



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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September 4, 2012

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

SUBJECT: NRC INSPECTION REPORT 050-00133/12-010

Dear Mr. Halpin:

This refers to the inspection conducted on August 6-9, 2012, 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. No violations were identified during the inspection, and no response to this letter is required.

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 document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact Robert Evans, Senior Health Physicist, at 817-200-1234 or the undersigned at 817-200-1191.

Sincerely,

/RA/

D. Blair Spitzberg, PhD, Chief
Repository and Spent Fuel Safety Branch

Docket: 050-00133
License: DPR-7

Enclosure:
NRC Inspection Report 050-00133/12-010

Pacific Gas and Electric Company

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U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 050-00133

License: DPR-7

Report: 050-00133/12-010

Licensee: Pacific Gas and Electric Company

Facility: Humboldt Bay Power Plant, Unit 3

Location: 1000 King Salmon Avenue
Eureka, California 95503

Dates: August 6-9, 2012

Inspector: Robert Evans, PE, CHP, Senior Health Physicist
Repository and Spent Fuel Safety Branch

Accompanied by: Shaker Hamed Rayiss Al-Ani
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D. Blair Spitzberg, PhD, Chief
Repository and Spent Fuel Safety Branch

Approved by: D. Blair Spitzberg, PhD, Chief
Repository and Spent Fuel Safety Branch

Attachment: Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

Humboldt Bay Power Plant Unit 3 NRC Inspection Report 050-00133/12-010

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

Organization, Management, and Cost Controls

- The licensee's organization was in accordance with Quality Assurance Plan requirements, and sufficient staff was available for the work in progress. The licensee's safety committees functioned in accordance with the Quality Assurance Plan, Defueled Safety Analysis Report, and procedural requirements (Section 1.2).

Maintenance and Surveillance

- The licensee continued to operate, maintain, and test plant equipment in accordance with procedure requirements (Section 2.2).

Decommissioning Performance and Status Review

- The licensee and its contracted work force were conducting decommissioning activities in accordance with license and regulatory requirements (Section 3.2).

Solid Radioactive Waste Management and Transportation of Radioactive Materials

- The licensee was characterizing, packaging, and shipping radioactive wastes in accordance with license and regulatory requirements (Section 4.2).

Report Details

Summary of Plant Status - Unit 3

During the inspection, the licensee was decommissioning the Humboldt Bay Power Plant, Unit 3 facility, in accordance with the Post Shutdown Decommissioning Activities Report dated June 30, 2009. The licensee initiated decommissioning during May 2009.

In recent months, the licensee decommissioned circulating water system piping, continued to remove components from the former turbine building, and continued to remove the internals from the reactor pressure vessel. Work in progress during the inspection included removal of the liquid radwaste system concentrated waste tanks and the condensate storage tank. The licensee was also preparing to cut the main steam piping in the valve gallery area.

In the near future, the licensee plans to lift the lower shroud assembly from the reactor pressure vessel, a component that is highly radioactive. The licensee then plans to cut the shroud into sections after it has been lifted from the vessel and placed in the spent fuel pool. The licensee also plans to remove and section the resin storage tank in the near future.

During September 2012, the licensee plans to package and ship greater-than-Class C (GTCC) wastes for processing. This material is currently being stored in Interim Storage Container ISC-18 in the spent fuel pool. After processing, this material will be returned to the site for storage. During the spring of 2013, the licensee plans to load all GTCC wastes into Cask 6. Following loading, the licensee will transfer Cask 6 to the onsite independent spent fuel storage installation facility for long-term storage.

The licensee plans to section the reactor pressure vessel during early 2013. The work will consist of cutting out the highly radioactive sections, removing the remaining asbestos from the nozzles, and removing the mirror insulation. The vessel itself will most likely be disposed as Class A waste at an out-of-state disposal facility.

The licensee plans to install a subsurface slurry wall around portions of the site during 2014 to support removal of subsurface plant components. The slurry wall will create a barrier between the subsurface components and the groundwater. The licensee will use the slurry wall to support removal of the spent fuel pool walls. (At the time of the inspection, the licensee had not formally decided whether to remove the caisson or to leave this component in place.) The slurry wall is expected to be approximately 190 feet deep, 175 feet from the ground surface to the clay layer below the plant and 15 feet into the clay liner. The licensee plans to begin this work during the summer of 2013 by constructing a 15-foot deep trench around the site. The licensee will construct the trench, in part, to locate subsurface piping that may interfere with the installation of the slurry wall.

