UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E LAMAR BLVD
ARLINGTON, TX 76011-4511

April 17, 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 050-00133/14-007

Dear Mr. Halpin:

This refers to the inspection conducted on March 17-20, 2014, at the Humboldt Bay Power Plant, Unit 3 facility in Eureka, California. Additional information supplied on March 31, 2014 regarding waste shipment data and decommissioning funding was also reviewed. 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 inspectors 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.

Should you have any questions concerning this inspection, please contact Dr. Gerald Schlapper, Health Physicist, at 817-200-1273 or the undersigned at 817-200-1287.

Sincerely,

/RA/

Linda L. Howell, Deputy Director
Division of Nuclear Materials Safety

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

Enclosure:
NRC Inspection Report 050-00133/14-007
cc w/encl:

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cc w/encl:

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U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	050-00133
License:	DPR-7
Report:	050-00133/14-007
Licensee:	Pacific Gas and Electric Company
Facility:	Humboldt Bay Power Plant, Unit 3
Location:	1000 King Salmon Avenue Eureka, California 95503
Dates:	March 17-20, 2014
Inspectors:	Gerald A. Schlapper, PhD, PE, CHP, Health Physicist Repository and Spent Fuel Safety Branch
Approved by:	Linda L. Howell, Deputy Director Division of Nuclear Material Safety
Attachment:	Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

Humboldt Bay Power Plant, Unit 3
NRC Inspection Report 050-00133/14-007

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 contractor for the civil works portion of the decommissioning, Chicago Bridge and Iron (CB&I), is on site and commencing 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)

Safety Reviews and Design Changes

The licensee conducted safety reviews and design changes 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)

Occupational Exposure

The licensee continues to follow as low as reasonably achievable (ALARA) principles, maintaining personnel exposures well below applicable limits. Radioactive postings and boundaries were maintained in accordance with regulatory requirements. Occupational exposures were monitored in accordance with procedures and 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)

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

Primary efforts for the remainder of calendar year 2014 are to complete loading and shipment of class B and class C waste for transport to burial at an approved site in Texas, commence segmenting and packaging the reactor vessel for burial, remediate the intake and discharge canals, remove the spent fuel pool liner and begin trenching for study of slurry wall installation Decommissioning efforts to date have emphasized the removal of systems and components where, due to high levels of alpha contamination, the potential for elevated internal exposures resulting from intake of radioactive material dictated slow and methodical disassembly with removal of contaminated systems. 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.

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 by discharge to the bay has ceased.

Removal of material and components internal to the reactor vessel began in March of 2012 and continued through completion of removal of control rod drive mechanisms in January 2014. The reactor vessel has been drained and a fixative applied to the surfaces of the vessel to limit airborne releases as the vessel is sectioned. The inspector reviewed licensee's dry run efforts in preparation for sectioning of the reactor vessel. Work on vessel segmentation is scheduled to continue into 2014.

During tours of the site the inspector performed independent gamma surveys (Ludlum Model 2401-EC2 Survey Meter, NRC Serial Number 21115G,

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.

1.3 Conclusions

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

2 Safety Reviews and Design Changes (37801)

2.1 Inspection Scope

The inspector evaluated the licensee's program of review, assessment, and planning for decommissioning.

2.2 Observations

The inspector attended a meeting of the Plant Safety Review Committee (PSRC) conducted on March 17, 2014. The organization and charter of this committee is described in procedure HBAP A-2, Volume 1, Revision 39 dated 09/25/2013. The PSRC performs reviews, investigations or analysis and prepares reports as requested by the Chair of the Nuclear Safety Oversight Committee or the Nuclear Plant Manager. The chair of the committee verified that a quorum of technically qualified members was present for the meeting. The PSRC review on this date discussed the assessment of the Emergency Plan as required by step 3.6.5 of the procedure. The committee accepted results of this review as presented. The inspector also reviewed minutes of PSRC meetings conducted in October, November and December, 2013 and January 2014 and found them to comply with procedural and regulatory requirements.

