



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION IV
1600 E LAMAR BLVD
ARLINGTON, TX 76011-4511

July 18, 2014

Mr. Edward D. Halpin, Senior Vice President
& Chief Nuclear Officer
Pacific Gas and Electric Company
P. O. Box 3
Mail Code 104/6/601
Avila Beach, CA 93424

SUBJECT: NRC INSPECTION REPORT 050-00133/14-008

Dear Mr. Halpin:

This refers to the inspection conducted on June 23-26, 2014, at the Humboldt Bay Power Plant, Unit 3 facility in Eureka, California. The enclosed report presents the results of this inspection. This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. In summary, the inspector determined that you were conducting decommissioning activities in accordance with license and regulatory requirements. The preliminary inspection results were presented to your staff at the conclusion of the onsite inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's documents system (ADAMS), accessible from the NRC's Web site at <https://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction.

E. Halpin

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Should you have any questions concerning this inspection, please contact Dr. Gerald Schlapper, Health Physicist, at 817-200-1273 or the undersigned at 817-200-1191.

Sincerely,

/RA/

Ray L. Kellar, P.E., Chief
Repository & Spent Fuel Safety Branch
Division of Nuclear Materials Safety

Docket No: 050-00133
License No: DPR-7

Enclosure:
NRC Inspection Report 050-00133/14-008
cc w/encl:

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cc w/encl:

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Enclosure

REGION IV

Docket:	050-00133
License:	DPR-7
Report:	050-00133/14-008
Licensee:	Pacific Gas and Electric Company
Facility:	Humboldt Bay Power Plant, Unit 3
Location:	1000 King Salmon Avenue Eureka, California 95503
Dates:	June 23-26, 2014
Inspector:	Gerald A. Schlapper, PhD, CHP, Health Physicist Repository and Spent Fuel Safety Branch
Accompanied by:	Ray L. Kellar, P.E., Chief Repository & Spent Fuel Safety Branch Division of Nuclear Material Safety
Attachment:	Supplemental Inspection Information

EXECUTIVE SUMMARY

Humboldt Bay Power Plant, Unit 3 NRC Inspection Report 050-00133/14-008

This inspection was a routine, announced inspection of decommissioning activities being conducted at the Humboldt Bay Power Plant (HBPP), Unit 3, facility. In summary, the licensee was conducting site activities in compliance with regulatory and license requirements.

Decommissioning Performance and Status Review

At the time of the inspection, decommissioning was progressing at a slower rate than what was initially planned. The licensee had initiated two shift operations for reactor vessel segmentation work that has improved compliance with the proposed schedule. The contractor for the civil works portion of the decommissioning, Chicago Bridge and Iron (CB&I), has commenced work. A License Termination Plan (LTP) was submitted to the U.S. Nuclear Regulatory Commission (NRC) on May 3, 2013 and currently is under review. This plan will further define the end state of the site, refine decommissioning cost estimates and thereby provide a new baseline for cost and schedule considerations. The licensee submitted additional information to aid in review of the plan on March 31, 2014. The licensee conducted decommissioning activities in accordance with license and regulatory requirements. (Section 1)

Maintenance and Surveillance

The licensee conducted safety maintenance and surveillance in accordance with procedures and regulatory requirements. (Section 2)

Solid Waste Management and Transportation

The licensee conducted solid waste management and transportation activities in accordance with procedures and regulatory requirements. Transportation of liquid waste was also reviewed. (Section 3)

Radioactive Waste Treatment and Effluent and Environmental Monitoring

The licensee continues to follow as low as reasonably achievable (ALARA) principles, maintaining worker and public exposures well below applicable limits. The licensee was also found to comply with requirements for effluent discharges. The licensee has revised the Off-site Dose Calculation Manual to reflect the fact that discharge of liquid radioactive waste has ceased. Radioactive postings and boundaries were maintained in accordance with regulatory requirements. (Section 4)

Report Details

Summary of Plant Status - Unit 3

During the inspection, the HBPP, Unit 3, was being decommissioned by the licensee in accordance with commitments made in its Post Shutdown Decommissioning Activities Report, dated June 30, 2009. The licensee continues to transport waste to appropriate sites. The licensee continues the process of analyzing the feasibility and cost of removing subsurface structures as part of the decommissioning process.

