



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

September 27, 2019

James M. Welsch
Vice President, Nuclear Generation
and Chief Nuclear Officer
Pacific Gas and Electric Company
P.O. Box 56
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Avila Beach, CA 93424

SUBJECT: Humboldt Bay Power Plant INSPECTION REPORT 050-00133/2019-002

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted from August 26-29, 2019, at the Humboldt Bay Power Plant, Unit 3 facility, 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 inspectors discussed the results of the inspection with members of your staff at the conclusion of the onsite inspection on August 29, 2019. The results of the inspection are documented in the enclosure to this letter.

This 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. No violations were identified, and no response to this letter is required.

The inspection included a confirmatory survey that was conducted by staff from Oak Ridge Associated Universities/Oak Ridge Institute for Science and Education on behalf of the NRC. The results of this confirmatory survey were not available at the end of the onsite inspection, and will be presented to you and your staff at a later date under separate correspondence.

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) accessible from the NRC Web Site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response, if you choose to provide one, 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 Dr. Robert Evans at 817-200-1234, or the undersigned at 817-200-1156.

Sincerely,

/RA/

Heather J. Gepford, PhD, CHP, Chief
Materials Licensing and Decommissioning
Branch
Division of Nuclear Materials Safety

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

Enclosure:
NRC Inspection Report 050-00133/2019-002

cc w/enclosure:
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G. Perez, California Dept. of Health Services
Chairman, Humboldt County Board of Supervisors

**U.S. NUCLEAR REGULATORY COMMISSION
Region IV**

Docket No. 050-00133

License No. DPR-7

Report: 050-00133/2019-002

Licensee: Pacific Gas and Electric Co.

Facility: Humboldt Bay Power Plant, Unit 3

Location: 1000 King Salmon Ave.
Eureka, California 95503

Dates: August 26-29, 2019

Inspectors: Robert Evans, PhD, PE, CHP, Senior Health Physicist
Materials Licensing and Decommissioning Branch
Division of Nuclear Materials Safety

Marti Poston, Health Physicist
Materials Licensing and Decommissioning Branch
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Approved by: Heather Gepford, PhD, CHP, Chief
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Division of Nuclear Materials Safety

Attachment: Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

Humboldt Bay Power Plant, Unit 3 NRC Inspection Report 050-00133/2019-002

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. The inspection included a confirmatory survey by NRC staff and contractors for the NRC. In summary, the licensee was found to be conducting decommissioning activities in accordance with site procedures, license requirements, and applicable NRC regulations.

Organization, Management, and Cost Controls at Permanently Shutdown Reactors

The licensee continued to provide staff and train workers as specified in the quality assurance plan. The licensee also continued to maintain an organization that provided high-level review, and oversight of the decommissioning program as required by the quality assurance plan. (Section 1.2)

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

The inspectors determined that the licensee conducted safety reviews, and implemented design changes in accordance with regulatory requirements, site procedures, and NRC guidance. Specifically, the licensee made changes to the Offsite Dose Calculation Manual and reported the changes to the NRC as required by regulatory requirements, site procedures, and NRC guidance. The inspectors confirmed that the changes did not require prior NRC approval. (Section 2.2)

Maintenance and Surveillance at Permanently Shutdown Reactors

The inspectors determined that the maintenance rule did not apply to current operations under the license. The inspectors did not assess the maintenance rule applicability under the license that covers the Independent Spent Fuel Storage Installation facility. (Section 3.2)

Decommissioning Performance and Status Review at Permanently Shutdown Reactors

The licensee was conducting decommissioning activities in accordance with the Post-Shutdown Activities Report, and the License Termination Plan. In addition, the licensee was implementing industrial safety precautions, applying safety communications, and utilizing personal protective equipment as necessary to minimize safety hazards. The licensee continued to implement corrective actions for a previously identified violation involving final status survey instrumentation. A previously identified Inspect Followup Item involving issuance of dosimetry during a radiological emergency was reviewed and closed. (Section 4.2)

