate action to assure~~

~~compliance with applicable worker safety requirements and mitigate workplace hazards. The CSS shall:~~

- ~~Have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;~~
- ~~Assure that the safety program for the project complies with Cal/OSHA & federal regulations related to power plant projects;~~
- ~~Assure that all construction and commissioning workers and supervisors receive adequate safety training;~~
- ~~Conduct accident and safety-related incident investigations prepare emergency response reports for injuries, and inform the CPM of safety related incidents; and~~
- ~~Assure that all the plans identified in **WORKER SAFETY-1 and 2** are implemented.~~

~~**Verification:** At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the CSS. The contact information of any replacement CSS shall be submitted to the CPM the next business day after the replacement.~~

~~The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:~~

- ~~Record of all employees trained for that month (all records shall be kept on-site for the duration of the project);~~
- ~~Summary report of safety management actions and safety-related incidents that occurred during the month;~~
- ~~Report of any continuing or unresolved situations and incidents that may pose danger to life or health; and~~
- ~~Report of accidents and injuries that occurred during the month.~~

~~**WORKER SAFETY-4** The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO, and will be responsible for verifying that the Construction Safety Supervisor, as required in **WORKER SAFETY-3**, implements all appropriate Cal/OSHA and Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.~~

~~**Verification:** Prior to the start of construction, the project owner shall provide proof of its commitment to pay for the Safety Monitor services to the CPM for review and approval.~~

## PALEONTOLOGY

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**PAL-1** The project owner shall provide the Compliance Project Manager (CPM) with the resume and qualifications of its Paleontological Resource Specialist (PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain CPM approval of the replacement PRS. The project owner shall submit to the CPM to keep on file, resumes of the qualified Paleontological Resource Monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontology (SVP) guidelines of 1995. The experience of the PRS shall include the following:

1. institutional affiliations, appropriate credentials and college degree,
2. ability to recognize and collect fossils in the field;
3. local geological and biostratigraphic expertise;
4. proficiency in identifying vertebrate and invertebrate fossils and;
5. at least three years of paleontological resource mitigation and field experience in California, and at least one year of experience leading paleontological resource mitigation and field activities.
  - The project owner shall ensure that the PRS obtains qualified paleontological resource monitors to monitor as he or she deems necessary on the project. Paleontologic resource monitors (PRMs) shall have the equivalent of the following qualifications:
  - BS or BA degree in geology or paleontology and one year experience monitoring in California; or

- AS or AA in geology, paleontology or biology and four years experience monitoring in California; or
- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

**Verification:**

(1) At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

(2) At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project and stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM no later than one week prior to the monitor beginning on-site duties.

(3) Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

**PAL-2** The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction laydown areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements ~~or strip maps for linear facility routes~~, the project owner shall provide copies to the PRS and CPM. The site grading plan ~~and the plan and profile drawings for the utility lines~~ would be acceptable for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances and can be at a scale of 1 inch = 40 feet to 1 inch = 100 feet range. If the footprint of the power plant ~~or linear facility changes~~, the project owner shall provide maps and drawings reflecting these changes to the PRS and CPM. Maps and drawings may be limited to the boundaries of the PEFE project

If construction of the project will proceed in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Prior to work commencing on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.

**Verification:**

- (1) At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.
- (2) If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.
- (3) If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

**PAL-3** The project owner shall ensure that the PRS prepares, and the project owner submits to the CPM for review and approval, a revision, as appropriate, to the Paleontological Resources Monitoring and Mitigation Plan (PRMMP) for the existing PEF to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the revised PRMMP by the CPM shall occur prior to any ground disturbance. The revised PRMMP shall function as the formal guide for monitoring, collecting and sampling activities and may be modified with CPM approval. This document shall be used as a basis for discussion in the event that on-site decisions or changes are proposed. Copies of the revised PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The revised PRMMP shall be developed in accordance with the guidelines of the Society of Vertebrate Paleontology (SVP, 1995) and shall update, as necessary include, but not be limited to, the following elements of the approved PRMIMP for the existing PEF:

1. Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation will be performed according to the PRMMP procedures;

2. Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and the Conditions of Certification;
3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;
4. An explanation of why, how, and how much sampling is expected to take place and in what units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units;
5. A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for the monitoring and sampling;
6. A discussion of the procedures to be followed in the event of a significant fossil discovery, halting construction, resuming construction, and how notifications will be performed;
7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
8. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meets the Society of Vertebrate Paleontology standards and requirements for the curation of paleontological resources;
9. Identification of the institution that has agreed to receive any data and fossil materials collected, requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution; and
10. A copy of the paleontological Conditions of Certification.

**Verification:** At least 30 days prior to ground disturbance, the project owner shall provide a copy of the revised PRMMP to the CPM. The revised PRMMP shall include an affidavit of authorship by the PRS, and acceptance of the revised PRMMP by the project owner evidenced by a signature.

**PAL-4** Prior to ground disturbance and for the duration of construction activities involving ground disturbance in areas where no previous excavation has occurred, the project owner and the PRS shall prepare and conduct weekly CPM-approved training for all recently employed project managers, construction supervisors and workers who are involved with or operate ground disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of an initial in-person PRS training during the project kick-off for those mentioned above. Following initial training, a CPM-approved video or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern. No ground disturbance shall occur prior to CPM approval of the WEAP, unless specifically approved by the CPM.

The revised Worker Environmental Awareness Program (WEAP) shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Good quality photographs or physical examples of vertebrate fossils shall be provided for project sites containing units of high paleontologic sensitivity;
3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;
4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;
5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. A Certification of Completion of WEAP form signed by each worker indicating that they have received the training; and

7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

**Verification:**

(1) At least 30 days prior to ground disturbance, the project owner shall submit the proposed revised WEAP including the brochure with the set of reporting procedures the workers are to follow.