1 Decommissioning Performance and Status Review (71801, 36801)

1.1 Inspection Scope

The inspector evaluated whether the licensee and its contracted workforce were conducting decommissioning activities in accordance with license and regulatory requirements.

1.2 Observations

The licensee has completed loading and shipment of class B and class C waste for transport to burial at an approved site in Texas. Work is underway to segment and package the reactor vessel for burial with all vertical cuts completed and horizontal cutting work scheduled to begin soon. As further detailed in Radiological Work Permit 20140116, "Reactor Pressure Vessel (RPV) Segmentation," the estimated personnel exposure for vessel segmentation is 10,000 person-mrem with documented levels to date of approximately 2,600 person-mrem. Metal debris from the cutting operations are captured and placed in drums for eventual shipment to the appropriate disposal site.

Work activity related to remediation of the intake and discharge canals has begun. Radiation surveys have been completed in preparation for removal of the spent fuel pool liner with results indicating that minimal contamination is present. The minimal contamination levels are a result of the licensee's ALARA related program of liner decontamination. Initial trenching for study of slurry wall installation is underway and removal of pilings that supported the Unit 1 fossil plant has begun. The inspector observed radiological surveys of the pilings prior to transfer to on-site storage and noted they were completed in compliance with applicable procedures.

Decommissioning efforts to date have emphasized the slow and methodical removal of contaminated systems and components. This has been due to high levels of alpha contamination that had the potential for elevated internal exposures resulting from intake of radioactive material. Engineering controls were implemented in order to maintain safety of the workers and public. Once these components and systems are removed, work then moves to demolition of major structures, primarily conducted by the civil works contractor under licensee supervision.

The licensee's staffing plans for the progression of work to the demolition of major structures by the civil works contractor was reviewed. With the reduction in radiological controls necessary due to removal of high levels of alpha contamination, the licensee is evaluating changes in licensee staffing levels necessary to oversee the demolition by the civil works contractor. The inspector met with radiation protection management and noted that though staffing levels were decreasing, the reduction in staffing was keyed to need for radiological support and therefore an adequate number of trained and qualified personnel would be maintained to ensure regulatory requirements were met. The inspector noted that many of the individuals that had been released by the licensee, due to reductions in force, had been hired by on-site contractor organizations to maintain knowledge and experience levels at the site.

Demolition of the turbine building is complete except for some below grade structures. The radioactive liquid waste system has been dismantled and replaced with an ion exchange system for treatment of liquids. The licensee plans to use the spent fuel pool and on-site external tanks for storage of liquid waste, with final disposal by shipment of liquid waste using tanker trucks to the waste disposal site. Disposal of radioactive liquids by discharge to the bay has ceased.

1.3 Conclusions

The licensee conducted decommissioning activities following applicable procedures and in accordance with license and regulatory requirements.

2 Maintenance and Surveillance (62801)

2.1 Inspection Scope

The inspector reviewed the licensee's program of maintenance and calibration of portable radiation detection instrumentation.

2.2 Observations

The inspector reviewed the database of instrumentation available for use by licensee personnel and determined that the licensee had an adequate supply and variety of instruments suitable for the radiological hazards at the site. The inspector reviewed the calibration records of selected instruments. Noted was the fact that the licensee continues to utilize a database that provides clear visual indication in the form of green, yellow and red color designations that apply to instruments that are in calibration, that are due calibration within 30 days, and that are past due for calibration and removed from service. During tours of the site the inspector checked calibration dates on instruments in use in the field and determined that all were within calibration.