Inspection of Remedial and Final Surveys at Permanently Shutdown Reactors

The licensee was conducting final status surveys in accordance with License Termination Plan, and procedural requirements. The inspectors and a contractor for the NRC conducted confirmatory surveys during the inspection. The preliminary survey results suggest that the surveyed areas had been properly remediated for eventual release from the license. The results of the contractor's confirmatory survey will be presented to the licensee at a later date, and under separate correspondence. (Section 5.2)

Solid Radioactive Waste Management and Transportation of Radioactive Materials

The licensee managed, packaged, and shipped radioactive waste in accordance with procedural and regulatory requirements. (Section 6.2)

Report Details

Site Status

In July 1976, the Humboldt Bay Power Plant, Unit 3 facility was shut down for refueling, and seismic modifications. In June 1983, Pacific Gas & Electric Company (the licensee) announced its intention to decommission the Unit 3 facility. In July 1985, the NRC amended the Unit 3 license to change the status of the license to possess-but-not-operate. The plant was placed in SAFSTOR status for future decommissioning. (SAFSTOR 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 [deferred decontamination] to levels that permit release for unrestricted use.) The licensee completed the transfer of spent fuel from the spent fuel pool to the onsite Independent Spent Fuel Storage Installation (ISFSI) in December 2008, and the decontamination and dismantlement (DECON) phase of Unit 3 commenced at that time.

Decommissioning activities completed since the previous inspection, conducted in April 2019, (Agencywide Documents Access and Management System [ADAMS] Accession No. ML19135A315), included completion of site contouring, and site drainage. The licensee permanently removed the water treatment system from service. The water treatment system was previously in service primarily to maintain compliance with State of California discharge requirements for turbidity levels. The licensee also modified the environmental monitoring program by eliminating one sampling station and relocating several environmental thermoluminescent dosimeters (TLDs) due to changes in the fence line. In addition, the site perimeter fence was completed with several minor exceptions.

At the time of the inspection, four structures remained onsite. These structures (security building, count room, office building, and waste management facility) will be repurposed for other uses. Activities in progress during the inspection included planting local plants, and removal of evasive plants, final installation of the perimeter fence, and gates, and performance of the final status survey. The licensee plans to complete site restoration activities and final status surveys by the end of 2019.

1 Organization, Management, and Cost Controls at Permanently Shutdown Reactors (Inspection Procedure 36801)

1.1 Inspection Scope

The inspectors reviewed documents, and interviewed plant personnel to assess the licensee's performance in the following areas:

- Evaluate methods the licensee resolves employee/safety concern, and provides information to the employees,
- Regulatory requirements are properly implemented with respect to the site organization, staffing, and staff qualifications,
- Licensee appropriately implements the technical specifications, and Post-Shutdown Decommissioning Activities Report (PSDAR), and

- Licensee decommissioning activities are initiated, sequenced, performed, and completed in a manner that is reasonably consistent with docketed planning and scheduling information.

1.2 Observations and Findings

The inspectors reviewed the licensee's organizational structure. The site staffing requirements are provided in the Humboldt Bay Quality Assurance Plan (HBQAP), Revision 38, dated April 2, 2019. Figure 2 of the Plan provided the decommissioning organizational chart. All positions shown on the organizational chart were filled at the time of the inspection.

Staff qualifications, indoctrination, and training are also discussed in the HBQAP. General employee training was conducted for all new employees, and as an annual refresher for current employees. The licensee tracked general employee training status and all other training using a computer-based program. Employees were notified when required training expired, and the computer-based program reminded them of the need to requalify. The current program provided individuals with a 30-day grace period from training expiration for renewal. A spot check of training and qualification records revealed that staff was qualified for the work they were conducting.

The licensee no longer had formal safety committees onsite; safety was addressed in pre-job briefings. The NRC inspectors observed two pre-job briefings associated with final status survey work. The pre-job briefings were concise, thorough, and demonstrated a commitment to safety by the individuals participating in the briefing.

