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

August 2, 2017

Mr. Edward D. Halpin, Senior Vice President,
Generation and Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 56, Mail Code 104/6
Avila Beach, CA 93424

SUBJECT: HUMBOLDT BAY POWER PLANT – NRC INSPECTION REPORT
05000133/2017-002

Dear Mr. Halpin:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on July 11-13, 2017, at the Humboldt Bay Power Plant, Unit 3 facility, located near Eureka, California. The purpose of the inspection was to determine whether decommissioning activities were being conducted safely and in conformance with NRC requirements and the conditions of your license. The NRC inspector discussed the results of this inspection with Mr. J. Salmon and other members of your staff during an onsite final exit meeting conducted on July 13, 2017. The inspection results are documented in the enclosure to this inspection report.

The NRC inspection examined activities conducted under your license as they relate to public health and safety, the common defense and security, and to confirm 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. Specifically, the inspector reviewed the decommissioning activities at the site, effectiveness of the corrective action program, implementation of the environmental monitoring program, and the transportation of radioactive materials program. No violations were identified and no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," 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 Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC's Website 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.

If you have any questions regarding this inspection report, please contact Rachel Browder at 817-200-1452, or the undersigned at 817-200-1191.

Sincerely,

/RA/

Ray L. Kellar, P.E., Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Docket Nos. 50-133
License Nos. DPR-7

Enclosure:
Inspection Report 05000133/2017-002;
w/Attachment: Supplemental Information

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.	05000133
License No.	DPR-7
Report No.	05000133/2017-002
Licensee:	Pacific Gas & Electric Company
Facility:	Humboldt Bay Power Plant, Unit 3
Location:	1000 King Salmon Avenue Eureka, California 95503
Dates:	July 11-13, 2017
Inspectors:	Rachel S. Browder, C.H.P., Senior Health Physicist Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety
Approved By:	Ray L. Kellar, P.E., Chief Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Humboldt Bay Power Plant, Unit 3
NRC Inspection Report 05000133/2017-002

This U.S. Nuclear Regulatory Commission (NRC) 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 these activities in accordance with site procedures, license requirements, and applicable NRC regulations.

Decommissioning Performance

- The licensee was implementing the decommissioning and dismantlement activities in accordance with the License Termination Plan (LTP) Revision 1. The licensing was conducting final status surveys of areas in accordance with regulatory requirements and the LTP Revision 1, and subsequently isolating and controlling the final status survey areas as required by the LTP Revision 1. (Section 1.2)

Self-Assessment, Auditing, and Corrective Actions

- The licensee was implementing its corrective action program in accordance with the appropriate regulatory requirements as prescribed by the Humboldt Bay (HB) Quality Assurance Plan (QAP) and implementing procedures. Responsible personnel were knowledgeable of the program and the status of the notifications. The licensee established measures to monitor the completion of the assigned actions. In addition, the licensee's audit program was being conducted and maintained in accordance with the appropriate regulatory requirements as prescribed by the HB QAP. (Section 2.2)

Effluent and Environmental Monitoring

- The licensee maintained and implemented a radiological environmental and effluent monitoring program in accordance with the appropriate regulatory requirements as prescribed by the licensee's Offsite Dose Calculation Manual (ODCM). (Section 3.2)

Solid Radioactive Waste Management and Transportation of Radioactive Materials

- The licensee continued to process, package and ship radioactive wastes in accordance with regulatory requirements. (Section 4.2)

Report Details

Summary of Plant Status

On July 2, 1976, Humboldt Bay Power Plant (HBPP), Unit 3 was shut down for its annual refueling outage and to conduct seismic modifications. In 1983, an updated economic analysis indicated that restarting Unit 3 would probably not be cost-effective, and in June 1983, the Pacific Gas & Electric Company (licensee) announced its intention to decommission the HBPP. On July 16, 1985, the U.S. Nuclear Regulatory Commission (NRC) issued Amendment No. 19 to the HBPP Unit 3 Operating License to change the status to possess-but-not-operate and the plant was placed into a SAFSTOR status. This status is a method of decommissioning in which a nuclear facility is placed and maintained in a condition that allows the facility to be safely stored and subsequently decontaminated to levels that permit release for unrestricted use.

The transfer of spent fuel from the spent fuel pool (SFP) to the Independent Spent Fuel Storage Installation (ISFSI) was completed in December 2008, and the decontamination and dismantlement phase of HBPP Unit 3 decommissioning commenced.