The inspector observed weekly tests and demonstration of quarterly calibration checks of the MGPI alpha continuous air monitor (CAM). The CAM is designed to provide real time measurements of airborne plant radioactivity by continuous monitoring of the presence of alpha and beta particulates in the atmosphere. The CAM system also compensates for interference of radon, radon progeny and

external gamma fields. The tests and calibration checks were done in compliance with steps outlined in Procedure RCP-7X, "Use and Calibration of the MGPI Alpha Continuous Air Monitor," dated March 3, 2013. The licensee noted that use of the CAMs had decreased due to the fact that most work on highly contaminated systems was complete. The inspector noted that though some units of an older design were out of service, there were still a sufficient number of operable and calibrated systems for ongoing work.

2.3 Conclusions

The licensee's programs for conduct of maintenance and surveillance were found to be in accordance with license and regulatory requirements. The inspector concluded that the licensee had adequate calibrated instrumentation to ensure compliance with monitoring requirements.

3 **Solid Waste Management and Transportation (86750)**

3.1 Inspection Scope

The inspector reviewed site procedures and documentation for a shipment on March 27, 2014 of Class C solid waste material to the Waste Control Specialists Compact Waste Facility located in Andrews, Texas to evaluate compliance with applicable transportation and import/export requirements. The inspector noted that at the time of shipment import and export permits were current.

3.2 Observations

To ensure compliance with applicable NRC and Department of Transportation (DOT) regulations, the licensee utilized a shipping compliance checklist. The checklist requires that the licensee have documentation on file that certifies that any container used meets package qualifications and that vendor provided procedures for use of the container were followed. The package includes documentation that manifested information is consistent with the approved waste profile. Documents supplied in the package indicated that the containers are inspected by the licensee and determined to be in compliance with DOT packaging requirements. Emergency response information was supplied with the shipment.

The inspector reviewed specific shipping checklists and documentation for the shipment to the Waste Control Specialists Facility in Andrews, Texas. The shipment reviewed consisted of resin and debris. Information supplied confirmed that the disposal site waste acceptance criteria were met and classification of the waste was determined by established procedures. Required direct radiation and contamination surveys were conducted to verify compliance with applicable limits as outlined in 10 CFR 71.47 and results were acceptable for this shipment. A vehicle inspection checklist was completed prior to approval for the vehicle to depart the site. A review of documents for this shipment indicated that license and regulatory requirements were met. The inspector also verified that individuals involved in the approval of the shipments were properly trained and that training was maintained within regulatory requirements. With oversight by the licensee, the civil works contractor, CB&I, has assumed responsibility for packaging and shipping of waste material.

The inspector also discussed with staff methods used by the licensee to ensure continued compliance with requirements of three exemption requests applicable to the US Ecology RCRA site, located in Idaho. As of June 20, 2014 the site had reached a level of approximately 12.8 percent of the total volume of 2,020,000 cubic feet allowed in the exemptions for solid waste. As of the same date a total of 3998 cubic feet of liquid had been shipped which is approximately 8 percent of the allowed liquid volume.

3.3 Conclusions

The licensee's program for transportation of material for off-site burial was found to be performed in accordance with license and regulatory requirements.

4 **Radioactive Waste Treatment, and Effluent and Environmental Monitoring (84750)**

4.1 Inspection Scope

As of December 31, 2013 the licensee ceased liquid radioactive effluent discharges via the discharge canal into Humboldt Bay. Any remaining processed liquid radioactive waste is transported offsite to an authorized disposal facility. The inspector reviewed the Offsite Dose Calculational Manual (ODCM) in light of these changes.

4.2 Observations

The ODCM procedure, "Safstor/Decommissioning Offsite Dose Calculation Manual," dated April 1, 2014, supports implementation of the Humboldt Bay Power Plant (HBPP) Unit 3 radiological effluent controls and radiological environmental monitoring program (REMP). The REMP consists of monitoring stations and sampling programs based on the HBPP Decommissioning Plan and Environmental Report. It also includes a commitment to participate in an inter-laboratory comparison program. The program includes dosimeters and air samples required to evaluate direct radiation and gaseous effluents from HBPP. A second part of the ODCM contains calculational methods developed for use in determining dose to members of the public resulting from routine radioactive effluents released from HBPP during decommissioning activities. Also present are gaseous effluent monitor alarm/trip setpoints which assure that releases of materials remain within regulatory allowed concentrations. The inspector reviewed environmental thermo luminescent dosimeter (TLD) data for the period 1/1/2014 to 4/1/2014. Reported exposure data were essentially at background.