The HBQAP includes discussion of the Independent Management Review, a high-level management oversight program. The inspectors reviewed the last meeting summary, conducted in May 2018. The reviewers assessed the effectiveness of the quality assurance program at the site. The reviewers concluded that the licensee effectively implemented the program with several minor deficiencies involving responsibilities and authorities. The next review was scheduled to occur in May 2020, unless decommissioning activities had been completed at that time.

1.3 Conclusions

The licensee continued to provide staff and train workers as specified in the quality assurance plan. The licensee also continued to maintain an organization that provided high-level review, and oversight of the decommissioning program as required by the quality assurance plan.

2 Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors (Inspection Procedure 37801)

2.1 Inspection Scope

The inspectors reviewed documents, and interviewed plant personnel to assess the licensee's performance in the following areas:

- Determination that licensee procedures and processes conform to the regulations and guidance associated with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59,
- Implementation of a sampling of design change modifications to verify that procedures and controls were followed,
- Verify that the applicable changes were effectively implemented in the plant, in plant procedures, drawings, and training programs if applicable, and
- Verify that the changes made under 10 CFR 50.59 did not require prior NRC approval.

2.2 Observations and Findings

The requirements for the Offsite Dose Calculational Manual (ODCM) are provided in Appendix B to the HBQAP. The ODCM provides the requirements for the effluent and environmental monitoring program. The current effluent and environmental program included measurement of direct radiation at the fence line using TLDs at sixteen locations, and air monitoring at three locations.

At the time of the onsite inspection, the ODCM had been revised twice by the licensee in calendar year 2019. Changes to the ODCM were evaluated using the instructions provided in Procedure HBAP C-19, "Licensing Bases Impact Evaluation (LBIE)," Revision 37 effective June 30, 2016. The LBIE process was used to evaluate changes, tests, experiments, and other activities for potential impact on the licensing bases, to determine if a 10 CFR 50.59 evaluation was required prior to implementing the proposed change, test, experiment, or other activity involving the licensing basis, and to determine if NRC approval was required prior to making a change to the licensing bases document. The following LBIE documents were reviewed by the inspectors:

- ODCM Rev. 29 - Change to ODCM to reflect movement of TLD locations to coincide with movement of perimeter fence as areas were transitioned out of controlled area
- ODCM Rev. 30 - Change to ODCM to reflect elimination of one of the air sampling stations (reflects a reduction from four to three stations)

The inspectors reviewed the reduction in air sampling stations and the movement of the TLDs against the ODCM requirements and the guidance provided in NUREG-0473, "Draft Radiological Effluent Technical Specifications for Boiling Water Reactors." Section 3.12.1, Table 3.12.1 of NUREG-0473 allows licensees to use between 1-5 locations to monitor for airborne effluents and 1-8 locations to monitor for direct gamma radiation. The licensee's effluent and environmental monitoring program at the time of the inspection was consistent with NRC guidance and ODCM requirements.

The inspectors reviewed the LBIE documents generated for Revisions 29 and 30 to the ODCM. The documents and review processes were consistent with the requirements specified in the implementing procedure.

The inspectors reviewed previous changes to the ODCM to determine if the ODCM changes had been submitted to the NRC as part of the annual radiological effluent report. Revision 26 to the ODCM was submitted to the NRC on March 24, 2016 (ADAMS Accession No. ML16089A201), as part of the report for calendar year 2015. Revision 27 was submitted to the NRC on March 30, 2017 (ADAMS Accession No. ML17089A747), as part of the report for calendar year 2016. Revision 28 was submitted to the NRC on March 7, 2019 (ADAMS Accession No. ML19066A392), as part of the radiological effluent report for calendar year 2018. Revisions 29 and 30 are anticipated to be submitted to the NRC in the annual radiological effluent report for calendar year 2019.

