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

October 11, 2012

Mr. Edward D. Halpin
Senior Vice President
& Chief Nuclear Officer
Pacific Gas and Electric Company
P. O. Box 3
Mail Code 104/6/601
Avila Beach, CA 93424

SUBJECT: NRC INSPECTION REPORT 050-00133/12-011

Dear Mr. Halpin:

This refers to the inspection conducted on September 11-14, 2012, at the Humboldt Bay Power Plant, Unit 3, facility, in Eureka, California. The enclosed report presents the results of this inspection. This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. In summary, the inspector determined that you were conducting decommissioning activities in accordance with license and regulatory requirements. The preliminary inspection results were presented to your staff at the conclusion of the onsite inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's documents system (ADAMS), accessible from the NRC's Web site at HTTP://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction.

Should you have any questions concerning this inspection, please contact Dr. Gerald Schlapper, Health Physicist, at 817-200-1273 or the undersigned at 817-200-1191.

Sincerely,

/RA/

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

Docket: 050-00133
License: DPR-7

Enclosure:

NRC Inspection Report 050-00133/12-011
cc w/enclosure:
James Becker, Site Vice President
and Station Director
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 56
Avila Beach, CA 93424

Jennifer L. Post, Esq.
Pacific Gas and Electric Company
P.O. Box 7442
San Francisco, CA 94120

Loren Sharp, Director and Plant Manager
Humboldt Bay Power Plant, PG&E
1000 King Salmon Avenue
Eureka, CA 95505

Chairman
Humboldt County Board of Supervisors
County Courthouse
825 Fifth Street
Eureka, CA 95501

Law Office of Linda J. Brown, Esq.
999 5th Avenue, Suite 430
San Rafael, CA 94901

Regional Radiation Representative
U.S. Environmental Protection Agency
Region IX Office
75 Hawthorne Street
San Francisco, CA 94105

Dr. James F. Davis, State Geologist
Department of Conservation
Division of Mines and Geology
801 K Street MS 12-30
Sacramento, CA 95814-3531

Director, Radiologic Health Branch
State Department of Health Services
P.O. Box 997414 (MS 7610)
Sacramento, CA 95899-7414

Steven Hsu, M.S., Senior Health Physicist
Radiological Assessment Unit
Radioactive Material Licensing Section
Radiologic Health Branch
Dept. of Health Services, MS-7610

Sacramento, CA 95899-7414
Gretchen Dumas, Esq.
Public Utilities Commission
of the State of California
5066 State Building
San Francisco, CA 94102

Director
Energy Facilities Siting Division
Energy Resources Conservation &
Development Commission
1516 9th Street
Sacramento, CA 95814

Redwood Alliance
P.O. Box 293
Arcata, CA 95521

Dr. Robert B. Weisenmiller, Chair
California Energy Commission
1516 Ninth Street (MS 34)
Sacramento, CA 95814

California Public Utilities Commission
505 Van Ness, Room 4102
San Francisco, CA 94102

Deputy Attorney General
State of California
110 West A Street, Suite 700
San Diego, CA 92101

Internal distribution w/enclosure:
A. Vegel, D:DNMS
V. Campbell, DD:DNMS
B. Spitzberg, C:DNMS/RSFS
B. Watson, C:FSME/DWMEP/DUELD/RDB
C. Santos, RIV ETA
J. Weil, Congressional Affairs Officer
J. Hickman, FSME/DWMEP/DURLD/RDB
R. Evans, RSFS
G. Schlapper, RSFS
M. Herrera, Fee Coordinator, DRMA

ML

DRAFT: S:\DNMS\!RSFS\GAS\HB IR 12-11.doc
FINAL: R:_DNMS\2012\HB IR 12-011.doc

ADAMS	■Yes ☐ No	■SUNSI Rev Complete		Reviewer Initials:	GAS
Publicly Available	■Yes ☐ No	Sensitivity:	■Nonsensitive		

RIV:DNMS/RSFS	C:RSFS		
GASchlapper	DBSpitzberg		
/RA/	***/RA/***		
10/11/12	10/11/12		