The licensee anticipates that much of the demolition of structures will be in the open air. Procedure RCP-2G, "Open Air Demolition Radiological Assessment," dated March 13, 2014, describes the controls and monitoring of surface contamination and airborne radioactive materials during open air demolition activities with minimal radiological controls. The objective of the procedure is to keep the dose at the site boundary ALARA and a fraction of the 10 CFR 20.1301 dose limit of 100 mrem/yr to a member of the public. Limiting criteria on total

surface contamination and loose surface contamination for open air demolition of structures containing residual radioactivity is provided in a supporting calculation, NX-432, "Open Air Demolition at HBPP," dated October 13, 2013. These limiting criteria are based on comparison to other similar facilities during decommissioning activities and the licensee notes that once HBPP has evaluated the site specific source term, adjustments to the limits may be required.

During tours of the site the inspector performed independent gamma surveys (Ludlum Model 2401-EC Survey Meter, NRC Serial Number 21175G, Calibration Due Date 11/7/2014). For all the locations that were surveyed, the inspector found that the licensee was meeting the posting requirements of 10 CFR 20.1902. General site exposure values were essentially at background level. The inspector also compared Oak Ridge Associated University independent laboratory results of analysis of split samples of soil and rubble with those obtained by the licensee and found results to be in reasonable agreement.

4.3 Conclusions

The inspector concluded that effluent limits and controls were maintained to ensure compliance with regulatory requirements

5 Exit Meeting

The inspector reviewed the scope and preliminary findings of the inspection during an exit meeting that was conducted at the conclusion of the onsite inspection on June 26, 2014. The licensee did not identify as proprietary any information provided to, or reviewed, by the inspector.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

J. Albers, Radiation Protection Manager
D. Anderson, Count Room Supervisor
M. Celletti, Training Manager
J. Chadwick, ALARA Supervisor
P. Coutts, Deputy Program Manager, CB&I
M. Erickson, FSS and LTP Consultant
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J. Kristofzski, HBPP Strategic Waste Disposal Manager
J. Morris, Regulatory Services
W. Parish, RP Engineer
J. Salmon, Environmental Manager
S. Schlerf, RP Supervisor
L. Sharp, Director and Plant Manager
M. Smith, Engineering Manager
M. Strehlow, Deputy Director
D. Wheeler, Program Manager, CB&I

INSPECTION PROCEDURES USED

IP 36801 Organization, Management, and Cost Controls

IP 62801 Maintenance and Surveillance at Permanently Shutdown Reactors,

IP 71801 Decommissioning Performance and Status Review at Permanently Shutdown
Reactors

IP 84750 Radioactive Waste Treatment and Effluent and Environmental Monitoring

IP 86750 Solid Waste Management and Transportation of Radioactive Materials

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	as low as reasonably achievable
CAM	Continuous Air Monitor
CFR	<i>Code of Federal Regulations</i>
CPI	cost performance index
CRDM	control rod drive mechanisms
DAC	derived air concentration
DOT	Department of Transportation
DSAR	Decommissioning Safety Analysis Report
FSAR	Final Safety Analysis Report
FSS	Final Site Survey
HBPP	Humboldt Bay Power Plant
IP	NRC Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
LTP	License Termination Plan
NRC	U.S. Nuclear Regulatory Commission
NSOC	Nuclear Safety Oversight Committee
ODCM	Offsite Dose Calculation Manual
ORAU	Oak Ridge Associated Universities
PSRC	Plant Staff Review Committee
RCRA	Resource Conservation and Recovery Act
REMP	Radiological Environmental Monitoring Program
RPV	Reactor Pressure Vessel
SFP	Spent Fuel Pool
SNM	Special Nuclear Material
SPAMS	Stack Particulate Airborne Monitoring System
SPI	schedule performance index
TLD	thermo luminescent dosimeter