On July 19, 2013, the licensee submitted Revision 4 to its Post-Shutdown Decommissioning Activities Report (PSDAR) for HBPP (ADAMS Accession ML13213A160). The PSDAR was revised to include significant changes in the scope and cost estimate that primarily included the caisson removal and discharge canal remediation activities.

On January 29, 2016, the licensee issued Revision 11 to the Defueled Safety Analysis Report (DSAR), and Revision 33 to the HBPP Quality Assurance Plan (QAP) (ADAMS Accession ML16029A508). The changes provided a distinct organizational structure between HBPP Unit 3 and the ISFSI, as well as updated the programs and procedures that were established and controlled under the licensee's administrative controls listed in Appendix B of the HB QAP. For example, based on the license amendment issued on September 23, 2015 (ADAMS Accession ML15148A361), which approved a reduction in the emergency planning functions commensurate with the reduction in radiological source term at the site, the QAP removed the Emergency Plan administrative procedures from HBPP Unit 3 and placed them solely under the Humboldt Bay ISFSI (HBISFSI) where it remained applicable.

On August 13, 2014, the licensee submitted Revision 1 to the HBPP, Unit 3, License Termination Plan (LTP) (ADAMS Accession Package ML14246A164). The LTP is required to be submitted at least 2 years prior to license termination, under 10 CFR 50.82(a)(9). The LTP Revision 1 described the remaining activities that the licensee will perform to complete decommissioning and the methods used to demonstrate that the site meets the NRC radiological criteria for unrestricted use under 10 CFR 20.1402. On May 4, 2016, the NRC issued Amendment No. 45 to Facility Operating License No. DPR-7 (ML15090A339), to approve the LTP Revision 1, and established the criteria under which the licensee was allowed to make changes without prior NRC approval.

The activities observed during the inspection included excavation of material from the caisson, initiation of shotcrete on the inside of the cutter soil mixture (CSM) wall, excavation of soil from the discharge canal to support removal of the circulating water lines, final status survey of portions of the RUBB™ tent area, packaging and transportation of material, and remediation of the retention basin. The licensee currently plans to complete final status surveys and site restoration activities by early 2019.

1 Decommissioning Performance (71801)

1.1 Inspection Scope

The inspector evaluated whether the licensee and its contracted workforce were conducting decommissioning activities in accordance with the LTP Revision 1, and regulatory requirements.

1.2 Observations and Findings

The NRC inspector observed the licensee's daily plan of the day meetings, in addition to the subsequent craft and radiation protection daily meetings. The inspector observed attention to detail, knowledge of the activities, and a high level of attention to safety being discussed during each meeting attended during the inspection. The inspector performed a tour of the site and noticed there was attention to safety and housekeeping as evidenced during pre-job briefings, spotters guiding construction equipment and haulers across the site, hearing protection was readily available, and trucks were spraying water on the roadway to minimize dust and dirt around the site. In addition, based on a review of several radiological surveys, instrumentation calibration frequency and daily performance checks, and observation of radiological postings located around the site, the inspector determined that the licensee was implementing its radiological control program in accordance with the regulations and licensee's procedures.

The LTP, Revision 1 was approved by the NRC on May 4, 2016, in which Chapter 3 states in part, that the licensee would dismantle and decontaminate the site in accordance with HBPP procedures and approved work packages. The license's critical path was removing the caisson under work package (WP-15). At the time of the inspection, the licensee was performing excavation and concrete demolition at the -40 foot elevation, which was approximately 10 feet below the bottom of the active vessel region. The licensee was using water spray from monsoon equipment for dust abatement.

The process waste management plan in WP-15 detailed the criteria for performing excavation lifts for the soils between the outer caisson wall and the CSM wall, how to separate the concrete, steel, and soil for either disposal or re-use. Essentially, the licensee considered all concrete and steel removed as radioactive waste and it was processed and packaged for disposal. Nearly all steel went to U.S. Ecology, Idaho, or was still contained in intermodals destined for U.S. Ecology, Idaho, under an NRC exemption. Most concrete and soil was processed and placed into Type IP-1 industrial packages for shipment to Waste Control Specialists, Texas. The licensee stated that the materials encountered, such as any remaining contaminated systems, drain lines or metal and concrete from the activated core region, were directly loaded into intermodals for disposal. The excavated soils were loaded onto trucks and monitored using the licensee's mobile assay system, Energy*Solutions*™ gamma radiation detection and in-container analysis (GARDIAN) system. The system was designed to perform surveys of large volumes of containerized waste or homogeneous material including truck-mounted containers. Once the truck passed the assay analyses, then the soil was stock piled in a "clean" area behind the caisson, for later backfill into either the caisson or as part of the final site restoration.