2.3 Conclusions

The inspectors determined that the licensee conducted safety reviews and implemented design changes in accordance with regulatory requirements, site procedures, and NRC guidance. Specifically, the licensee made changes to the ODCM, and reported the changes to the NRC as required by regulatory requirements, site procedures, and NRC guidance. The inspectors confirmed that the changes did not require prior NRC approval.

3 **Maintenance and Surveillance at Permanently Shutdown Reactors (Inspection Procedure 62801)**

3.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- Maintenance and surveillance for structures, systems, and components (SSCs) are being conducted in a manner that results in safe storage of spent fuel, and proper operation of radiation monitoring and effluent control equipment,
- Evaluate the effectiveness of the licensee maintaining adequate material, and structural integrity of SSCs important to safe decommissioning, and
- Licensee has an effective maintenance program that implements the maintenance rule requirement.

3.2 Observations and Findings

The licensee was in the final stages of decommissioning, and no important to safety structures, systems or components (SSCs) remained other than those associated with the ISFSI. The reactor and all its associated components have been removed from the site, and the remaining decommissioning work under the Part 50 license was associated with final status surveys, shipping of waste materials offsite for disposal and planting of remediated areas with native grasses and plants. The four structures remaining onsite are not associated with the reactor or its components (security building, count room, office building and waste management facility) and will be repurposed for other uses by PG&E. Title 10 CFR 50.65, the maintenance rule, requires licensees to monitor the performance and condition of SSCs in a manner sufficient to provide reasonable assurance that the SSCs are capable of performing their intended functions. Since the

SSCs associated with the reactor have been deinstalled and removed from the site, the maintenance rule does not apply to this stage of decommissioning. The inspectors walked down the site with the licensee's representatives from management and radiation protection to assess the material condition of the site. The inspectors did not assess the radiological effluent controls for liquid effluents as the licensee had discontinued the release of liquid effluents in December 2013. The only SSCs in place at the site were those associated with the ISFSI license. The inspectors did not assess the SSCs associated with the safe storage of spent fuel.

3.3 Conclusions

The inspectors determined that the maintenance rule did not apply to current operations under the 10 CFR Part 50 license. The inspectors did not assess the maintenance rule applicability under the 10 CFR Part 70 license that covers the ISFSI facility.

4 **Decommissioning Performance and Status Review at Permanently Shutdown Reactors (Inspection Procedure 71801)**

4.1 Inspection Scope

The inspectors reviewed documents, interviewed plant personnel, and performed plant tours to assess the licensee's performance in the following areas:

- Status of ongoing decommissioning activities, and planning for future activities,
- Operability and functionality of systems necessary for safe decommissioning were assessed through plant walkdowns, such as: radioactive effluent monitoring, spent fuel pool level and temperature control, and radiation protection monitors and alarms,
- Assessed field conditions and decommissioning activities, and
- Observe and assess the status of facility housekeeping.

4.2 Observations and Findings

a. Observation of Site Activities

The PSDAR (ADAMS Accession No. ML13213A160) provides a general description of the planned decommissioning activities. In addition, the License Termination Plan (LTP) states that the licensee would dismantle and decontaminate the site in accordance with site procedures, and approved work packages. The inspectors conducted site tours to observe work in progress. In general, the licensee was nearing completion of all onsite work. All structures intended to be demolished had been demolished, and all remaining structures will be repurposed at the end of the decommissioning project. The inspectors observed non-radioactive waste material being packaged and shipped for offsite disposal. The inspectors also observed the licensee's implementation of the final status survey program. The inspectors determined that the licensee was conducting work as generally described in the PSDAR.

The work in progress included installation of the final sections of the site perimeter fence and final landscaping. The licensee was constructing a gate near the waste management facility. The licensee was also planting/landscaping areas that had been final status surveyed. Most land areas of the site were covered with clean topsoil (between 3 and 13 inches of topsoil, depending on the area) and planted with native grasses and other native plants including trees, shrubs, ferns, and wildflowers.