(2) At least 30 days prior to ground disturbance, the project owner shall submit the script and final video to the CPM for approval if the project owner is planning on using a video for interim training.

(3) If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.

(4) In the Monthly Compliance Report (MCR) the project owner shall provide copies of the WEAP Certification of Completion forms with the names of those trained and the trainer or type of training (in-person or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

**PAL-5** The project owner shall ensure that the PRS and PRM(s) monitor consistent with the revised PRMMP all construction-related grading, excavation, trenching, and augering in areas where potentially fossil-bearing materials have been identified, ~~both at the site and along any constructed linear facilities associated with the project.~~ In the event that the PRS determines full time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the revised PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring different from the accepted schedule presented in the revised PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and included in the Monthly Compliance Report. The letter or email shall

include the justification for the change in monitoring and be submitted to the CPM for review and approval.

2. The project owner shall ensure that the PRM(s) keeps a daily log of monitoring of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.
3. The project owner shall ensure that the PRS immediately notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources Conditions of Certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the Conditions of Certification.
4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours or Monday morning in the case of a weekend when construction has been halted due to a paleontological find.

The project owner shall ensure that the PRS prepares a summary of the monitoring and other paleontological activities that will be placed in the Monthly Compliance Reports (MCR). The summary will include the name(s) of PRS or PRM(s) active during the month, general descriptions of training and monitored construction activities and general locations of excavations, grading, etc. A section of the report shall include the geologic units or subunits encountered; descriptions of sampling within each unit; and a list of identified fossils. A final section of the report will address any issues or concerns about the project relating to paleontologic monitoring including any incidents of non-compliance and any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

**Verification:** The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from the plan identified in the PRMMP. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

**PAL-6** The project owner, through the designated PRS, shall ensure that all components of the revised PRMMP are adequately performed including

collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during the project construction.

**Verification:** The project owner shall maintain in their compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after completion and approval of the CPM-approved revised Paleontological Resource Report (See **PAL-7**). The project owner shall be responsible to pay any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to the CPM.

**PAL-7** The project owner shall ensure preparation of a revision to the Paleontological Resources Report (PRR) for the existing PEF by the designated PRS. The PRR shall be prepared following completion of the ground disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and submitted to the CPM for review and approval.

The report shall include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance.

Within 90 days after completion of ground disturbing activities, including landscaping, the project owner shall submit the revised Paleontological Resources Report under confidential cover to the CPM.

## **GENERAL CONDITIONS OF CERTIFICATION**

### **Construction Milestones, Compliance Condition of Certification 1 (COMPLIANCE-1)**

The Monthly Compliance Report is the vehicle for notifying the CPM of applicable construction milestones, or for amending previously established milestones, for pre-construction and construction phases of the project. The project owner may also send a

letter, an e-mail message, or make a phone call to notify the CPM of planned changes to the milestones.

**A. ESTABLISH PRE-CONSTRUCTION MILESTONES TO ENABLE START OF CONSTRUCTION (WITHIN ONE YEAR OF CERTIFICATION WHEN REQUIRED)**

1. Obtain site control
2. Obtain financing

**B. ESTABLISH CONSTRUCTION MILESTONES FROM DATE OF START OF CONSTRUCTION**

1. Begin pouring major foundation concrete
2. Begin installation of major equipment
3. Complete installation of major equipment
4. ~~Begin gas pipeline construction~~
5. ~~Complete gas pipeline interconnection~~
6. ~~Begin T-line construction~~
- 7.4.        Complete T-line interconnection

The CPM will negotiate the above-cited pre-construction and construction milestones with the project owner based on an expected schedule of construction. The CPM may agree to modify the final milestones from those listed above at any time prior to or during construction if the project owner demonstrates good-cause for not meeting the originally-established milestones.

**C. A FINDING THAT THERE IS GOOD CAUSE FOR FAILURE TO MEET MILESTONES WILL BE MADE IF ANY OF THE FOLLOWING CRITERIA ARE MET:**

1. Change in any milestone does not change the established commercial operation date milestone.
2. The milestone will be missed due to circumstances beyond the project owner's control.

3. The milestone will be missed, but the project owner demonstrates a good-faith effort to meet the project milestone.
4. The milestone will be missed due to unforeseen natural disasters or acts of God that prevent timely completion of the milestones.
5. The milestone will be missed due to requirements of the California ISO.

## **ENERGY EFFICIENCY**

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### **ENERGY RESOURCES-1.**

- a. Except as provided in paragraph b, in the event the simple cycle unit generates 1,280,000 MW hours per year or more for 2 consecutive years, the project owner will, at its option, do one or more of the following to ensure that the project will not continue to operate at that level of energy production:
  1. File an application with the CEC to convert the project to a combined cycle plant,
  2. File an application with the CEC to construct a new combined-cycle plant.
- b. The provisions of this condition shall not apply to generation dispatched by a California utility, or by the California Independent System Operator or a successor entity.
- c. If an application under items a.1 or a.2 is not filed within 6 months after the end of the second consecutive year, the simple cycle unit is prohibited from operating at more that 30 percent of its maximum annual energy production until this condition is satisfied.

**Verification:** The project owner shall include in its Annual Compliance Report, or in a separate report filed at a time agreed to by the CPM, a summary of the total megawatt hours of operation for the simple cycle turbine, and the megawatt hours of operation in response to dispatches by a California utility or the California Independent System Operator (or successor entity), for the prior year. If the project generates 1,280,000 MW-hours or more for 2 consecutive years, excluding generation in response to dispatch by a California utility or the California Independent System Operator (or successor entity), the project owner shall file its application to the CEC under items a.1 or a.2 within 6 months after the end of the second consecutive year.

