

U. S. NUCLEAR REGULATORY COMMISSION  
REGION V

Report No. 50-133/90-03  
Docket No. 50-133  
Licensee: Pacific Gas and Electric Company  
77 Beale Street  
San Francisco, California 94106  
Facility Name: Humboldt Bay Power Plant (HBPP) Unit 3  
Inspection at: Eureka, California  
Inspection Conducted: November 5-9, 1990

Inspector: C. A. Hooker 11/30/90  
C. A. Hooker, Fuel Facilities Inspector Date Signed

Approved: Robert J. Pate 11/30/90  
Robert J. Pate, Chief Date Signed  
Nuclear Materials and  
Fuel Fabrication Branch

Summary:

a. Areas Inspected:

This was a routine, unannounced inspection of licensee activities during SAFSTOR including licensee action on open items, followup on IE Information Notices, radiation protection, radioactive waste management, environmental protection, review of licensee event reports (LERs), fire protection and emergency preparedness. The inspection also included facility tours. Inspection procedures 30703, 92701, 83822, 88035, 88045, 90712, 64704 and 88050 were addressed.

b. Results:

In the areas inspected, the licensee's programs appeared capable of accomplishing of their safety objectives. No violations or deviations were identified.

DETAILS1. Persons ContactedPacific Gas and Electric Company (PG&E)

R. T. Nelson, Plant Manger  
 P. E. Rigney, Power Plant Engineer  
 \*R. C. Parker, Senior Chemistry and Radiation Protection Engineer (SRPE)  
 \*D. A. Peterson, Quality Control Supervisor  
 \*T. J. Williams, Environmental Coordinator  
 \*R. D. McKenna, Supervisor, Operations  
 \*W. R. Montavlo, Jr. Radiation Protection Monitoring Foreman  
 D. D. Richardson, Supervisor, Maintenance  
 P. G. Rasmussen, Senior Power Production Engineer  
 J. H. Paul, Power production Engineer and Plant Fire Fire Marshal

City of Eureka Fire Department

J. Christian, Fire Captain  
 J. McFarland, Operations Commander

\*Denotes individuals attending the exit interview on November 9, 1990.

In addition to the individuals noted above, the inspector met and held discussions with other members of the licensee's staff.

2. Followup on Open Items and IE Information Notices (92701)a. Open Items

(Open) Item 50-133/90-01-02. This item involved the need to review the licensee's long term corrective actions regarding low level contamination on a paved area immediately adjacent to the Unit 3 restricted area. Inspection Report Nos. 50-133/90-01 and 50-133/90-02 describe previous reviews of this matter. During this inspection, the Plant Manager informed the inspector that they had made a decision to remove the contaminated pavement. However, due to the volume of pavement involved, the task would not take place in the near future. This matter will remain as an open item until a the the contaminated pavement has been removed and a subsequent evaluation has been made of the involved area.

(Closed) Item 50-133/90-02-01. This item involved labeling certain fire suppression system valves with numbers as depicted on the licensee's surveillance test procedure (STP) checklist. During this inspection the inspector observed that the licensee had painted identification numbers on the subject valves, consistent with the STP checklist. This matter is closed.

(Closed) Item 50-133/90-02-02. This item involved resolution of out-of-sequence starting of the three fire pumps on the fire

suppression system. The inspector noted that the licensee had adequately evaluated the matter and had taken action to reduce the problem. The licensee had adjusted the starting pressures of the pumps further apart, within their calibration range, to reduce the immediate problem. The licensee was also processing a design change to widen the starting pressures further apart and increase the domestic water system's pressure which currently maintains the fire system's pressure. The licensee's long range plans included consideration for installation of a fire system jockey pump to allow isolation of the fire main from the domestic water system. The inspector considers this matter closed.

b. IE Information Notices

The inspector verified that the licensee had received and reviewed IE Information Notices Nos. 90-35, 90-44 and 90-48 for applicability at their facility.

3. Radiation Protection (83822)

The licensee's radiation protection program was reviewed for compliance with the requirements of 10 CFR part 20, Technical Specifications (TS), licensee procedures and recommendations outlined in various industry standards.

a. Changes

There had been no changes in organization, personnel, facilities, equipment, programs and procedures that may effect occupational exposure since the last inspection of this area.

The inspector noted that approval had been granted to build a new on site administrative building. The new building will be located immediately adjacent to the current office section of the facility. The licensee expects construction to start in the near future and completed within a couple of months.

b. Audits

Quality assurance (QA) Audit Report No. 90814T, "Radiation Protection; Technical Specifications, Administrative Controls, and Provisions of the SAFSTOR License; Emergency Preparedness; Plant Training and Qualifications; Nonconformance and Results of Corrective Actions", dated August 14, 1990, was reviewed. The audit was conducted July 16-19, 1990, to verify that HBPP was effectively implementing the applicable requirements of the Code of Federal Regulations, QA Policy, SAFSTOR TS and procedures for the areas audited. The inspector noted that the audit appeared to be broad scope and essentially covered all aspects of the programs audited. No Nonconformance or Audit Finding Reports were issued. Four areas of concern were identified and two recommendations were made. The items of concern involved were administrative in nature and did not represent a personnel safety problem. The inspector noted that the licensee had taken or were in the process of taking action to

address the items of concern. The inspector had no questions regarding these matters.