1 Organization, Management, and Cost Controls (36801)

1.1 Inspection Scope

The inspector reviewed management organization and controls to ensure that the licensee was maintaining effective oversight of decommissioning activities.

1.2 Observations

The organizational requirements are specified in the Humboldt Bay Quality Assurance (QA) Plan. The inspector reviewed the licensee's organizational structure for compliance with QA Plan requirements. The licensee made two changes to the organization in recent months. During May 2012, the licensee created and staffed two new positions—deputy director and strategic waste disposal manager. The deputy director's assignments include oversight of the day-to-day decommissioning activities in the field. The strategic waste disposal manager's assignments include waste handling, waste transport, environmental remediation, and final status surveys. At the time of the inspection, the licensee had staffed all management-level positions, and the licensee appeared to have sufficient staff for all work activities in progress. In summary, the organizational structure was in compliance with QA Plan requirements.

The requirements for the Nuclear Safety Oversight Committee are provided in the QA Plan. The committee was required to perform independent reviews of: changes, tests, and experiments; procedures; reportable events; plant trends; and violations of regulatory and license requirements. The committee was required to meet at least quarterly. The inspector reviewed the meeting minutes for 2012. The committee discussed relevant topics during these meetings and took actions as appropriate. The inspector concluded that the Nuclear Safety Oversight Committee functioned as required by the QA Plan.

The requirements for the Plant Staff Review Committee are provided in the Defueled Safety Analysis Report and site procedures. This committee performed reviews of work tasks with an emphasis on As Low As Reasonably Achievable (ALARA) controls. The committee is required to meet at least quarterly and at other times at the discretion of the chairman. The committee met more frequently than quarterly during 2012, and the meetings were a combination of regular and special sessions. The committee members discussed and approved requests to isolate and abandon equipment for decommissioning. The committee also conducted evaluations of routine ALARA reviews and readiness reviews of major work activities. The inspector concluded that the Plant Safety Review Committee functioned in accordance with Defueled Safety Analysis Report and procedure requirements.

1.3 Conclusions

The licensee's organization was in accordance with QA Plan requirements, and sufficient staff was available for the work in progress. The licensee's safety committees functioned in accordance with the QA Plan, Defueled Safety Analysis Report, and procedural requirements.

2 Maintenance and Surveillance (62801)

2.1 Inspection Scope

The inspector reviewed selected operational, maintenance, and surveillance activities to ensure that the licensee continued to operate and maintain plant systems during decommissioning.

2.2 Observations

At the time of the inspection, the licensee continued to operate and maintain selected plant systems. The systems still in service included power distribution, fire protection, instrument air, ventilation, and water supply systems. There are no longer any license requirements for safety-related systems or structures, although some equipment operability requirements are provided in the Offsite Dose Calculation Manual, implementing procedures, and Defueled Safety Analysis Report. The systems required to be operable by the Offsite Dose Calculation Manual include the discharge canal sampler, radioactive liquid effluent monitoring system, and stack particulate airborne monitoring system. The systems required to be operable by the Defueled Safety Analysis Report include the refueling building ventilation, portable air samplers, fire protection system, and liquid waste treatment system. Finally, the yard drain sump system is required to be operable per an emergency procedure.

The inspector reviewed the licensee's ability to operate and to maintain systems during decommissioning. The licensee continued to provide dedicated staff for plant operations and for system maintenance and surveillance. The licensee also continued to maintain procedures for operations and surveillance testing of the systems in service. During site tours, the inspector observed equipment in operation, and the inspector concluded that the licensee operated the remaining equipment in accordance with procedure requirements.

The inspector observed the performance of the liquid effluent monitoring system channel functional test. The equipment worked as designed, and the licensee's staff performed the test in accordance with surveillance procedure requirements. The inspector also discussed system reliability with licensee representatives. The system frequently tripped due to voltage spikes in the electrical supply to the system. The uninterruptable power supply system supporting the liquid effluent monitoring system could not maintain system operation as desired, resulting in unnecessary trips requiring operator action to restore system functions. According to licensee representatives, the installation of a new uninterruptable power supply has resolved this reliability issue.

The inspector discussed the status of the liquid radwaste system with the licensee's staff. The licensee plans to phase out the permanent plant equipment and replace the equipment with temporary equipment to allow for continued processing of liquid radwastes. The licensee plans to demolish the liquid radwaste building during 2013, and the licensee must place a temporary system into service prior to decommissioning of the permanent plant equipment and demolition of the building.