The licensee used lapel air samples on the individuals working in the caisson area. The lapel air samplers did not identify any uptakes for the individuals working in the caisson

area. When the individuals exited the area, they went to building #26 and were monitored using a portal monitor. The inspector reviewed a daily caisson area survey record dated July 5, 2017, that indicated area dose rates in the caisson and outside the immediate vessel area were approximately 15 micro-Roentgen per hour (μR/hr). The dose rates around the excavated vessel at grade level were approximately 100-150 uR/hr, and the dose rate directly on top of the excavated vessel area was approximately 2 milli-Roentgen per hour (mR/hr).

In addition, the licensee placed quarterly TLDs inside the cabs of the excavators. For the second quarter 2017, which corresponded to the removal of the active vessel region, the licensee observed the following TLD results in millirem (mrem). The inspector concluded that the individuals working in the caisson area did not require to be monitored in accordance with 10 CFR Part 20.1502, "Conditions requiring individual monitoring of external and internal occupational dose."

TLD Location	Result (mrem)	Estimated (mrem/hour) based on 2000 hours in a quarter
Excavator 01 (NWD 220/East Yard)	0	0
Excavator 02 (NWD 480/East Yard)	89	0.045 mrem/hr
Excavator 03 (NWD 380)	155	0.077 mrem/hr
Excavator 04 (NWD 300)	64	0.032 mrem/hr

Since most of the caisson structure was located below sea level, the licensee tested the compressive strength of the CSM wall and determined that additional compressive strength was required for adequate protection. At the time of the inspection, the engineering package had been approved and the licensee initiated the work activity to add an additional 12-inches of wire mesh and shotcrete combination to the interior walls of the CSM structure. The licensee planned to continue the shotcrete process as the excavation proceeded to the bottom of the CSM wall. The schedule called for 4-days of excavation, followed by 4-days of debris removal, followed by 4-days of shotcrete, and continuously progressing with that cycle until the bottom of the excavation was achieved.

The licensee continued to focus on excavation of the discharge canal to remove the circulating water piping under work package (WP-29). The work package had different phases to support the activity. Phase A of the work package supported removal of concrete and asphalt and excavation of the soil. Phase B of the work package was on hold and the licensee was working Phase C, which was installation of the sheet pile to support the sides of the excavation and reduce water intrusion into the work area. The licensee experienced some water intrusion and used a slurry mixture that sealed the in-leakage into the discharge canal so work could continue. Finally, Phase D of the work package supported deep excavation, circulating water piping removal, and backfill.

All excavated soil was loaded onto trucks and monitored using the licensee's GARDIAN system. Once the truckload was monitored, the truck returned to the discharge canal work area and transferred its load to the "clean" area for re-use as backfill soils. This effort to re-use the remediated soils onsite reduced the number of shipments made during decommissioning.

Work package (WP-25.6) supported the previous retention basin that had been grubbed and was continuing to be cleared and remediated in preparation for final status surveys.

The retention basin that captured surface water had previously flowed into the intake structure and was now being graded to redirect the water to the wetland areas. The vegetation that had been removed from the area was still staged in a “non-clean” area since it had not been loaded onto trucks and monitored through the GARDIAN system yet.

The inspector observed the licensee perform final status surveys of a portion of the RUBB™ tent area, which had been remediated under work package (WP-16.5). The inspector reviewed the final status survey planning (FSSP) worksheet for survey area number NOL01, survey unit number 01. The area contained approximately 7,617 square meters (m^2). The planning worksheet indicated that the survey unit contained the RUBB™ Tent footprint, and about 1,116 m^2 of surface area made up of soils, engineered materials, gravel, and sand.