OFFICIAL RECORD COPY T=Telephone E=E-mail F=Fax

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	050-00133
License:	DPR-7
Report:	050-00133/12-011
Licensee:	Pacific Gas and Electric Company
Facility:	Humboldt Bay Power Plant, Unit 3
Location:	1000 King Salmon Avenue Eureka, California 95503
Dates:	September 11-14, 2012
Inspectors:	Gerald Schlapper, PhD, PE, CHP, Health Physicist Repository and Spent Fuel Safety Branch
Accompanied by:	Bruce Watson, Chief Reactor Decommissioning Branch FSME/DWMEP/DURLD
	John Hickman, Project Manager Reactor Decommissioning Branch FSME/DWMEP/DURLD
Approved by:	D. Blair Spitzberg, PhD, Chief Repository and Spent Fuel Safety Branch
Attachment:	Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

Humboldt Bay Power Plant, Unit 3
NRC Inspection Report 050-00133/12-011

This inspection was a routine, announced inspection of decommissioning activities being conducted at the Humboldt Bay Power Plant (HBPP), Unit 3, facility. In summary, the licensee was conducting site activities in compliance with regulatory and license requirements. During the inspection at 0453 hours on 9/14/2012 a small earthquake of magnitude 4.4 occurred 21 miles SSE of the Humboldt Bay Power Plant. A second earthquake of magnitude 4.0 occurred at 1119 hours at the same location. Four smaller events of magnitude 3.2, 3.3, 2.5 and 2.3 also occurred. The magnitude 4.4 quake was felt by personnel at the HBPP site. Site personnel followed plant procedures and verified that no damage resulted at the site.

Decommissioning Performance and Status Review

At the time of the inspection, decommissioning remains on schedule and within budget though the sequence of some activities has required adjustment to accommodate the challenges of scheduling. The licensee conducted decommissioning activities in accordance with license and regulatory requirements. The licensee continues to assess the final site status to include analysis of structures and components that are below ground level. During this visit, the licensee was taking actions to ship greater than class C waste material to be processed into a form acceptable for long term storage. (Section 1).

Radiation Protection

The licensee monitored occupational exposures in accordance with procedures and regulatory requirements. Personnel exposures were well below applicable limits and reflect application of ALARA (as low as reasonably achievable) to work activities. Radioactive postings and boundaries were maintained in accordance with regulatory requirements. (Section 2).

Operator Training and Retraining

The licensee conducted training and retraining of individuals in accordance with procedures and regulatory requirements. (Section 3)

.

.

Report Details

Summary of Plant Status - Unit 3

During the inspection, the Humboldt Bay Power Plant (HBPP), Unit 3, was being decommissioned by the licensee in accordance with commitments made in its Post Shutdown Decommissioning Activities Report, dated June 30, 2009. The licensee continues to transport waste to appropriate sites. The licensee is in the process of analyzing the feasibility and cost of removing subsurface structures as part of the decommissioning process.

1 Decommissioning Performance and Status Review (71801, 86750)

1.1 Inspection Scope

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

1.2 Observations

The licensee's project team continues to work to determine the end state of decommissioning and key assumptions and costs associated with various options. The majority of the decommissioning effort to date has been the removal of systems and components where the potential for elevated exposures dictated slow and methodical disassembly with removal of contaminated systems and required significant engineering controls in order to maintain safety of the workers and public. During tours, the licensee noted that there are only three more cuts required to complete removal of the main steam line. During the tour the inspector observed installation of the WACHS pipe cutter on the main steam line and noted procedural adherence.

For future work, the project team has defined five major project areas that will encompass the completion of the effort. These areas are demolition of the turbine building, remediation of the intake and discharge canals, excavation and demolition of remaining permanent plant structures and facilities, demobilization of office facilities and final site restoration The effort to remove underground structures to include the reactor caisson will involve construction of a clay and concrete slurry wall surrounding the Unit 3 area that will act to improve soil stability and also limit ingress of water as the structures are removed.

Concrete from demolition of the Turbine Building is expected to contain low levels of radioactive material. In order to determine the appropriate burial site for this demolition debris the licensee is in the process of determining the radioactive material level in the debris. Based on initial assessment and information on the potential source of contamination, length of time since shutdown of the facility and process knowledge, the isotopes Cesium-137 (Cs-137) and Cobalt-60 (Co-60) were selected as the isotopes of concern. In-situ assays using gamma scanning techniques were performed within the Turbine Building to determine locations and variations in the concentrations of radionuclides. Results showed that most contamination was located on floors and lower walls of the building.