On March 20, 2014 the inspector attended a quarterly meeting of the Humboldt Bay Power Plant Nuclear Safety Oversight Committee (NSOC). The organization and charter of this committee is described in procedure HBAP A-6, Volume 1, Revision 7 dated 02/04/2011. Activities subject to NSOC review include Unit 3 and Independent Spent Fuel Storage Installation (ISFSI) activities. Requirements for the committee are described in the Humboldt Bay Quality Assurance Plan and are based on the review and audit functions identified in Regulatory Guide 1.33-1978, and ANSI 18.7-1976. The chair of the committee verified that a quorum of technically qualified members was present for the meeting. Presentations by HBPP staff to the committee allowed the members to review nuclear safety and environmental matters in the facilities.

2.3 Conclusions

The inspector reviewed the programs for conduct of safety reviews and design changes and found them to be in accordance with procedures and regulatory requirements.

3 Solid Waste Management and Transportation (86750)

3.1 Inspection Scope

The inspector reviewed site procedures and documentation for shipment of solid waste material containing debris and tooling waste to a Utah site and for shipment of solid waste material to a site approved for Resource Conservation and Recovery Act (RCRA) waste material in Idaho to evaluate compliance with applicable transportation and import/export requirements. Documentation applicable to the first shipment of water containing low levels of radioactivity to the RCRA site was also examined. The inspector also discussed with staff methods used by the licensee to ensure continued compliance with requirements of three exemption requests applicable to the RCRA site. As of the end of December 2013 the site had reached a level of approximately 12 percent of the total volume allowed in the exemption.

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 container had been inspected by the licensee and determined to be in compliance with DOT packaging requirements. Radiation/ contamination survey data sheets were noted that verified compliance with applicable limits as outlined in 10 CFR 71.47. Emergency response information was supplied with all shipments.

The inspector reviewed shipping checklists and documentation for two shipments to the US Ecology RCRA site located in Idaho. The first shipment reviewed consisted of concrete rubble from demolition of the turbine building with very low levels of radioactivity. The second shipment to the RCRA site that was reviewed was for the first shipment of waste water containing low levels of radioactivity that had been processed through the site FIXES system. Information supplied confirmed that the disposal site criteria and classification was determined by established procedures. Documentation also noted that exemption conditions as approved by NRC were reviewed and followed. The licensee verified that the intermodal container utilized for the first shipment met the general design packaging requirements of 49 CFR 173.410. Required direct radiation and contamination surveys were conducted 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 these selected shipments 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.

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 Occupational Exposure During Safstor and Decommissioning (83101)

4.1 Inspection Scope

The inspector reviewed site procedures for the calibration and performance checks of portable survey and monitoring equipment. The inspector also reviewed data for estimated and actual exposure since the last inspection.

4.2 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 inspectors checked calibration dates on instruments in use in the field and determined that all were within calibration.

The inspector selected licensee external and internal exposure data summaries for December 2013 for review. External exposure data from electronic dosimeters indicated a total integrated levels of 1.45 person-rem. Approximately 160 site personnel were monitored during December. The maximum indicated external dose during this month was 154.8 mrem that was received by an individual whose primary work during this period was removal of the control rod drive mechanisms. The licensee continues to utilize lapel air samples to assess the potential for internal exposure via inhalation. During the month of December 2013, 364 lapel air samples were analyzed with no samples indicating a potential for internal exposure. The licensee indicated that if respirators had not been used, a maximum dose of 21.5 mrem would have been assigned for the month of December. During 2013 a total of 5077 lapel air samples were analyzed, a number consistent with data for 2011 and 2012. The total assigned CEDE for integrated internal exposures for 2013 was 34.4 Man-mrem. There were no positive whole body counts during December 2013. The licensee requires a whole body count on an annual basis. Compliance with this requirement is tracked through the Sentinel database which prevents approval of entry into the radiological controlled area if an individual fails to comply with this requirement. The inspectors verified that the database will indeed indicate that a whole body count is required and that entry is not approved if the whole body count is not completed as required within the one year period.