The inspector compared the FSSP worksheet for NOL01 to the LTP Revision 1 requirements under Chapter 5, “Final Status Survey Plan.” The survey design, soil sample requirements, and the performance of the gamma scans sufficiently met the requirements specified in the LTP Revision 1. The licensee followed the requirements in Section 5.2.4.4 of the LTP Revision 1, for protecting the survey unit from contamination during the final status survey by installing a rope barrier with postings and performing a survey of himself and any equipment prior to entering the roped-off final status survey controlled area. The inspector observed the conduct of the gamma scans for survey area NOL01, and concluded that the scan was performed as required by the FSSP worksheet and the LTP Revision 1.

1.3 Conclusion

The licensee was implementing the decommissioning and dismantlement activities in accordance with the LTP Revision 1. The licensing was conducting final status surveys of areas in accordance with regulatory requirements and the LTP Revision 1, and subsequently isolating and controlling the final status survey areas as required by the LTP Revision 1.

2 Self-Assessment, Auditing, and Corrective Actions at Permanently Shutdown Reactors (40801)

2.1 Inspection Scope

The inspector evaluated the effectiveness of licensee controls in identifying, resolving and preventing issues that degraded safety or the quality of decommissioning. These controls included audits, corrective actions, and root and apparent cause evaluations. The inspector reviewed a sample of audit reports to evaluate compliance with the licensee’s program. In addition, the inspector reviewed the disposition and timeliness of corrective actions issued to resolve identified deficiencies or improvements.

2.2 Observations and Findings

a. Corrective Action Program

The licensee’s Defueled Safety Analysis Report (DSAR) Revision 1, Chapter 1.3 stated that the quality standards were described in the Humboldt Bay Quality Assurance Plan (HB QAP). The inspector reviewed the licensee’s QAP, Revision 33, and the licensee’s Procedures HBAP C-808, “Humboldt Bay Quality Assurance Program Description,’ Revision 0 and HBAP C-807, “HBPP Audit Program,” Revision 0. The changes

incorporated into Revision 33 of the HBPP QAP separated the HBPP quality requirements from the HBISFSI requirements. The inspector reviewed the 10 CFR 50.54(a)(3) evaluation dated October 28, 2015, for the HB QAP Revision 33 change and determined that the license evaluated the change appropriately. Since there are no remaining important to safety or quality-related systems, structures, or components associated with the HBPP decommissioning programs or processes, the inspector determined that the licensee appropriately separated the two programs.

The HB QAP, Appendix B identified the decommissioning programs that remained under the licensee's administrative quality requirements, which included the radiation protection program, radiological environmental monitoring program, and radioactive effluent control program. The final status survey program quality was described in Section 5.8 of the LTP Revision 1. The licensee's Procedure HBAP C-808, Revision 0, described the quality-related activities included FSS, radiation protection, and administrative processes such as corrective action program, audits, records, and procedures. In addition, the HB QAP, Revision 33, Section 2.1 stated in part, that the quality requirements were provided in the respective administrative programs and procedures.

The inspector reviewed licensee Procedure HBAP C-12, "Problem Identification and Resolution," Revision 42, which described the licensee's corrective action program. The licensee utilized a computer software program (i.e., SAP) to document and trend the corrective actions that were entered. The procedure established provisions to ensure that the program provided: 1) adequate documentation and description of the event or condition; 2) standard criteria for identifying severity level, safety hazard level, and the quality classification (as applicable); 3) guidance for consistent method to disposition the problem, including threshold for conducting a cause analysis to prevent recurrence; 4) direction for review, approval, and documentation of the issue; 5) follow-up actions taken to verify timely and effective implementation of the corrective actions; and 6) review and periodic analysis of the corrective actions by the licensee. The inspector had several conversations with licensee and contractor personnel and concluded that personnel were aware of the corrective action process, recognized when and how to enter into the process, and were not hesitant in submitting a SAP notification when an issue was identified. In addition, the inspector concluded that the program was implemented with adequate licensee management oversight.

The inspector reviewed approximately 25 notification summaries, which had been generated since August 2016, and involved a range of issues including transportation, radiological protection program, training, and the environmental program. Based on the notifications reviewed, the inspector determined that the licensee assigned the appropriate severity level and/or safety hazard level and the notifications were appropriately dispositioned.