Core samples of concrete sufficient in size to allow quantification of radionuclide concentrations were taken at randomly selected and also biased locations. A selected number of concrete core samples will be forwarded for verification to NRC's contracted laboratory, Oak Ridge Associated Universities (ORAU) in Oak Ridge, TN. Sample analysis at ORAU will be performed in accordance with ORISE Procedures and results documented in a future report which will be made publicly available in NRC's Agency wide Documents Access and Management System (ADAMS).

Because of the limited size of the Humboldt Bay Power Plant, the licensee has found it necessary to survey decontaminated and decommissioned areas and then backfill, pave over areas, or construct temporary facilities to allow for other decommissioning activities, such as storage of materials. Prior to approving an area for an alternate use, the licensee characterizes the area through use of data collected during walkover gamma measurements and soil sampling. During the inspection the inspector reviewed the characterization survey planning worksheet for the 60 Kv Switchyard excavation that is being done in order to upgrade the switchgear facility. The purpose of the survey is to demonstrate that years of plant operation did not result in an accumulation of plant related radioactivity that exceeds release criteria. The survey was planned to the rigors of a final site status survey so that data could be use for determination of the final status of this area. Twenty, one liter soil samples at locations based on random selection were taken in accordance with procedure RCP-FSS-8. Additional biased samples were added based on historical data and process knowledge of the area. The licensee was also in the process of excavating a narrow trench to upgrade the domestic water supply line. Similar procedures were being followed during this effort.

During the inspection, the inspector reviewed video of and witnessed portions of the transfer of the greater than class C waste from an interim storage container (ISC-18) into the process waste container (PWC) for shipment for processing. The ISC-18 container was used to store debris from spent fuel pool cleanup and stellite fragments. The majority of the material was in the form of very fine, transuranic fragments that resulted from fuel failures during operation of the plant. The debris needed to be repackaged and dewatered prior to shipment to a processor in Barnwell SC. Dewatering was necessary to limit the generation of hydrogen during the shipping process. The inspector reviewed licensee calculations and validated through independent calculations the buildup of hydrogen inside the PWC and shipping cask (B-120B) per limitations outlined in the Certificate of Compliance for the cask (CoC 9168, Docket 71-9168, Package ID USA/9168/B(U)-96, Rev 19.) Flammable Hydrogen gas concentration must be limited to less than five percent of volume. Calculations showed that the five percent level is not exceeded for at least 60 days, a much longer time than the expected storage and shipping time of 8 days.

To ensure compliance with applicable NRC and Department of Transportation regulations, the licensee utilized a shipping compliance checklist. The inspector reviewed the checklist and found that applicable requirements were addressed. The shipment of greater than class C waste left the site on the morning of September 17 and arrived at the South Carolina processing facility on September 20. The shipment arrived safely though the transport vehicle was

involved in a minor traffic incident with only cosmetic damage to the carrier truck cab and no damage to the shipping container or contents. All required notifications were completed in a timely manner.

1.3 Conclusions

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

2 Radiation Protection (83100)

2.1 Inspection Scope

The inspector evaluated the licensee's program for monitoring and tracking occupational exposure of workers to ensure that the program was in accordance with license and regulatory requirements.

2.2 Observations

The inspector reviewed the Radiological Work Permit (RWP) for the interim storage waste container (ISC-18) dewatering and packaging (RWP 20120122, Rev 00). The RWP contained adequate estimates of radiological conditions as confirmed by data taken during various evolutions to include preparation of ISC-18 for transfer to the Process Waste Container (PWC), transfer of the PWC from the refuel pool to the cask and survey of the cask in the railroad bay with primary and secondary lids installed. Based on data supplied by the licensee, the inspector noted that the actual personnel exposures during the transfer of the interim storage container (ISC-18) to the process waste container (PWC) were on track with ALARA estimates made prior to start of the job. With approximately 55 percent of the effort complete, electronic dosimetry indicated 110 man-mrem of exposure, equal to that estimated in ALARA analyses for this level of work completion.