In addition to the QA audits conducted by the Corporate QA department, the inspector reviewed selected monthly housekeeping reports, random weekend/backshift inspection data sheets, and quality control (QC) inspection and management review reports. The inspector noted that HBPP's monthly QC inspections and/or management reviews covered essentially all of the major SAFSTOR programs. The inspector determined that HBPP's audits/inspections continue to be effective in identifying and reporting deficiencies to management as described in previous inspection reports. Appropriate corrective actions had been taken and/or planned for identified deficiencies.

c. External Exposure Control

Personnel dosimetry reports from January 1 through September 30, 1990, were reviewed. Personnel exposures are measured by monthly exchanged thermoluminescent dosimeters (TLDs). The inspector noted that exposures continue to be minimal. The highest year to date exposure, for any one individual, was 25 millirem. According to the licensee there had been no major tasks conducted year to date, or planned for 1991 that would result in any significant changes in personnel exposures. During facility tours the inspector noted that individuals were properly equipped with personnel monitoring devices.

d. Internal Exposure Control

The licensee continues to assess internal exposures on the basis of their air sampling program and semiannual whole body counts. As described in previous inspection reports, one individual that the licensee is unable to count on their bed type counter, submits semiannual urine samples for assessment. Based on review of routine and non-routine air sampling and bioassay data, the inspector noted that the internal exposures were being maintained well below the requirements delineated in 10 CFR 20.103.

Calibration of the whole body counter was described in Inspection Report No. 50-133/90-01.

During facility tours the inspector observed that air sampling stations appeared be sufficient in number, and reasonably representative of the work area being sampled. Adequate engineering controls and good housekeeping practices to contain loose radioactive material were evident.

The licensee's use and/or need for use of respiratory equipment has been limited. However, the licensee continues to maintain an active program that includes, training, annual medical examinations, quantitative fit testing, and procedures for use and maintenance of respirators.

e. Control of Radioactive Materials and Contamination, Surveys and Monitoring

There had been no changes in the licensee's radiological survey program for SAFSTOR operations since the last inspection of this area (50-133/90-01). The inspector noted, from review of survey reports and STPs, that daily surveys were conducted of selected locations where exposure levels could change due to equipment operation. The degree of detail and survey frequency of plant areas continue to be based on the amount and type of work in the respective area. The licensee's procedures adequately documented their programs for radiological surveys and control of radioactive materials. The licensee's program appeared to be consistent with 10 CFR Part 20 and their SAFSTOR TS.

The licensee had only one personnel contamination since the last inspection of this area. The incident involved low level contamination of a radiation monitoring technician's personal clothing, which occurred during a survey of a lead shield in the Unit 3 condensate pump room. The licensee's investigation and conservative evaluation indicated no radiological consequence resulted from the incident. The inspector did not identify any concerns regarding the incident or the licensee's evaluation.

During facility tours, the inspector noted that a large portion of the 12 foot level of the Refueling Building had been decontaminated to allow entry in street cloths. Considerable effort had been devoted to this task by the radiation monitoring staff, with plans to clean the passageway of the lower levels.

The inspector reviewed records of the licensee's sealed source inventory and sealed source leak tests conducted February 26-27 and August 28-29, 1990. Sealed source leak testing was noted to be consistent with the requirements specified in Section VI.B.7 of the TS. Sealed source wipe test data indicated that all sources tested had less than 0.005 microcuries (uCi) of removable contamination.

During facility tours, the inspector observed that adequate operating personnel survey instruments were conveniently located at exits from contaminated areas. All survey instruments in use were noted to be within their current calibration period. The inspector also made independent measurements using an Eberline R0-2 portable survey meter, S/N 837, due for calibration on January 19, 1991. The inspector noted that radioactive materials and radiation areas were posted as required in 10 CFR Part 20. Licensee access controls for high radiation areas were observed to be consistent with TS, Section VII.K, and licensee procedures.

The licensee's program appeared adequate to the accomplishment of its safety objectives. The licensee's audit and inspection programs continue to be effective and appear to be major strengths in SAFSTOR operations. No violations or deviations were identified.

4. Radioactive Waste Management (88035)

The licensee's radioactive waste management program was reviewed for compliance with the requirements of 10 CFR part 20, TS, licensee procedures and recommendations outlined in various industry standards.

There have been no changes in the licensee's program since the last inspection of this area.

a. Audits

The QA audit described in Section 3.a. above also covered the review of this program.

b. Liquid Wastes

Records of filtered radioactive liquid discharges to the outfall canal from July 25 through October 19, 1990, were reviewed. A total of 15 batch releases had been made since January 1, 1990. About 6800 gallons are discharged per batch. The inspector verified, by manual calculations, the maximum permissible concentration (MPC) values for batch release No. 90-13, discharged on August 24, 1990. No errors or anomalies were noted. The inspector determined that all releases were well below the limits provided in 10 CFR Part 20, Appendix B, Table II, Column 2. Operation and sample analysis were conducted in accordance with the requirements specified in TS VI.A and B.