The inspector reviewed the first and second quarter 2017 CAP Report for HBPP Decommissioning. There were no Severity Level 4 or 5 SAP notifications generated, which were the licensee's designation for significant severity levels involving incidents such as, a significant hazard, reportable event, or an apparent violation. The reports provided a summary of the implementation of the program by productivity, summary of Severity Level 3 SAP notification that required work group evaluations, and trends that easy summarized the status of the program.

b. Audits and Self-Assessments

The audit program was reviewed for effectiveness as part of the overall audit process. The HB QAP established the necessary measures to implement audits to verify, at a minimum, the conformance of decommissioning activities to applicable regulatory requirements. The licensee's Procedure HBAP C-807, "HBPP Audit Program," Revision 0 provided the responsibilities, instructions, and audit schedule. The licensee's audit schedule met the 24-month frequency requirement as stated in the HB QAP. The procedure identified the programs in the audit schedule which were: 1) radiological protection; 2) Offsite Dose Calculation Manual (ODCM), including the radiological environmental monitoring program (REMP); and 3) FSS and LTP.

The inspector reviewed the "2016 Humboldt Bay Power Plant, Unit 3, Radiation Protection Audit Report," which also included the audit for the ODCM and REMP programs. The inspector verified that the audit report contained the prepared and approved plans which identified the audit scope, specified the focus elements, identified the auditor, and applicable criteria before the initiation of the audit activity. In addition, the inspector verified that any identified findings were captured in the licensee's corrective action program, with the appropriate management review and proper documentation.

The licensee's contractor responsible for the respective activity performed daily quality control reports for the respective work package. The report contained the daily quality control summary of the work package status; tailboard briefing that contained items such as job scope, safety, and walkdowns; names of individuals performing the tasks, pictures, field notes, and attendance logs. The daily quality control reports were provided to the contractor CAP Champion for review as applicable. The inspector concluded that the daily quality control reports provided management a current status of the activities and conditions of the jobsite under the respective work package.

2.3 Conclusions

The licensee was implementing its corrective action program in accordance with the appropriate regulatory requirements as prescribed by the HB QAP and implementing procedures. Responsible personnel were knowledgeable of the program and the status of the notifications. The licensee established measures to monitor the completion of the assigned actions. In addition, the licensee's audit program was being conducted and maintained in accordance with the appropriate regulatory requirements as prescribed by the HB QAP.

3 Radioactive Waste Treatment, and Effluent and Environmental Monitoring (84750)

3.1 Inspection Scope

The inspector reviewed the licensee's annual radioactive and environmental report and the radioactive effluent release report to verify that the program was implemented consistent with the licensee's ODCM requirements.

3.2 Observations and Findings

The licensee's DSAR, Revision 11, Chapter 5 described the radioactive waste and radiation protection programs. The DSAR stated that the modular ventilation systems

were used when required, to monitor gaseous effluents (particulates) and that the ODCM provided the information and methodologies used to evaluate the impact of radiological gaseous effluent discharged from the plant to ensure compliance with NRC requirements. The ODCM, Revision 4 contained the requirements for the REMP and the radioactive effluent controls, as well as the process control program for solid radioactive wastes to ensure compliance with 10 CFR Parts 20, 61, and 71.

The scope of the program consisted of environmental dosimeters and air samplers to evaluate the direct radiation and gaseous effluents respectively, from HBPP. There was no longer any liquid effluent releases from the site, since the discharge canal was being remediated. The licensee contained the water onsite for either subsequent disposal or processing. The licensee submitted its Annual Radiological Environmental Monitoring Report dated April 27, 2016, (ADAMS Accession ML17117A683) as required by Section 4.1 of the ODCM, and its Annual Radioactive Effluent Release Report for 2016, dated March 30, 2017 (ADAMS Accession ML17089A747) as required by Section 4.2 of the ODCM.

The licensee monitored onsite and offsite environments for direct radiation contribution, airborne contribution, and groundwater contribution. The inspector determined that the monitoring was performed in accordance with the ODCM and licensee's procedures. The NRC authorized the licensee to relocate the groundwater monitoring program from the ODCM requirements to the licensee's procedures in order to provide the flexibility necessary for the licensee to adjust the number and location of wells throughout the decommissioning process.