Since the last inspection of the site a major activity, removal of the control rod drive mechanisms (CRDM), was completed. Removal of the mechanisms started in November 2013 and was finished in January 2014. This activity, accomplished following requirements of Radiological Work Permit 20140126, was one of the more challenging from a radiation protection perspective in that it involved work in a high radiation area where dose rates of up to 10 R/hr were measured. This external exposure level was coupled with a high level of contamination, greater than one million dpm per 100 square centimeters of beta, gamma and alpha. Work in the confined space also required use of respiratory equipment as airborne levels of up to 30 DAC were found. Based on time and motion studies of work during mockup training, exposure to remove the 32 CRDMs was estimated to be 2.6 person-rem. The actual exposure received was 1.934 person-rem with approximately 25 percent of this amount incurred during removal of 5 of the CRDMs that were stuck and required additional efforts to remove. The actual versus estimated agreement emphasizes the advantages of use of training mockups as a training tool and for improved dose estimation when work in a high risk environment is required.

The inspector reviewed summary data through December 2013 and noted that total exposure for the period of decommissioning had reached 56.2 Man-Rem. Earlier ALARA projections for this time had predicted a level of 88 Man-Rem, a level 31.8 Man-Rem greater. The licensee was able to identify 26.4 Man-Rem of the exposure savings due to enhanced ALARA efforts during specific evolutions of decommissioning. It was noted that rescheduling of reactor vessel segmentation had deferred a projected exposure of approximately 35 Man-Rem from 2013 to 2014.

4.3 Conclusions

The inspector concluded that the licensee had adequate calibrated instrumentation to ensure compliance with monitoring requirements. The inspector also reviewed the licensee's approach to control of occupational exposure during current work. Exposure controls were effective in maintaining exposures ALARA. Access controls were maintained in accordance 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 March 20, 2014. The licensee did not identify as proprietary any information provided to, or reviewed, by the inspector. Additional information applicable to shipment of solid and liquid radioactive waste was supplied by the licensee on March 31, 2014.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

J. Albers, Radiation Protection Manager
D. Anderson, Count Room Supervisor
W. Barley, RP Consultant and FSS Supervisor
C. Caldwell, Area Supervisor
M. Celletti, Training Manager
J. Chadwick, ALARA Supervisor
G. Frank, RP Instrument Supervisor
S. Jones, QA Supervisor
J. Kristofzski, HBPP Strategic Waste Disposal Manager
W. Parish, RP Engineer
K. Rod, Decommissioning Manager
S. Schlerf, RP Supervisor
L. Sharp, Director and Plant Manager
M. Smith, Engineering Manager
D. Sokolsky, Licensing Supervisor
M. Strehlow, Deputy Director

INSPECTION PROCEDURES USED

IP 37801 Safety Reviews, Design Changes and Modifications at Permanently Shutdown Reactors

IP 71801 Decommissioning Performance and Status Review at Permanently Shutdown Reactors

IP 83101 Occupational Exposure During SAFSTOR and DECON

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
CAP	Corrective Action Program
CFR	*Code of Federal Regulations*
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
kV	Kilo Volt
LSA	Lower Shroud Assembly
LTP	License Termination Plan
NRC	U.S. Nuclear Regulatory Commission
NSOC	Nuclear Safety Oversight Committee
RAU	Oak Ridge Associated Universities
PSRC	Plant Staff Review Committee
RCRA	Resource Conservation and Recovery Act
RPV	Reactor Pressure Vessel
SFP	Spent Fuel Pool
SNM	Special Nuclear Material
SPAMS	Stack Particulate Airborne Monitoring System
SPI	schedule performance index