



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

January 31, 2018

Mr. James M. Welsch
Vice President, Nuclear Generation
and Chief Nuclear Officer
Pacific Gas and Electric Company
P.O. Box 56
Mail Code 104/6
Avila Beach, CA 93424

**SUBJECT: HUMBOLDT BAY POWER PLANT – NRC INSPECTION REPORT
05000133/2018-001**

Dear Mr. Welsch:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on January 9-11, 2018, at the Humboldt Bay Power Plant, Unit 3 facility, located near Eureka, California. The purpose of the inspection was to accompany the NRC's contractor, Oak Ridge Associated Universities, during performance of confirmatory surveys in support of decommissioning activities. The NRC inspector discussed the results of this inspection with Mr. B. Barley and other members of your staff during an onsite final exit meeting conducted on January 11, 2018. 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, 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 and the final status survey 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 Ms. Linda M. Gersey at 817-200-1299, or the undersigned at 817-200-1191.

Sincerely,

/RA by RSBrowder Acting For/

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

Docket: 50-133
License: DPR-7

Enclosure:
Inspection Report 05000133/2018-001;
w/Attachment: Supplemental Information

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

Docket No. 05000133
License No. DPR-7
Report No. 05000133/2018-001
Licensee: Pacific Gas & Electric Company
Facility: Humboldt Bay Power Plant, Unit 3
Location: 1000 King Salmon Avenue
Eureka, California 95503
Dates: January 9-11, 2018
Inspector: Linda M. Gersey, Health Physicist
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety
Accompanied by: Erika Bailey, Project Manager
Oak Ridge Associated Universities
Kaitlin Engel, Health Physicist
Oak Ridge Associated Universities
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 05000133/2018-001

This U.S. Nuclear Regulatory Commission (NRC) inspection was an announced inspection to accompany NRC's contractor, Oak Ridge Associated Universities (ORAU), operating under the Oak Ridge Institute for Science and Education, during performance of confirmatory surveys in support of decommissioning activities at the Humboldt Bay Power Plant, Unit 3 facility.

Inspection of Remedial and Final Surveys at Permanently Shutdown Reactors

- The ORAU staff conducted confirmatory surveys of two survey units in accordance with the NRC-approved procedure. NRC staff will evaluate the results of the ORAU confirmatory surveys and soil sample results when they become available. (Section 1.2)
- The licensee had performed FSS in the caisson in accordance with internal procedures. (Section 1.2)
- The caisson well and adjacent soils which exceed the DCGLs continue to be evaluated by NRC staff. (Section 1.2)

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 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 to the Independent Spent Fuel Storage Installation 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 No. 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 (HBQAP) (ADAMS Accession No. 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 HBQAP.

On August 13, 2014, the licensee submitted Revision 1 to the HBPP, Unit 3, License Termination Plan (LTP) (ADAMS Accession Package No. 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 (ADAMS Accession No. 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 licensee staff performing the final status survey (FSS) of the caisson, operation of the licensee's EnergySolutions™ gamma radiation detection and in-container analysis (GARDIAN) system, and a walk-through of the counting labs used to analyze soil samples in support of decommissioning. The inspector also observed ORAU performing confirmatory surveys in two survey units. The licensee currently plans to complete final status surveys and site restoration activities by early 2019.

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

1.1 Inspection Scope

The inspector verified that ORAU representatives performed confirmatory surveys in accordance with NRC-approved Project-Specific Plan for the Confirmatory Survey Activities at the Humboldt Bay Power Plant, dated August 3, 2016, (ADAMS Accession No. ML18029A019). In addition, the inspector observed the licensee performing FSS of the caisson.

1.2 Observations and Findings

During the inspection, the inspector observed two ORAU staff, under NRC's contract, perform confirmatory surveys in two survey units. The ORAU staff used two Ludlum Model 2221 Ratemeters with a Ludlum Model 44-10 sodium iodide (NaI) scintillator for walk-over gamma surveys. Gamma surveys and soil samples were taken in accordance with the ORAU's NRC-approved Project-Specific Plan for the Confirmatory Survey Activities at the Humboldt Bay Power Plant.

The inspector observed ORAU staff perform daily checks on the survey equipment, including determining a background measurement and source reproducibility checks. The quality control program for instrumentation is described in the NRC-approved procedure. All daily check results were within acceptable ranges.

In December 2017, the licensee performed a FSS at Parking Lot A, Survey Unit BBPP-FSS-00L10-14. The FSS included a gamma walk-over and collection of 15 statistical soil samples. The inspector reviewed the licensee's FSS results for this survey unit and observed that the report noted that there were no elevated gamma readings above background and no soil samples exceeding the licensee's derived concentration guideline levels (DCGLs). The licensee's DCGLs are found in the NRC-approved LTP Revision 1. The licensee's documentation of the FSS at this location indicated that this survey unit met the LTP Revision-1 criteria for unrestricted release.