**ATTACHMENT B**

**PASTORIA ENERGY FACILITY 160 MW EXPANSION PROJECT  
(05-AFC-1)**

**COMMENTS ON AIR QUALITY SECTION OF PASTORIA ENERGY FACILITY  
160 MW EXPANSION PSA**

# ATTACHMENT B

## PASTORIA ENERGY FACILITY 160 MW EXPANSION PROJECT (05-AFC-1)

### COMMENTS ON AIR QUALITY SECTION OF PASTORIA ENERGY FACILITY 160 MW EXPANSION PSA

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We sincerely appreciate the willingness of Staff to discuss and resolve the air quality issues in this proceeding. In fact, there were very few areas of disagreement between Applicant and Staff on air quality issues, and we were able to resolve all but one of them. The issues and their resolutions are discussed in more detail below.

#### **General Comments**

We discussed with Staff some revisions to the discussion of the status of SJVAPCD attainment planning (p. 4.1.41) to clarify and simplify the section. We also clarified for Staff that CO<sub>2</sub> emissions from the new CTG will be calculated, not measured (p. 4.1-20 and 4.1-21).

#### **Changes to Conditions of Certification**

##### **Staff Conditions**

As discussed at the PSA workshop, the following changes will be made to conditions AQ-SC3 and AQ-SC7:

**AQ-SC3** Construction Fugitive Dust Control: The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report (MCR) that demonstrates compliance with the following mitigation measures for the purposes of ~~preventing all fugitive dust plumes from leaving the Project~~ controlling fugitive dust emissions. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

- I. All paved roads within the construction site shall be washed or swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

[no further changes]

**AQ-SC7** The project shall the emission offset credits listed in Appendix A or a modified list, as allowed by this condition, at the time that surrender is required by condition **AQ-43**. The project owner ~~may~~ shall request CPM approval for any substitutions or modification of credits listed in Appendix A. The CPM, in consultation with the District, may approve any such change to the ERC list provided that the project remains in compliance with all applicable laws, ordinances, regulations, and standards, the requested change(s) clearly will not cause the project to result in a significant environmental impact, and each requested change is consistent with applicable federal and state laws and regulations.

### **Other Conditions of Certification**

At the PSA workshop, Applicant had requested some revisions to the verification conditions for AQ-25, AQ-52, AQ-53 and AQ-60 to avoid the potential for conflicting agency reviews and requirements. After further discussion with Staff, Applicant believes that the intent is simply to continue the existing oversight practices currently in place for the three existing CTGs at Pastoria. Since the current procedures have not resulted in conflicting agency reviews or requirements, we agree that the proposed revisions are not needed.

At the workshop, Applicant had also pointed out a typographical error in AQ-35 that had been carried over from the District's Condition 35 and appeared to limit VOC emissions during combustor tuning to 96 **hours** per period rather than 96 **pounds** per period. Applicant has also asked the District to make this correction in the FDOC.

During the PSA workshop, Staff pointed out an inconsistency between the NO<sub>x</sub>, CO and VOC limits during combustor tuning in Condition AQ-35 and the daily emissions limits in Condition AQ-38. Staff also addressed this comment to the District in the September 29, 2005, comment letter on the PDOC. This comment, as well as Staff's other comments on the PDOC, is discussed further below.

### **CEC Staff Comments on the PDOC**

Applicant agrees with Staff's comment, made in both the PSA workshop and the PDOC comment letter, regarding the combustor tuning emission limits. Applicant also agrees with Staff's suggestion to modify the conditions to address the inconsistency between the combustor tuning emission limits and the daily emissions limits in Condition AQ-38.

Staff's September 29 comment letter on the PDOC also indicates that staff would not object if Applicant proposes to remove the once per year limitation on combustor tuning periods in Condition AQ-34. Applicant would like to remove that restriction.

The following revisions to Conditions AQ-34 and AQ-38 are proposed to address both of Staff's comments. The daily emissions limits for NO<sub>x</sub>, VOC and CO in Condition AQ-38 are based on one combustor tuning period and 22 hours of baseload operation.

**AQ-34** Compliance with NO<sub>x</sub>, CO and VOC emissions limitations specified in condition **AQ-31** shall not be required during excursions for combustor tuning. Combustor tuning excursion is defined as that period following the replacement of a combustor that is required for testing, tuning and calibration as recommended by the manufacturer to insure safe and reliable steady state operation of the GTE. Excursions for combustor tuning shall be limited to ~~one continuous~~ 6 hours period per calendar year.

**AQ-38** On any day when a startup or shutdown occurs, emission rates from GTE shall not exceed any of the following: PM<sub>10</sub> 216 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) 84 lb/day; NO<sub>x</sub> (as NO<sub>2</sub>) 450 lb/day; VOC 96.9 lb/day; or CO 2,113 lb/day. On any day when combustor tuning occurs, emission rates from GTE shall not exceed any of the following: PM<sub>10</sub> 216 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) 84 lb/day; NO<sub>x</sub> (as NO<sub>2</sub>) 957.5 lb/day; VOC 160.9 lb/day; or CO 3,036.5 lb/day.

Finally, Staff's comments on the PDOC include concerns regarding the Chemical Mass Balance (CMB) methodology approved by the District for calculating the appropriate interpollutant offset ratio to be used in determining the amount of NO<sub>x</sub> emission reductions needed to offset the PM<sub>10</sub> emissions from the project. Staff suggests that the CMB method approved by the District addresses only a single worst-case occurrence of elevated PM<sub>10</sub> concentrations and does not address a longer-term average case. Staff proposes that the District provide a CMB method calculation that is based on the annual average input values for all CMB method parameters.