The licensee continues to experience problems with silting of the discharge canal. The discharge canal is the location where treated, monitored effluents are released. The silting of the discharge canal impacts the licensee's ability to release liquids in accordance with the requirements specified in the Offsite Dose Calculation Manual. At the time of the inspection, the licensee is pursuing two separate resolutions to this issue: obtaining a permit to allow for the dredging of the canal and obtaining NRC approval to ship radwastes in liquid form offsite for

disposal. The NRC staff will continue to review this area during future inspections.

2.3 Conclusions

The licensee continued to operate, maintain, and test plant equipment in accordance with procedure requirements.

3 **Decommissioning Performance and Status Review (84750)**

3.1 Inspection Scope

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

3.2 Observations

The inspector toured the radiologically restricted areas of the facility. Radiological postings were clearly visible, and postings met the requirements of 10 CFR Part 20. The licensee was controlling housekeeping in all areas. During the site tours, the inspector conducted radiological surveys to verify the accuracy of radiation area postings using a Ludlum Model 2401-EC2 survey meter (NRC No. 20779G, calibration due date of 01/09/13). The inspector did not identify any radiation area that was incorrectly posted by the licensee.

The inspector observed decommissioning work in progress and discussed these activities with the licensee's staff. The work observed included removal of the internals from the reactor pressure vessel, cutting of the condensate storage tank, removal of the concentrated waste tanks, and preparation work for the cutting of main steam line piping.

The licensee was removing the internals from the reactor pressure vessel. The items were relocated into the spent fuel pool for sectioning. The work in progress included segmentation of the control rod guide tubes. At the time of the site tour, this work was temporarily suspended due to alignment problems with the cutting tool.

In the valve gallery area, the licensee was preparing to cut portions of the main steam line. The licensee's staff was installing glove bags to contain the contamination that may become airborne during the cutting operation. The licensee was conducting this work with an emphasis on industrial safety and radiation protection controls.

The condensate storage tank and the concentrated waste tanks were being sectioned during the inspection. The licensee installed a containment system around the condensate storage tank to control the possible spread of contamination during the cutting process. The containment system included a ventilation system to help prevent the spread of contamination outside of the work area. The inspector also observed the removal of radioactive level indicator

tubing from the concentrated waste tank area. This work was also conducted with an emphasis on radiation protection controls.

In the near future, the licensee plans demolish the turbine building. To support this activity, the licensee needed to install a second doorway at the eastern end of the refueling building. During the inspection, the licensee was cutting this doorway into the wall of the refueling building. The door will be used to allow personnel to enter and exit the refueling building during times when the overhead equipment door is closed.

The inspector conducted a brief review of internal and external occupational exposures. The licensee originally estimated a total exposure of 35.5 man-rem for January 2010 through July 2012. The actual collective dose was 21.2 man-rem. The licensee's representative stated that the reduced doses were the result, in part, of effective ALARA practices. For example, the removal of the chimney from the reactor pressure vessel, an activity that had a high potential for external exposures of workers, resulted in a collective dose of only 0.023 rem. In addition, the licensee has experienced few uptakes of radioactivity since the start of decommissioning.

In summary, the licensee was conducting the decommissioning activities with industrial safety and radiation protection controls in place. Preplanning was evident because the work was performed in a safe and controlled manner.

3.3 Conclusions

The licensee and its contracted work force were conducting decommissioning activities in accordance with license and regulatory requirements.

4 **Solid Radioactive Waste Management and Transportation of Radioactive Materials (86750)**

4.1 Inspection Scope

The inspector reviewed the licensee's programs for characterizing, packaging, and shipping the radioactive wastes generated during site decommissioning.

4.2 Observations

The inspector observed the handling and shipment of radioactive wastes. In addition, the inspector reviewed the licensee's implementation of its alternate waste disposal program for discarding certain wastes containing low levels of radioactive contamination. Further, the inspector reviewed the licensee's plans for repackaging and shipping GTCC waste for offsite processing.

During 2012, the licensee's records indicate that it had shipped 90 individual shipments of wastes totaling slightly over 1.9 million pounds (excluding shipments of sample media). The shipments included Class A wastes in Type A containers destined for disposal at a state-licensed disposal facility in Utah. The licensee also shipped hazardous wastes containing oil, chrome, and mercury. Some radioactive wastes were shipped for processing prior to disposal. Finally,

the licensee plans to send eight shipments of Class B and C wastes to a state-licensed facility in Texas during October 2012.

The inspector observed the licensee's staff ship exempt quantity wastes. For this category of wastes, the NRC authorized the licensee to ship up to 2,200,000 cubic feet of hazardous wastes containing low-activity radioactive debris for offsite disposal at a Resource Conservation and Recovery Act (RCRA) facility in Idaho. These wastes include concrete, steel, insulation, roofing material, and other debris from Units 1 and 2, as well as selected debris from Unit 3.