The inspectors observed the licensee's control of industrial safety and precautions throughout the site, including discussions of hazards and safety precautions at morning meetings, and as part of pre-job briefings prior to work activities. The licensee had designated pedestrian work activities and traffic controls throughout the site. The licensee's staff also established and continuously enforced the use of personal protective equipment across the site.

b. Critical Path Activities

Section 3.0 of the PSDAR discusses the licensee's commitment to develop a critical path method to reflect long-range planning and coordination for the project. The inspectors reviewed and discussed the current critical path report with licensee representatives.

At the time of the inspection, the critical path consisted primarily of final status survey projects including completion of field sampling, preparation of survey packages, and submittal of the final status survey report to the NRC. Remaining final status survey projects included surveying the western side of the site (side facing the bay), cleaning and surveying the count room, finishing the survey of the waste management facility, and surveying the security building. Once the field work was complete, the licensee planned to complete the associated survey packages and final status survey report. As noted earlier, the licensee plans to complete all field work by the end of 2019.

c. Follow Up of Non-Cited Violation 050-00133/1901-01

As discussed in NRC Inspection Report 050-00133/2019-001 (ADAMS Accession No. ML19135A315), the licensee identified in February 2019 that it was not conducting daily instrument response checks for the in-situ object characterization system (ISOCS). The licensee added this issue to its NRC-approved corrective action program (SAPN 1450541), and the NRC issued a non-cited violation in accordance with the NRC's Enforcement Policy.

During this inspection, the inspectors reviewed the status of the licensee's corrective actions for the non-cited violation. The licensee was conducting the daily instrument response checks for ISOCS, but the SAPN remained open. Discussions with licensee staff revealed that the SAPN was expanded to require a data analysis for each ISOCS instrument. As the data analysis was completed for each instrument, that portion of the SAPN was closed. The SAPN will be closed in its entirety when the data analyses are completed.

d. (Closed) Inspection Followup Item 050-00133/9801-02

During an internal NRC review of open issues for this licensee, the inspectors identified that a former Inspection Followup Item (IFI) remained open. This IFI involved the failure

to issue dosimetry to individuals remaining onsite during a radiological emergency. Specifically, an exercise critique identified that maintenance personnel, who did not normally wear dosimetry, dispatched to assess the condition of the reactor fuel building, were not issued dosimetry prior to their entry into the reactor fuel building. The licensee discontinued dosimetry for all personnel in calendar year 2016 after the reactor fuel building was dismantled. This IFI should have been closed at that time.

4.3 Conclusions

The licensee was conducting decommissioning activities in accordance with the PSDAR, and the LTP. In addition, the licensee was implementing industrial safety precautions, applying safety communications, and utilizing personal protective equipment as necessary to minimize safety hazards. The licensee continued to implement corrective actions for a previously identified violation involving final status survey instrumentation. A previously identified Inspect Followup Item involving issuance of dosimetry during a radiological emergency was reviewed and closed.

5 Inspection of Remedial and Final Surveys at Permanently Shutdown Reactors (Inspection Procedure 83801)

5.1 Inspection Scope

The inspectors reviewed the licensee's final status survey program for compliance with LTP requirements and site procedures. The inspection included review of surveys in progress, results of completed surveys, and performance of independent confirmatory surveys.

5.2 Observations and Findings

a. Review of Final Status Survey Program

At the time of the inspection, the licensee was conducting final status surveys. Section 5 of the NRC-approved LTP provides the requirements for final status surveys (ADAMS Accession No. ML18066A137). As part of the survey process, the licensee divided the site in various survey units using the guidance provided in NUREG-1575, Revision 1, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)." The inspectors reviewed the status of the final status survey program with the licensee's staff.