Applicant disagrees with Staff's recommendation for several reasons. First, the CMB method used by Applicant to calculate the NO<sub>x</sub> to PM<sub>10</sub> interpollutant offset ratio is consistent with the methodology used for other projects that have come before and been approved by the Commission, including the original Pastoria combined cycle CTGs and the San Joaquin Valley Energy Center projects. The

CEC Staff recommended approval of this methodology most recently in its November 4, 2004, Staff Analysis of Proposed Modifications to Emission Reduction Credit Offsets for the Pastoria Energy Facility.

Second, Applicant notes that the methodology has been approved by the San Joaquin Valley APCD, which is the agency responsible for air quality planning in the area. Applicant has discussed the Staff's comments with District staff. The District uses the worst-case day CMB analysis to establish offset ratios because it is believed that from an air quality perspective it is the days with the highest PM<sub>10</sub> concentrations that are of concern. The District has found that the PM<sub>10</sub> on these worst-case days typically has high nitrate and sulfate components, and so reducing nitrate concentrations is considered an effective strategy for reducing PM<sub>10</sub> under these conditions. District staff also indicate that the methodology used for calculating the interpollutant offset ratio for this project is consistent with that used for other projects.

The District staff also noted that Kern County has an annual PM<sub>10</sub> design value of 51 µg/m<sup>3</sup>, which is only slightly above the state standard of 50 µg/m<sup>3</sup>. This suggests that the PM<sub>10</sub> air quality problem in Kern County is more severe on a short-term basis than on an annual average basis, and supports the District's approach to PM<sub>10</sub> reductions by focusing on reducing high short-term concentrations.

Finally, the calculation methodology has also been reviewed and approved by EPA Region 9 staff, as discussed in the EPA's October 5, 2005, comment letter on the PDOC. In summary, Applicant developed the NO<sub>x</sub> to PM<sub>10</sub> interpollutant offset ratio using the most current available, area-specific data and a methodology that has been approved by the District and EPA and is consistent with calculation methods that have been accepted by the Commission in previous cases. For these reasons, Applicant believes that the ratio developed using this approach is appropriate for this project.

### **EPA Comments on the PDOC**

EPA submitted a comment letter on the PDOC to the District on October 5, 2005. Applicant has discussed these comments with EPA staff and believes that most of EPA's issues can be addressed with minor changes to permit conditions and conditions of certification and/or with additional information. These issues and responses are as follows:

#### **1. Interpollutant Trading**

The EPA staff agrees that the NO<sub>x</sub> to PM<sub>10</sub> ratio proposed by the Applicant for the project is appropriate. This comment was discussed extensively above.

## 2. Offset Ratio for PM10

EPA suggests that the District's method of combining the interpollutant offset ratio and the distance ratio is being inappropriately applied. EPA believes that the ratios should be multiplied, rather than added, as is the District's practice.

In Applicant's discussion of this issue with EPA staff, we pointed out that the District has used this approach to calculating offset requirements for projects involving interpollutant trading in numerous previous projects that have been accepted by EPA (including Pastoria Energy Facility, San Joaquin Valley Energy Center, and the Modesto Irrigation District Electric Generation Station (MEGS) Ripon and Woodland II projects. We indicated that we did not believe it was appropriate for EPA to change its position on the District's offset calculation procedures at this point in the review of the project. We suggested that if EPA believes the District's rule is not being appropriately enforced, EPA should work with the District directly to develop a mutual understanding of how to interpret the District's rule in the future.

Since the District's interpretation of its rule in this case is consistent with past practice and has not been objected to in the past, we believe it is appropriate in this case and should not be changed. In any event, we believe that the Commission's conditions should be revised only in the event the District revises its conditions in response to EPA's comments.

## 3. Permit Conditions Concerning Offsets

The EPA staff proposes a minor change to Condition 43 and a correction to Condition 45. Applicant agrees with the proposed correction to the typographical error in Condition 45 (except for the change in calculation methodology, as discussed above in comment 2), but believes that the way the District has structured Condition 43 is preferable to the change proposed by EPA. The amended language below may address EPA's comments.

**AQ-43** Prior to initial operation, project owner shall provide emission reduction credits to offset the calendar quarter emissions increases set forth below, at the distance offset ratio specified in Rule 2201 (4/20/05 version) Table 4.2 and the interpollutant offset ratio specified in Condition AQ-45 of this permit, PM<sub>10</sub> - Q1: 19,440 lb, Q2: 19,656 lb, Q3: 19,872 lb and Q4: 19,872 lb; SO<sub>x</sub> (as SO<sub>2</sub>) - Q1: 7,549 lb, Q2:

7,633 lb, Q3: 7,717 lb and Q4: 7,717 lb; NO<sub>x</sub> (as NO<sub>2</sub>) - Q1: 39,817 lb, Q2: 40,260 lb, Q3: 40,702 lb, and Q4: 40,702 lb; and VOC - Q1: 7,331 lb, Q2: 7,412 lb, Q3: 7,494 lb and Q4: 7,494 lb. [District Rule 2201]

**AQ-45** NO<sub>x</sub> ERCs may be used to offset PM10 emission increases at a ratio of ~~2.42~~ 2.22 lb NO<sub>x</sub> : 1 lb PM10 for reductions occurring within 15 miles of this facility, and at 2.72 lb NO<sub>x</sub>: 1 lb PM10 for reductions occurring greater than 15 miles from this facility [District Rule 2201]

#### 4. Emission Reduction Credit Analysis

EPA requests additional information regarding the source and calculation procedures for the ERCs that have been granted by the District in the certificates proposed for use in this project. Applicant believes that the District will supply the additional information requested.