During the inspection, ORAU staff performed confirmatory surveys at the Parking Lot A, Survey Unit BBPP-FSS-00L10-14. For areas that were accessible, ORAU staff performed 100% surface gamma scans. No areas were found to be above background; thus, no judgmental soil samples were taken. Some inaccessible areas in the survey unit were covered in water and thus, unsafe to perform surveys. NRC staff will review the ORAU confirmatory survey report when it becomes available.

The inspector also observed ORAU staff performing confirmatory surveys in Survey Unit HBPP-FSSP-NOL1-09-01, which includes four wells and the open land area inside the caisson. ORAU staff performed a 100% area gamma scan of the land surface and obtained 3 judgmental soil samples at locations that exceeded background levels. The three judgmental soil samples obtained by ORAU staff were split and one half of the sample was provided to the licensee to perform their own analysis. Both ORAU staff and the inspector observed background gamma levels in the caisson of approximately 5,500-6,500 counts per minute. The NRC will evaluate the soil sample results when they become available. The inspector also performed gamma scans of approximately 30% of

the total land area in the caisson survey unit using a NaI scintillator (Ludlum Model 2221 Ratemeter, NRC No. 076572, with an Eberline Model SPA-3 NaI detector, calibration due date of December 12, 2018).

During the confirmatory surveys being performed by the inspector and ORAU staff in the caisson survey unit, the licensee was also performing the FSS. The inspector observed the licensee performing gamma surveys using equivalent survey instrumentation to the ORAU staff and the inspector's instrumentation. The licensee also obtained 15 statistical soil samples as determined by the licensee's Final Status Survey Planning Worksheet for Survey Unit HBPP-FSSP-NOL1-09-01. The inspector observed and interviewed the licensee's staff performing the surveys and determined the surveys were being conducted in accordance with the licensee's procedure indicated in the Final Status Survey Planning Worksheet for Survey Unit HBPP-FSSP-NOL1-09-01.

Prior to entry in the caisson, the licensee provided safety training to the inspector, ORAU staff, and the licensee's staff who were entering the caisson. Safety training included a review of the industrial hazards, radiological hazards, and information on how to respond if an emergency occurred while in the caisson. The training also included a detailed review of the licensee's Final Status Survey Planning Worksheet for Survey Unit HBPP-FSSP-NOL1-09-01. The training was thorough and there were opportunities provided for any questions by the participants.

Prior to the on-site inspection, the licensee had identified a well located in the caisson footprint in which the internal well and the soil immediately surrounding the well exceeded the DCGLs for several radionuclides. The NRC headquarter staff continued to evaluate this finding after the close of the inspection. The results of the NRC evaluation will be documented at a future date.

1.3 Conclusions

The ORAU staff conducted confirmatory surveys of two survey units in accordance with the NRC-approved procedure. NRC staff will evaluate the results of the ORAU confirmatory surveys and soil sample results when they become available. The licensee had performed FSS in the caisson in accordance with internal procedures. The caisson well and adjacent soils which exceed the DCGLs continue to be evaluated by NRC staff.

2 Exit Meeting Summary

On January 11, 2018, the NRC inspector presented the final inspection results to Mr. B. Barley, HBPP Site Closure Manager, 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

B. Barley, Site Closure Manager
M. Erickson, FSS & LTP Consultant
L. Lewis, FSS Foreman
B. Lopez, PG&E Licensing
G. Madison, FSS Engineer
W. Parish, Radiation Protection Engineer
J. Ringwald, Safety Supervisor
K. Rowberry, FSS/Site Closure

INSPECTION PROCEDURE USED

IP 83801 Inspection of Remedial and Final Surveys at Permanently Shutdown Reactors

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed

None

Discussed

None

LIST OF ACRONYMS

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|-------|---|
| ADAMS | Agencywide Documents Access and Management System |
| CFR | <i>Code of Federal Regulations</i> |
| DCGL | Derived Concentration Guideline Level |
| FSSP | Final Status Survey Plan |
| HBPP | Humboldt Bay Power Plant |
| LTP | License Termination Plan |
| NaI | Sodium iodide scintillator |
| NRC | Nuclear Regulatory Commission |
| ORAU | Oak Ridge Associated Universities |
| PG&E | Pacific Gas & Electric |
| PSDAR | Post-Shutdown Decommissioning Activities Report |
| QAPP | Quality Assurance Project Plan |
| WP | Work Package |

HUMBOLDT BAY POWER PLANT – NRC INSPECTION REPORT 05000133/2018-001 –
 DATED JANUARY 31, 2018

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ADAMS ACCESSION NUMBER: ML18030B036

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| OFFICE | DNMS/FCDB | C:FCDB | | |
| NAME | LMGersey | RLKellar | | |
| SIGNATURE | /RA/ | /RA by RSBrowder Acting For/ | | |
| DATE | 01/30/18 | 01/31/18 | | |

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