Prior to the inspection, the NRC reviewed and accepted the results of surveys for selected survey units. By letter dated January 5, 2018 (ADAMS Accession No. ML17115A108), the NRC released approximately 30 acres of the site known as Fisherman's Channel from the license based on the results of previously completed final status and confirmatory surveys. The NRC also approved the final status survey reports for the mobile emergency power plant station and ISFSI areas (ADAMS Accession No. ML18278A087). The licensee submitted, but the NRC has not approved, the final status survey reports for the relay building and mobile emergency power plant station island building (ADAMS Accession No. ML19143A046).

The licensee initially established survey unit boundaries across the site using the guidance provided in MARSSIM based on the potential for residual contamination.

These initial classifications were provided in Section 2 and Table 5.2 of the LTP. License Condition 2.C.5 allows the licensee to reclassify survey units as long as the licensee notifies the NRC at least 14 days prior to implementation of the reclassification of a survey unit to a less restrictive classification. By letter dated July 11, 2019 (ADAMS Accession No. ML19192A340), the licensee downgraded the classification of the waste management facility walls and floor. The NRC did not object to the changes in classification at that time.

The inspectors observed the licensee's staff conducting final status surveys of the waste management facility. These surveys consisted of scan surveys of surfaces, fixed and removable contamination measurements of the floors and walls of the facility. The licensee conducted the surveys using the less restrictive survey instructions as referenced in its July 2019 letter (fewer sample points, for example). As noted below, the NRC conducted a confirmatory survey of the waste management building. The licensee's and NRC's preliminary survey results suggest that the building surfaces meet the NRC-approved release limits, indicating that the licensee's decision to downgrade the classification of the building was acceptable.

In addition to the waste management facility, the inspectors observed the licensee conducting a final status survey of a trench that was constructed to support installation of an automatic fence gate. The inspectors confirmed that the surveyors used calibrated instruments to conduct the surveys, and the surveyors followed the instructions provided in the respective survey packages for both the waste management facility and the trench.

The inspectors reviewed several survey packages that were in progress or had been completed for consistency with the requirements provided in Section 5.0 of the LTP. These survey packages included the western area of the site (bay side of site), former discharge canal, and waste management facility. The licensee's staff used checklists to verify that the packages were complete prior to implementation. The licensee's documentation included a verification that the survey unit had been remediated, visually inspected, physically isolated from other potentially contaminated areas, and formally turned over to the final status survey group prior to the survey. The survey packages provided detailed instructions for performance of the surveys including minimum detectable concentration calculations, survey coverage (in percent), radionuclides of concern, and quality control requirements. The inspectors confirmed that the survey packages were developed and implemented in accordance with the instructions provided in the LTP.

The inspectors reviewed representative survey results, after completion of the respective final status survey. The packages included the recording of the survey measurements, results of quality control samples, and statistical analyses of the data, to demonstrate compliance with the release criteria. The inspectors concluded that the completed survey packages complied with LTP requirements. The licensee plans to submit these survey packages to the NRC for review and approval as part of the final status survey report.

b. Confirmatory Surveys

In accordance with MARSSIM, a confirmatory survey (also known as an independent verification survey) may be performed by the responsible regulatory agency or by an

independent third party (e.g., contracted by the regulatory agency) to provide data to substantiate results of the final status survey. During the inspection, representatives from Oak Ridge Associated Universities/Oak Ridge Institute for Science and Education conducted a confirmatory survey on behalf of the NRC. The NRC's contractors used the guidance provided in the confirmatory survey plan that was previously submitted to the NRC on August 3, 2016 (ADAMS Accession No. ML18029A019).

The confirmatory survey included gamma scans, fixed point measurements, swipe sampling, and soil sampling. The contractor surveyed portions of the waste management facility, security building, and count room. The office building was not surveyed because it had been surveyed by the contractor during a previous inspection. Outdoor areas were scan surveyed and soil sampled at locations that were both systematically (random) and judgmentally selected for sampling.