EPA points out an apparent error in the quarter 3 and quarter 4 PE2 values shown in the NO<sub>x</sub> offsets table on p. 18 of the PDOC. The comment is correct; the PE2 values shown in that table as 40,370 lb/quarter should be corrected to 40,702 lb/quarter. The NO<sub>x</sub> ERC requirements shown in PDOC Condition 43 (COC AQ-43) are correct.

#### 5. Short-Term Excursions

The EPA comments request additional information regarding why there is a need for the short-term NO<sub>x</sub> emissions excursions that have been proposed for approval by the District and CEC staff. Applicant will provide the requested information to EPA by October 31 and a copy will be provided to the CEC.

#### 6. Startups, Shutdowns and Operating Hours

EPA proposes to increase the frequency of source testing during startup operations from every 7 years to every 5 years (Conditions 49 and AQ-49), consistent with Title V requirements. Applicant has no objection to the proposed change.

EPA also proposes to add a condition limiting the total hours of startup activities to 300 hours per year. The applicant does not believe such a condition is necessary because we believe the proposed annual emissions limits are adequate to limit startup hours consistent with the analysis in the AFC. Applicant will provide additional information to EPA to make this demonstration and will provide a copy of this information to the CEC staff.

## 7. 40 CFR 60 Subpart GG

The EPA comments request some corrections and updates to the District's discussion of the gas turbine new source performance standards in 40 CFR Subpart GG. Applicant made similar suggestions in our comments on the PDOC.

## 8. Sulfur Content of the Fuel

The EPA comments point out that although the PDOC proposes a limit of 0.75 grains per 100 scf in the natural gas fuel to limit SO<sub>2</sub> emissions from the power plant, the SO<sub>2</sub> emissions limits in the proposed permit reflect a fuel sulfur level that is slightly lower than 0.75 gr/100 scf. After discussion of this issue with EPA, Applicant agrees to propose an additional, annual average sulfur grain loading limit of 0.70 gr/100 scf that will limit SO<sub>2</sub> emissions to 29,704 lb/yr. The AFC and the District's PDOC evaluate annual SO<sub>2</sub> emissions of 30,616 lb/yr, so the proposed annual average grain loading limit of 0.70 gr/100 scf will limit annual SO<sub>2</sub> emissions from the project to less than the proposed annual limit for the project.

$$0.70 \text{ grains}/100 \text{ scf} * 1 \text{ lb}/7000 \text{ grains} * 64 \text{ lb SO}_2/32 \text{ lb S} * 1\text{E}6 \text{ scf}/\text{MMscf} \\ = 2.0 \text{ lb}/\text{MMscf}$$

$$\text{annual fuel use (from Table A-3 of the AFC)} = 14,852 \text{ MMscf}/\text{yr}$$

$$\text{annual SO}_2 = 2.0 \text{ lb}/\text{MMscf} * 14,852 \text{ MMscf}/\text{yr} = 29,704 \text{ lb}/\text{yr}$$

Applicant proposes the following addition to Condition 38/AQ-38:

**AQ-38** GTE shall be fired exclusively on natural gas consisting primarily of methane and ethane, with a sulfur content of no greater than 0.75 grains of sulfur compounds (as S) per 100 dry scf of natural gas on a per sample basis and no greater than 0.70 grains of sulfur (as S) per 100 dry scf of natural gas on a 12-month rolling average basis based on monthly samples and analyses.

## 9. Acid Rain Provisions

EPA comments that Condition 66 should be revised to be consistent with acid rain program requirements, and the applicant has no objection to such revisions.

## **ATTACHMENT C**

**PASTORIA ENERGY FACILITY 160 MW EXPANSION PROJECT  
(05-AFC-1)**

**PASTORIA ENERGY FACILITY GRADING AND EXCAVATION INFORMATION**

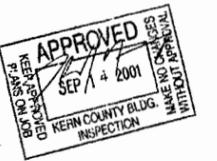
DRAWING NO. 00-V-014



- NOTE:**
- FOR CONSTRUCTION SITE GRADING AND DRAINAGE PLAN SEE DWG. 00-V-003. FOR CONSTRUCTION SITE EROSION AND SEDIMENTATION AND CONTROL PLAN SEE DWG. 00-V-011.
  - FINISH GRADE ELEVATIONS ARE SHOWN ON DRAWING D010173-STWS 001.
  - CONTRACTOR TO PROVIDE ACCESS RAMPS TO BOTTOM OF EXCAVATION AS NEEDED. MAXIMUM RAMP SLOPE IS 10%.
  - TEMPORARY EXCAVATIONS ARE TO HAVE SLOPES NO STEEPER THAN 1:1 PER URS GEOTECHNICAL INVESTIGATION, DATED MAY 2001.
  - TRENCH EXCAVATIONS CAN BE NEAR VERTICAL USING SHORING AS REQUIRED BY OSHA AND LOCAL CODES. (URS GEOTECHNICAL INVESTIGATION, (MAY 2001))
  - ELEVATIONS SHOWN ARE NOMINAL ELEVATIONS. ALL AREAS ARE TO SLOPE TO PROVIDE DRAINAGE TO A SUMP. STORMWATER IS TO BE PUMPED TO THE DETENTION POND USING PORTABLE PUMPS.
  - ALL EXCAVATED MATERIAL IS TO BE PROCESSED ON SITE TO MEET BACKFILL REQUIREMENTS SHOWN ON PAGE 5-5 OF THE URS GEOTECHNICAL INVESTIGATION. PROCESSED MATERIAL SHALL BE STORED ON SITE AND USED FOR GENERAL BACKFILL.
  - CONSTRUCTION EXCAVATION = 166400 CU YD (DOES NOT INCLUDE RETENTION POND)



M010173-LSIF023 R2A  
 PASTORIA ENERGY 11/5/2001  
 Review does not relieve contractor from responsibility for errors or deviations from contract requirements.  
**ENGINEERING**  
 NO EXCEPTIONS NOTED  
 EXCEPTIONS NOTED  
 RETURNED FOR CORRECTION



**NOTE:**  
 COORDINATES SHOWING EXCAVATION LOCATION ON THIS DRAWING ARE APPROXIMATE. FIELD VERIFY FOR FINAL DESIGN COORDINATES BEFORE PROCEEDING WITH ANY EXCAVATION.