The licensee utilized thermoluminescent dosimeters (TLDs) to monitor for any direct radiation contribution to the onsite and offsite environments. The licensee monitored 16 locations around the site, in which a minimum of 8 locations were required by the ODCM for direct radiation monitoring. There were 3 TLDs at each location, and the results from the 3 TLDs were averaged for each location. In addition, the licensee monitored 5 locations offsite, at a radial distance of 0.3 miles to 9.4 miles from the site. The TLDs were exchanged on a quarterly frequency. Some of the TLDs were relocated as a result of the decommissioning activities and to ensure that the highest potential exposure to the public, primarily from the waste handling activities, continued to be monitored. The relocation of the TLDs was documented in the licensee's corrective action program. The licensee's analyses of the TLD results determined that the dose to the maximum exposed individual was indistinguishable from background. All TLD readings remained below the 100-millirem public dose limit specified in 10 CFR 20.1301(a).
The licensee monitored groundwater by a total of 12 intermediate and deep ground water wells located around the perimeter of the site. The licensee documented when wells were impacted as a result of decommissioning activities through the licensee's corrective action program and summarized the impacts in the annual radiological environmental monitoring report, as required. None of the required samples indicated detectable levels of tritium or gamma radioactivity. The groundwater was saline and was not used for direct consumption or for agricultural purposes; therefore, an ingestion pathway dose calculation was not required by the ODCM.

The ODCM required a minimum of 5 airborne monitoring stations and 1 offsite monitoring location. The air samplers were run continuously and the licensee collected and analyzed the results for gross beta and gross alpha on a weekly basis. On a quarterly basis, the

licensee analyzed the composited samples by gamma isotopic analysis. The licensee placed additional stations strategically across the site to further monitor airborne results from specific decommissioning activities. The results from these additional monitoring stations were also analyzed on a weekly basis. The licensee documented any malfunctions or impacts to the monitoring stations using the licensee's corrective action program and summarized each occurrence in the annual radiological environmental monitoring report, as required. The inspector reviewed the summary of the occurrences and actions taken by the licensee and concluded that the licensee was diligently monitoring the stations and implemented its program in accordance with the ODCM.

The Annual Radioactive Effluent Release Report documented the monitoring of effluent release using the modular HEPA ventilation units, which were considered a ground level, gaseous release pathway at the site. The licensee discontinued the use of these units after the second quarter 2016, because the removal of the radioactive components from the caisson had been completed. The NRC reviewed the annual report that documented the gaseous effluent samples analyzed for the first two quarters, which were all less than the minimum detectable for the analyses performed.

3.3 Conclusions

The licensee maintained and implemented a radiological environmental and effluent monitoring program in accordance with the appropriate regulatory requirements as prescribed by the licensee's ODCM.

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

4.1 Inspection Scope

The inspector reviewed the licensee's radioactive waste management and transportation activities to determine whether the licensee properly processed, packaged, stored, and shipped radioactive materials.

4.2 Observations and Findings

The inspector reviewed the summary of solid waste shipments made during 2016, as documented in the Annual Radioactive Effluent Release Report dated March 30, 2017 (ADAMS Accession ML17089A747). During 2016, there were 682 truck shipments to U.S. Ecology, Idaho; 109 truck shipments to Waste Control Specialists, Texas; and 57 truck shipments to Energy*Solutions*™ Clive Facility, Utah. The licensee also utilized waste processors and shipped 1 truck load to Perma-Fix Northwest Richland facility, Washington and there were 14 shipments from the processor to Clive, Utah.

The inspector also reviewed the licensee's shipment tracking summary for 2017, reported as of July 6, 2017. There were 137 truck shipments to U.S. Ecology, Idaho under Exemptions 1 & 2; and 66 shipments under Exemption 3; 174 truck shipments to Waste Control Specialists, Texas; and 16 truck shipments to Energy*Solutions*™ Clive Facility, Utah. The licensee also shipped 1 truck load to TOXCO, Oak Ridge, Tennessee, for recycling or re-use of materials.

The NRC authorized two alternate disposal requests for a total of 2.2M cubic feet (ft^3) under 10 CFR 20.2002 and the exemption provision under 10 CFR 30.11, to the licensee dated November 2, 2010 (ADAMS Accession ML102870344) and April 25, 2012 (ML120620450). The exemptions were for waste debris such as concrete, steel, insulation, roofing material and other debris from Units 1 and 2; and waste materials including soils, and debris containing low-activity radioactive debris generated during the demolition of structures, and remediation of activities at Unit 3. The safety evaluation report for Exemption 3 stated that the data analyzed for the actual concentrations collected under Exemptions 1 & 2 were equal to approximately 10-percent of the projected source term concentrations for each truckload. Therefore, the concentration and subsequently the dose was significantly less than estimated under the exemption. The licensee was tracking the volume of material shipped to U.S. Ecology, Idaho under the Exemptions 1 & 2, and was currently at 38-percent of the requested volume of 2.2M ft^3.