As part of the confirmatory survey, the contractor collected 10 soil samples for analysis. The contractor also took possession of 10 soil samples previously collected by the licensee for independent analyses. The preliminary confirmatory survey results, based on fixed point and scan survey results, suggest that the surveyed areas meet the respective release criteria. The final survey results, including soil sample results, will be presented to the licensee at a later date, after the contractor has analyzed the soil and swipe samples, and NRC has reviewed the survey results.

During the inspection, the inspectors conducted an independent confirmatory survey of the public pathway between the western site boundary and the bay. The inspectors conducted the survey using Radeye SX survey meters connected to SPA-3 probes (Serial Numbers 52223 and 19205, calibration due date of 7/30/20; and Serial Numbers 52198 and 19211, calibration due date of 3/3/20). With a background of 2-3 microrentgen per hour, the measurements ranged from background to about twice background. The highest measurements were identified around rock that appeared to be naturally radioactive. The inspectors' confirmatory survey did not identify any plant derived radioactive material in the public pathway.

5.3 Conclusions

The licensee was conducting final status surveys in accordance with LTP and procedural requirements. The inspectors and a contractor for the NRC conducted confirmatory surveys during the inspection. The preliminary survey results suggest that the surveyed areas had been properly remediated for eventual release from the license. The results of the contractor's confirmatory survey will be presented to the licensee at a later date and under separate correspondence.

6 Solid Radioactive Waste Management and Transportation of Radioactive Materials (Inspection Procedure 86750)

6.1 Inspection Scope

The inspectors reviewed the radioactive waste management and transportation programs to determine if the licensee had properly processed, packaged, stored, and shipped radioactive material in accordance with procedural and regulatory requirements.

6.2 Observations and Findings

The inspectors reviewed transportation records and procedures to ascertain whether the licensee's staff were loading and shipping radioactive and hazardous material in accordance with regulatory requirements. The inspectors interviewed the individuals who implemented the licensee's shipping program. The inspectors concluded that the licensee was packaging and shipping radioactive and hazardous material in accordance with regulatory requirements.

Since the last inspection in April 2019 (ADAMS Accession No. 19135A315), the licensee shipped some sealed sources. The sealed sources were used to support operation of the drive-through truck monitors. The shipped radioactive material included europium-155 and sodium-22. The shipment consisted of limited quantities of radioactive material, and the material was shipped as an exempt package. The licensee used a procedural checklist to ensure that the shipment was prepared for shipment and the associated shipping paper package was complete. The inspectors confirmed that the shipment complied with procedural and regulatory requirements.

During 2019, the licensee shipped exempt quantity packages containing low-level concentrations of radioactive material. These shipments were sent to a disposal site in Idaho authorized to accept these types of shipments. To reduce the overall cost of waste material disposals, the licensee previously submitted three alternate disposal requests (exemptions) from the requirements specified in 10 CFR 20.2002. The NRC approved the requests but placed limits on the quantities of waste material that could be disposed at the Idaho facility (see ADAMS Accession Nos. ML102870344, ML120620450, and ML12299A056). To demonstrate compliance with the alternate disposal limits, the licensee maintained records documenting the amount of material shipped under each of the three exemption requests.

At the time of the inspection, the licensee had not exceeded any of the quantity limitations specified in the three exemption requests. Although the licensee reached the 89-percent disposal limit for solid non-aqueous waste, the licensee's staff indicated that most of these shipments had been completed and an increase in the exemption limit was not needed. The licensee's records indicated that the site staff were loading and shipping exempt quantity waste in accordance with the limitations set forth in the original evaluations.

The inspectors briefly reviewed how the licensee managed the wastes being shipped to the facility in Idaho. The NRC placed a limit on the radioactivity concentrations allowed to be shipped to the Idaho facility. The licensee used waste stream profiling to determine the disposal site and manifested quantities of radioactive materials being shipped. For example, miscellaneous yard wastes were categorized as a waste stream for disposal as exempt quantity material. The licensee conducted this evaluation in 2014. The evaluation calculated radioactive exposure rate limits for this waste stream. The inspectors confirmed that the exposure rate limits had been incorporated into the implementing procedure. If the material in the package (yard wastes, in this example) met the physical description and the material exposure rates met the analyzed limitations, then the material could be packaged, manifested, and shipped as exempt quantity wastes to the Idaho facility for disposal.