RECEIVED  
 SEP 14 2001  
 PEF

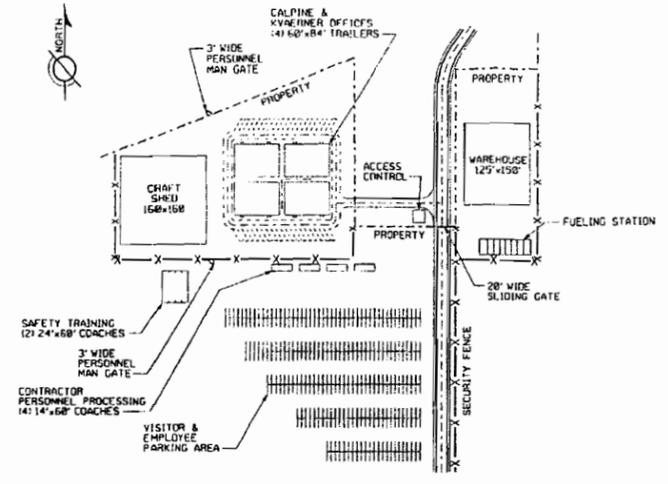
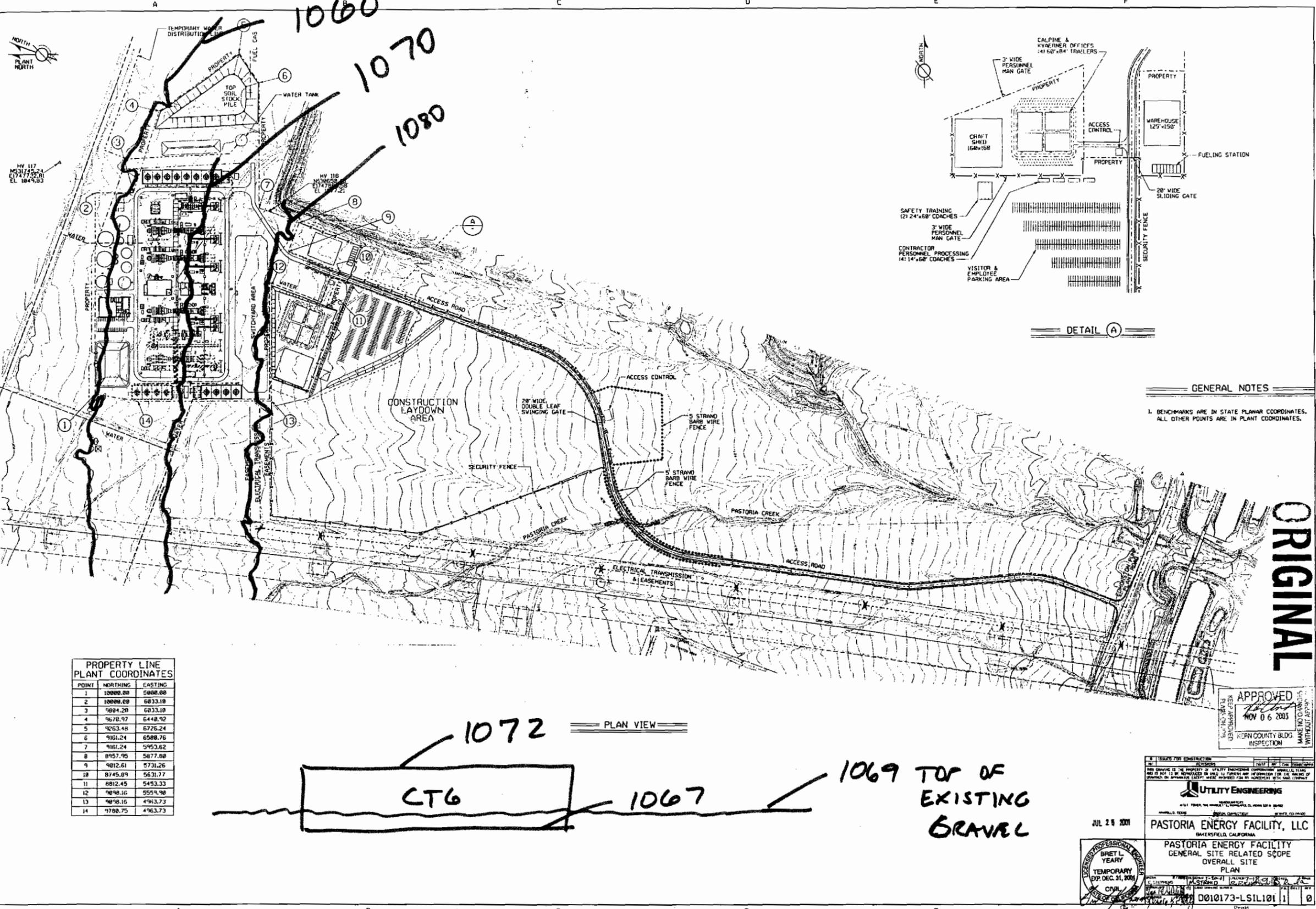
ORIGINAL