The inspector reviewed selected shipping records and interviewed shipping department staff to ensure that the licensee was in compliance with the alternate disposal provisions authorized by the NRC. The provisions included limitations on the concentrations of radionuclides in the wastes and the total quantity of material allowed for disposal at the RCRA facility. At the time of the inspection, the licensee's records indicate that it had shipped a total of 121,546 cubic feet of waste material in 258 shipments. In summary, the amount of material shipped was less than the NRC-approved limit for disposal of this type of waste.

The inspector observed the shipment of circulating water system piping, material classified as exempt quantity wastes. Prior to the inspection, the licensee excavated and rubblized the former circulating water intake piping. The piping was estimated to be about 300-feet in length. The waste material was packaged into 10 intermodals for shipment to the RCRA disposal site. The inspector reviewed the licensee's shipping protocols for these wastes. The licensee was shipping these wastes using IP-1 strong, tight containers. Shipping papers were optional. The licensee used shipping papers to document that the concentrations of radioactive material in the wastes were less than the NRC-approved exemption limits (such as 15 picocuries of cesium-137 per gram of wastes). The inspector reviewed one randomly selected shipping paper and noted that the concentrations of the radioactive material in the shipment were less than the exemption limits. The inspector observed the shipment of one intermodal containing circulating water system piping. The inspector confirmed that the intermodal was shipped in accordance with site procedures.

In the near future, the licensee plans to begin demolition of the Unit 3 turbine building. The licensee believes that much of the building debris and some soils from Unit 3 will meet the criteria for disposal as exemption wastes at the RCRA facility. The licensee plans to conduct a radiological survey of the building in the near future, including analysis of concrete core samples. After the survey has been completed, the licensee plans to rubblize the building. The current schedule indicates that the licensee will rubblize the building beginning in December 2012. The NRC staff will review the licensee's survey results and radwaste handling protocols for the turbine building during a future inspection.

The inspector also observed the loading of a Type A, IP-2 container with wastes destined for disposal at a Class A waste disposal facility in Utah. The wastes included contaminated systems material. The licensee loaded the wastes, including drums, into the container in a controlled manner. The inspector concluded that the licensee was loading the wastes in accordance with site procedures.

The inspector reviewed the licensee's plans for repackaging and shipping GTCC waste for offsite processing. The amount of material to be processed was estimated to be between 150-200 pounds. The licensee plans to transfer the material from the Interim Storage Container ISC-18 to the process waste container. The process waste container will be dewatered by heat to meet shipping requirements. Next, the licensee will ship the process waste container in a Type B shipping container to a processor in South Carolina. The processor will use an ashing process to remove the organics from the waste. The waste will be returned to the licensee. Finally, the licensee plans to place the processed GTCC waste into Cask 6 during 2013 for long-term storage in the onsite independent spent fuel storage installation.

The inspector reviewed the licensee's calculations for shipment of the GTCC waste. The licensee conducted the calculation, in part, to confirm that the shipment did not meet the criteria for radioactive materials in quantities of concern. The NRC Order EA-09-204 dated November 23, 2009, specifies that additional security measures are required for transport of certain quantities of radioactive material. The amount of GTCC material exceeds the Category 2 quantities but does not exceed the Category 1 quantities. Because the amount of material exceeds the Category 2 quantities, certain increased controls are necessary for shipment of the GTCC waste material. The inspector concluded that the licensee's calculation was thorough, and a qualified individual independently reviewed the calculation.

4.3 Conclusions

The licensee was characterizing, packaging, and shipping radioactive wastes in accordance with license and regulatory requirements.

5 Exit Meeting

The inspector reviewed the scope and findings of the inspection during an exit meeting that was conducted at the conclusion of the onsite inspection on August 9, 2012. During the inspection, the licensee did not identify any information reviewed by the inspector as proprietary.

SUPPLEMENTAL INSPECTION INFORMATION

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INSPECTION PROCEDURES USED

IP 36801	Organization, Management, and Cost Controls
IP 62801	Maintenance and Surveillance
IP 71801	Decommissioning Performance and Status Review
IP 86750	Solid Radioactive Waste Management and Transportation of Radioactive Materials

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS

ALARA	as low as reasonably achievable
CFR	<i>Code of Federal Regulations</i>
GTCC	greater than Class C
IP	NRC Inspection Procedure
QA	quality assurance
RCRA	Resource Conservation and Recovery Act