The inspectors reviewed a representative shipment package for waste shipped to the Idaho facility. The package included survey measurements. The inspectors confirmed that the survey results recorded in the package were below the limits specified in the procedure for shipment to the Idaho facility (16.8 microrentgen per hour on contact, and 7.2 microrentgen per hour at one meter from the package surface).

During the inspection, the licensee shipped non-radioactive, non-hazardous waste to a landfill for disposal. The inspectors conducted independent radiological surveys of one shipment, to ensure that the shipped material was not radioactive. The package was surveyed using a Ludlum Model 2401-S survey meter (Serial Number 182780, calibration due date of 11/5/19) calibrated to cesium-137 (the primary radionuclide of concern at this site). With a background of 4-5 microrentgen per hour, the radiological exposure rates at the surfaces of the package were indistinguishable from background. The survey results suggest that the packaged material did not contain radioactive material.

6.3 Conclusions

The licensee managed, packaged, and shipped radioactive waste in accordance with procedural and regulatory requirements.

7 **Exit Meeting Summary**

The inspectors presented the inspection results to the licensee's representatives at the conclusion of the onsite inspection on August 29, 2019. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was provided to the inspectors during the inspection.

SUPPLEMENTAL INSPECTION INFORMATION

Partial List of Persons Contacted

Licensee

B. Barley, Site Closure Manager
M. Blake, Final Status Survey Engineer
B. Lopez, Licensing
G. Madison, Final Status Survey Supervisor
W. Parish, Field Support Supervisor
K. Rowberry, Site Closure Specialist/Training Coordinator
J. Salmon, Deputy Director
L. Sharp, Director

Oak Ridge Associated Universities/Oak Ridge Institute for Science and Education

E. Bailey, Project Manager
K. Engel, Health Physicist
J. Lee, Health Physicist
A. Owens, Health Physicist

Inspection Procedures (IPs) Used

IP 36801 Organization, Management and Cost Controls at Permanently Shutdown Reactors
IP 37801 Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors
IP 62801 Maintenance and Surveillance at Permanently Shutdown Reactors
IP 71801 Decommissioning Performance and Status Review at Permanently Shutdown Reactors
IP 83801 Inspection of Remedial and Final Surveys at Permanently Shutdown Reactors
IP 86750 Solid Radioactive Waste Management and Transportation of Radioactive Materials

Items Opened, Closed and Discussed

Opened

None

Closed

050-00133/9801-02 IFI Issuance of dosimetry to individuals during radiological emergency

Discussed

None

List of Acronyms Used

| | |
|---------|---|
| ADAMS | Agencywide Documents Access and Management System |
| CFR | <i>Code of Federal Regulations</i> |
| HBQAP | Humboldt Bay Quality Assurance Program |
| ISOCS | in-situ object characterization system |
| ISFSI | Independent Spent Fuel Storage Installation |
| IFI | Inspection Follow up Item |
| IP | Inspection Procedure |
| LBIE | Licensing Basis Impact Evaluation |
| LTP | License Termination Plan |
| MARSSIM | Multi-Agency Radiation Survey and Site Investigation Manual |
| NRC | U.S. Nuclear Regulatory Commission |
| ODCM | Offsite Dose Calculation Manual |
| PSDAR | Post-Shutdown Decommissioning Activities Report |
| SSCs | structures, systems, and components |
| TLDs | thermoluminescent dosimeters |

HUMBOLDT BAY POWER PLANT INSPECTION REPORT 050-00133/2019-002, DATED -
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SUNSI Review ADAMS: Non-Publicly Available Non-Sensitive Keyword:
 By: RJE Yes No Publicly Available Sensitive NRC-002

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