PASTORIA ENERGY FACILITY LLC	<b>KVAERNER</b> Metals E&C Division San Francisco, California
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THIS DRAWING IS NOT VALID UNLESS THE LATEST REVISION INITIALS ARE HANDWRITTEN											
NO.	DESCRIPTION	BY	CH	APPROVED	DATE	NO.	DESCRIPTION	BY	CH	APPROVED	DATE
1	ISSUED FOR REVIEW & PERMIT	RC	DR	BH	7/12/01						
2	ISSUED FOR CONSTRUCTION	RC	DR	BR							
3	REV COOLING TOWERS AND UNDERGROUND UTILITIES	RC	DR	BR	9/14/01						

ISSUED FOR CONSTRUCTION														
DESIGNED	RC	7/10/01	DATE TO	A	B	C	0	1	2	3	4	5	6	7
DRAWN	HC	7/10/01	CLIENT											
CHECKED	BR	7/12/01	FIELD											
APPROVED 1	BR	7/12/01	KS											
APPROVED 2	BR	7/12/01												
CLIENT APPL.														

TITLE: PLANT CONSTRUCTION TEMPORARY EXCAVATION PLAN  
 SCALE: 1"=100'  
 PROJ. NO. 322300  
 DRAWING NO. 00-V-014  
 REVISION: 2



DETAIL A

GENERAL NOTES  
 1. BENCHMARKS ARE IN STATE PLANNER COORDINATES. ALL OTHER POINTS ARE IN PLANT COORDINATES.

PROPERTY LINE PLANT COORDINATES		
POINT	NORTHING	EASTING
1	10098.00	5088.00
2	10098.00	5833.18
3	9884.20	5833.18
4	9678.97	5448.92
5	9253.48	5276.24
6	9161.24	5588.76
7	9161.24	5953.62
8	8957.95	5877.88
9	9012.61	5731.26
10	8745.09	5631.77
11	8812.45	5453.33
12	9098.16	5559.98
13	9098.16	4963.73
14	9788.75	4963.73

PLAN VIEW

ORIGINAL

APPROVED  
 11/06/2003  
 PASTORIA ENERGY FACILITY  
 GENERAL SITE RELATED SCOPE  
 INSPECTION

TERMS FOR CONSTRUCTION

UTILITY ENGINEERING

PASTORIA ENERGY FACILITY, LLC  
 BAKERSFIELD, CALIFORNIA

PASTORIA ENERGY FACILITY  
 GENERAL SITE RELATED SCOPE  
 OVERALL SITE  
 PLAN

JUL 28 2001

BRET L. YEARY  
 TEMPORARY  
 DEC. 31, 2001

D010173-LS1101

1072

CT6

1067

1069 TOP OF EXISTING GRAVEL

**ATTACHMENT D**

**PASTORIA ENERGY FACILITY 160 MW EXPANSION PROJECT  
(05-AFC-1)**

**ARTICLE TITLED:  
“SENSOR FENCE: A NEW APPROACH TO LARGE-PERIMETER SECURITY”**

# Sensor Fence: A New Approach To Large-Perimeter Security

By Andrew F. Mazzara, David C. Swanson and Nicholas C. Nicholas

For the past five years, Penn State's Applied Research Laboratory has been building a network of relationships with law enforcement and correctional agencies throughout the United States. These partnerships stem from the increasing interest and use of "smart" technologies, minimal-force approaches and nonlethal devices by these agencies. One example is the Institute for Emerging Defense Technologies' (IEDT), sensor fence — a novel, low-cost, low-maintenance, tensioned wire system that may be used on new or existing fences that results in an improved capability to detect, locate and classify intruders. The sensor fence can be used reliably in large, secure areas such as correctional institutions, airports, military bases, power generation facilities, ports, reservoirs or other large areas typically protected by fences.

## Invention and Prototype

The concept for the sensor fence was developed in 1999 through discussions at IEDT, a unit of the university's Applied Research Laboratory. The IEDT team surveyed existing high-tech fences, including microwave, fiber optic and taut wire (strain gauge) systems, and found that these approaches could cost as much as \$165 per foot. Such systems would be prohibitively expensive for any large-perimeter facil-

ity such as a correctional institution, military base, airport or nuclear power plant.

The team decided to develop its own approach based on the Applied Research Laboratory's expertise in acoustics and signal processing. The IEDT approach uses an inconspicuous, ordinary, tensioned steel wire as an extended sensor. The wire can be attached to any new or existing chain-link or wooden fence. Geophones — inexpensive, rugged, off-the-shelf vibration sensors — are attached to the tensioned wire at about 1,000-foot intervals. The entire system is connected to a dedicated computer that is equipped with software developed at the research laboratory. Essentially, the software analyzes the fence's vibrations, pinpoints disturbances within 50 feet and then determines whether the vibration pattern signals a human intruder as opposed to, say, wind or rain.

With the exception of the computer equipment and a few corner brackets fabricated from 1-inch angle irons, the components — springs, pulleys, clamps and wire — were all available at a local hardware store (see Figure 1). The prototype system was installed covering roughly 1,000 feet of chain-link fence by one of the authors in about six hours and the installation cost approximately \$2 per foot, plus about \$5,000 for the computer equipment.

During one year of continuous operation, there have been no maintenance requirements on the mechanical or electronic system. However, if the wire in the sensor fence were to be cut or damaged, the system would detect and locate the point of signal disruption as it went "deaf." Repair would consist of simply resplicing the ordinary steel wire.