During site tours, the inspector noted that silting of the discharge canal continues. Licensee data verifies that the amount of tidal volume available for dilution of treated, monitored effluents from the liquid radwaste treatment system continues to decrease. Based on recent measurements, the licensee noted that the conservative dilution factors utilized in calculations to estimate radioactivity concentrations at the outfall canal and in the Humboldt Bay environment needed to be reduced from a previous value of 100 to the current value of 50. Effluents being discharged continue to comply with dose limits for individual members of the public pursuant to 10 CFR 20.1302. The silting of the discharge canal and resulting impact on radioactive effluents will continue to be of interest in future inspections. With the reduction in dilution factors due to silting, the licensee is reviewing alternate means for disposal of plant liquid effluents to include shipment to an off-site disposal facility.

During site tours, the inspector measured ambient gamma exposure levels with a Ludlum Model 2401-EC2 survey meter (NRC Serial Number 257911, calibration due 01/09/2013). No areas were found that were inconsistent with observed postings made pursuant to 10 CFR 20.1902.

2.3 Conclusions

The inspector reviewed techniques for control of occupational exposure during ongoing work. Exposure controls were implemented as described in applicable procedures. Postings and Radiation boundaries were maintained in accordance with regulatory requirements

3 Operator Training and Retraining (88010)

3.1 Inspection Scope

The inspector reviewed site procedures for training of on-site personnel to ensure that the program complied with regulatory and license requirements.

3.2 Observations

The inspector noted that the training department maintains a master job qualification matrix that lists jobs and that specifies training and qualification for each job. Jobs have a numeric descriptor that is coded into a qualification database. The employee's supervisor is responsible for entering the correct numeric job descriptor into the database. When a person changes jobs, the supervisor is to ensure that the individuals qualification matrix is updated. After required changes are made, new training requirements will be indicated as incomplete. The licensee noted as part of an internal quality verification audit, conducted to fulfill requirements of the Humboldt Bay Quality Assurance Plan Number L-4, Attachment 2.1, Volume 4, Rev.8, that satisfactory operation of the process relies on the supervisor maintaining the database up to date. Once the information is entered, required training is presented as either current (green), to lapse within 30 days (blue) or expired (red). The employee and the supervisor get a routine e-mail alerting them to either expired training or training that is to expire within 30 days.

The inspector validated the procedure utilizing his personal database entries. The inspector also noted that training about to expire is flagged when entering the radiologically controlled area (RCA) through the Sentinel Entry Control System. Once required training expires, the Sentinal database denies entry into the RCA. During the inspection, conduct of selected modules of the radiation worker training were observed and determined to be satisfactory. Emphasis was placed on the need to maintain barriers between the worker and significant hazards. Common radiation protection instruments and equipment were described and limitations discussed.

3.3 Conclusions

The licensee conducted training and retraining of individuals on-site in accordance with license and regulatory requirements.

4 Exit Meeting

The inspector reviewed the scope and preliminary findings of the inspection during an exit meeting that was conducted at the conclusion of the onsite inspection on September 14, 2012. The licensee did not identify as proprietary any information provided to, or reviewed, by the inspector.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

J. Albers, Radiation Protection Manager
D. Anderson, Count Room Supervisor
B. Arroyo, Site Services Manager
W. Barley, RP Consultant and FSS Supervisor
C. Caldwell, Area Supervisor
M. Celletti, Training Manager
J. Chadwick, RP Engineering Supervisor, ALARA
A. Cordone, Decommissioning Projects Superintendent
S. Jones, QA Supervisor
J. Kristofzski, HBPP Strategic Waste Disposal Manager
S. McDonald, Safety/IH Department Supervisor
D. Pierce, Area Supervisor
K. Rod, Decommissioning Manager
S. Schlerf, Radiation Protection Forman
L. Sharp, Director and Plant Manager
M. Smith, Engineering Manager
R. Sherman, Licensing
D. Sokolsky, Licensing Supervisor
M. Strehlow, Deputy Director
M. Tuse, QV Supervisor

INSPECTION PROCEDURES USED

IP 71801 Decommissioning Performance and Status Review at Permanently Shutdown Reactors

IP 83822 Radiation Protection

IP 88010 Operator Training and Retraining

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS

ALARA	as low as reasonably achievable
CFR	*Code of Federal Regulations*
EPIP	Emergency Plan Implementing Procedures
HBPP	Humboldt Bay Power Plant
IP	NRC Inspection Procedure
RWP	radiation work permit