In addition, the NRC authorized one alternate disposal request under 10 CFR 20.2002 for HBPP disposal to U.S. Ecology, Idaho dated December 19, 2012 (ADAMS Accession ML12299A056) which was referred to as Exemption 3, by the licensee. This exemption consisted of 100,000 ft^3 of soil, concrete, steel, insulation, roofing material, gravel and other debris and 50,000 ft^3 of aqueous waste associated with the decommissioning of Unit 3. The water would be solidified with clay at U.S. Ecology, Idaho, prior to disposal. The source term included fission products, activation products, and special nuclear material (SNM) nuclides resulting from operations at Unit 3. The licensee was tracking the volume of materials shipped to U.S. Ecology, Idaho under this Exemption 3, and was currently at 79-percent of the solid waste and 55-percent of the aqueous waste.

The inspector reviewed the licensee's methodology for the waste characterization and classification including the use of scaling factors to account for difficult-to-measure radionuclides, for the demolished reactor vessel. Based on discussions with the waste engineer and shipper, and review of the supporting documentation, the inspector concluded that the methodology used was technically sound and based on current 10 CFR Part 61 analysis.

The inspector observed the packaging and communications for shipments of soil using Type IP-1 industrial packages. The licensee loaded two Type IP-1 packages into designated trucks, which were transported to Redding, California. Once in Redding, the packages were placed into railcars for transport to the Waste Control Specialists (WCS) disposal facility in Andrews, Texas. The NRC inspector observed the dose rates of the packages using a Ludlum Model 2401-S survey meter, serial number 079765, calibration due date August 1, 2017, and determined that the observed measurements were consistent with the transport index placed on the label of the respective packages measured. The transport index is a number determined by multiplying the maximum radiation level in millisievert per hour at 1 meter from the external surface of the package by 100, which is equivalent to the maximum radiation level in millirem per hour at 1 meter.

The inspector reviewed several shipping packages, training records, and verified the 24-hour emergency telephone number indicated on the shipping papers. The inspector observed the shippers and discussed the shipping packages, communications, and labels and concluded that the shippers were knowledgeable of the regulations and demonstrated adequate skills to accomplish the package preparation requirements for public transport.

4.3 Conclusions

The licensee continued to process, package and ship radioactive wastes in accordance with regulatory requirements.

6 Exit Meeting Summary

On July 13, 2017, the NRC inspector presented the final inspection results to Mr. J. Salmon, HBPP Deputy Director, and other members of the licensee's staff. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was provided during the inspection.

SUPPLEMENTAL INSPECTION INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

D. Anderson, Count Room & Effluent Supervisor
B. Barley, Site Closure Manager
C. Donahue, CAP Champion
C. Evenson, Final Status Survey Supervisor
B. Jasen, Environmental Oversight
M. Jones, Waste Shipper
G. Mason, Corrective Action Supervisor
B. Parish, Radiation Protection
J. Salmon, Deputy Director
D. Snyder, Hazardous Waste Engineer
P. Soenen, PG&E Regulatory Services

INSPECTION PROCEDURES USED

IP 71801	Decommissioning Performance and Status Review at Permanently Shutdown Reactors
IP 40801	Self-Assessment, Auditing, and Corrective Action at Permanently Shutdown Reactors
IP 84750	Radioactive Waste Treatment, and Effluent and Environmental Monitoring
IP 86750	Solid Radioactive Waste Management and Transportation of Radioactive Materials

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed

None

Discussed

None

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
CFR	*Code of Federal Regulations*
DSAR	Decommissioning Safety Analysis Report
FSSP	Final Status Survey Plan
HBPP	Humboldt Bay Power Plant

ISFSI	Independent Spent Fuel Storage Installation
LTP	License Termination Plan
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PG&E	Pacific Gas & Electric
PSDAR	Post-Shutdown Decommissioning Activities Report
QAP	Quality Assurance Plan
REMP	Radiological Environmental Monitoring Program
TLD	thermoluminescent dosimeters
WP	work package

HUMBOLDT BAY POWER PLANT – NRC INSPECTION REPORT 05000133/2017-002 –
DATED AUGUST 2. 2017

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