## How It Works

The sensor fence works by converting the entire fence into a detector, similar to a spider's web. A spider poised on a web can feel vibrations conducted by the tensioned silk from any point in the network and so can the sensor fence. Vibrations at any point along the fence are transmitted via the tensioned wire to the computer, where they are detected and analyzed by the software. The system software then locates the site of intrusion by monitoring the vibrations in the fence and precisely detecting the time of arrival of signals from two or more locations. Measured differences between the signal's arrival times indicate the location where the intrusion occurred.

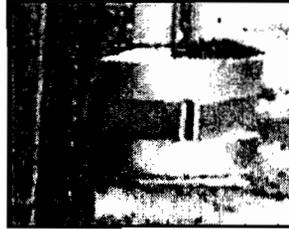
The sensor software is basically a passive detector designed to reject environmental noises from wind and rain and detect the types of vibrations produced by someone climbing over, cutting through or otherwise trying to

## Components of the Sensor Fence Prototype

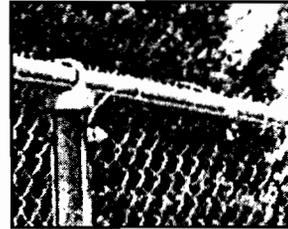
Figure 1:



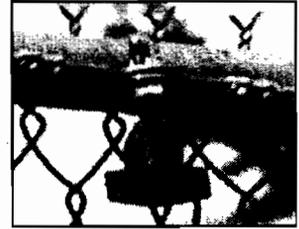
Spring anchors



Tensioning weights



Tensioned steel wire



Geophone

defeat the fence. The software is protected by encryption and can operate on common Windows-type PCs, allowing detection information to be automatically routed to desktops using secure communication protocol.

The system identifies different intruders by monitoring changes in loading (weight applied to an area of the fence). For example, even careful climbing by an intruder will change the loading on the fence and signal that a human is present rather than a squirrel. This approach addresses a problem common with typical sensor fences by minimizing false alarms. The sensor fence can distinguish between the vibrations caused by wind or small animals and man-made vibrations from climbing, cutting and digging. However, tree branches and foliage should be cleared away from the fence to avoid impacts with the fence in strong winds, which will likely be detected as intrusion signals. The sensor fence is also being designed into a commercial product that steers cameras to capture images of the detected intrusion area for absolute confirmation.

## Applications

While the sensor fence's low cost, low maintenance and low false-alarm rate are obvious advantages, the potential for customization offered by the approach promises even more value. Some advanced concepts envisioned by the team include adding sound, motion, imagery or heat detec-

tors to the fence and using data fusion and fuzzy logic techniques to fuse the output from the multiple detectors into a coherent report.

For example, the team is working with a commercial partner to integrate video cameras into a sensor fence system. Vibrations at any point in the fence system would cue a camera to turn toward that point and record the intrusion. Currently, many pharmaceutical companies monitor their fenced perimeters with video cameras, which record continuously, creating large volumes of tape. Adding sensor fence capability to already existing camera systems will increase sensitivity while greatly reducing the volume of tape that would need to be monitored.

Other advanced concepts IEDT is exploring for integration into sensor fence systems for automated security include using computer-controlled nonlethal weapons such as sting balls, pepper spray and even nets to deter or apprehend an intruder without harm. These systems can be installed at fixed locations or on autonomous ground vehicles for rapid deployment.

Through IEDT, Penn State is working with the Los Angeles Sheriff's Department, the Pennsylvania State Police, the New York City Police Department, the National Institute of Justice and police agencies in the United Kingdom to support law enforcement's need for new approaches and technologies to improve its ability to maintain public order and public safety.

For example, IEDT and the Los Angeles Sheriff's Department conducted the first assessment of less-than-lethal munitions, such as rubber bullets, and found that these projectiles do not approach the accuracy demanded of their lethal counterparts. The report is posted at [www.arl.psu.edu/areas/defensetech.html](http://www.arl.psu.edu/areas/defensetech.html).

Other projects being conducted at IEDT range widely from noise reduction in military armored vehicles to better sensors for detecting toxic chemicals or biological agents potentially used in terrorist attacks.

As for the sensor approach, it enables great efficiencies over the long term for maintaining a robust security presence over large areas. A key role for IEDT is to integrate the sensor fence into appropriate security solutions that can be dynamically controlled by the user to meet specific, unique or complex security needs, and give an instant virtual presence at any points of intrusion.

---

*Andrew F. Mazzara is director of Penn State's Institute for Emerging Defense Technologies in State College, Pa., and a specialist in security technologies. David C. Swanson, Ph.D., is associate professor of acoustics and senior research associate at Penn State's Applied Research Laboratory. He is a co-inventor of the sensor fence. Nicholas C. Nicholas, Ph.D., is an Applied Research Laboratory senior research associate and co-inventor of the sensor fence.*

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The American Correctional Association, 4380 Forbes Blvd., Lanham, Maryland 20706

STATE OF CALIFORNIA

Energy Resources Conservation  
and Development Commission

In the Matter of: )  
 ) Docket No. 05-AFC-1  
Application for Certification for the Pastoria Energy )  
Facility (PEF) 160 MW Expansion by Calpine )  
Corporation )  
\_\_\_\_\_ )

**PROOF OF SERVICE**

I, Ron O'Connor, declare that on October 21, 2005, I deposited copies of the attached *Applicant's Response to the Preliminary Staff Assessment* in the United States mail in Sacramento, California, with first-class postage thereon fully prepaid and addressed to all parties on the attached service list.

I declare under the penalty of perjury that the foregoing is true and correct.

  
\_\_\_\_\_  
Ron O'Connor

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**05-AFC-1**

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