Routine sample measurements of the spent fuel pool (SFP), SFP liner, french drain and the caisson sump were reviewed. The sample measurements indicated that Cs-137 continues to be the predominant radionuclide in the SFP and SFP liner. The sample measurements remain at about the same levels as described in the previous inspection of this area. However, there has been a slight decrease in the SFP liner activity. In regard to the SFP, the Cs-137 activity has averaged about  $2.0E-5$  uCi/ml over the past year. The SFP demineralizer outlet activity averages about  $2.0E-8$  uCi/ml which represents a decontamination factor of about 1000 (influent/effluent). The licensee has estimated that the SFP demineralizer removes about 25 uCi per minute of radioactivity from the SFP. Occasionally the licensee also detects low levels of Kr-85 in the SFP samples. Since there are no SFP operations which disturb the fuel in storage, it appears that there could be a continuous source of fuel leakage into the SFP water. Although there may be a continuous fuel leak into the SFP, it appears not represent a safety problem.

The review of quarterly liquid radwaste monitor source checks indicated that they were being conducted in accordance with the licensee's procedures and TS V.B.2.a requirements. The inspector noted that the licensee was in the process of performing the annual calibration of this monitor. The inspector observed that the individual performing this task was utilizing and appropriately

signing off each step of the STP during the calibration of this unit.

c. Gaseous Effluents

Records of weekly stack gaseous effluent sampling data from July 10 through November 6, 1990, were reviewed. The inspector noted that releases of radioactive material were well below the limits specified in 10 CFR Part 20, Appendix B, Table II, Column 1.

The review of weekly alarm and source checks of the stack monitoring indicated that these tests were being conducted in accordance with licensee procedures and TS V.1.b requirements.

d. Licensee Reports

The licensee's semiannual effluent report for the period of January 1 through June 30 1990, dated August 28, 1990, was reviewed in-office and during the onsite inspection. This timely report was submitted pursuant to TS VII.H.3 and included a summary of the quantities of radioactive liquid, gaseous effluents, and solid waste released from Unit 3 as outlined in NRC Regulatory Guide 1.21. There were no events that resulted in an abnormal release from the site and no radioactive waste shipments had been made during this period. The report also included the offsite doses and dose commitments to members of the public from radioactive effluents and direct radiation measurements. Due to the long shutdown time of Unit 3 (1976), effluents released from the plant were noted to be minimal and well below the 40 CFR 190 EPA Fuel Cycle Standard. No errors or anomalies were identified.

e. Solid Waste

The licensee had not shipped any solid waste since the last inspection of this area. Solid waste generation for SAFSTOR operations has been limited. Solid waste primarily consists of low level radioactive waste from Unit 3 such as used disposable protective clothing and cleaning materials, used liquid waste filters, equipment and hardware that is no longer needed.

Regarding mixed waste (chemically hazardous waste containing radioactive material), the licensee has occasionally disposed of slightly contaminated sludge from their oily water separator (OWS) and other onsite systems. The OWS is currently only used for the onsite fossil-fueled plants (Units 1 and 2). Although the drains from Unit 3 have are no longer routed to the OWS, residual radioactive contamination remains in the system from previous Unit 3 operations. The OWS sludge has also been classified as hazardous waste under federal and state regulations due to its chemical content. Through special approval from the State of California, the licensee has previously disposed of the OWS sludge at a Class I state approved landfill disposal facility. However, due to current problems at these disposal facilities, the licensee has not determined the location of future disposals of OWS sludge.

Two surface impoundments (ponds) utilized at HBPP for operations associated with Units 1 and 2 also contain slightly radioactive contaminated sludge. This sludge is also considered as mixed waste. The ponds are used as catch basins for normal boiler and makeup water evaporator blowdowns. The ponds' (A and B) capacity is about 60,000 gallons for pond A and 40,000 gallons for pond B. The licensee has found traces of radioactive byproduct material in deposits from the Unit 1 and 2 fire boxes and air preheaters. The ponds can also receive water from the OWS during desludging and maintenance on the OWS system or in emergency situations.

Water from the surface ponds is routinely sampled and batch released to the outfall canal in accordance with HBPP's state discharge permit. Previous licensee sample measurements of pond water have indicated no detectable radioactive material. The inspector noted that the last pond water radioactivity measurement appeared to be in 1987, with no radioactivity detected. At the request of the inspector, the licensee sampled both ponds and counted them on their high purity germanium (HPGe) gamma counting systems. No radioactivity above the licensee's established critical level (discussed in Section 5 below) was detected during a 10,000 second count.

The licensee's program appeared adequate to the accomplishment of its safety objectives. No violations or deviations were identified.

5. Environmental Protection (88045)

The licensee's environmental protection program was reviewed for compliance with their TS requirements, licensee procedures and recommendations outlined in various industry standards.

There had been no significant changes in the licensee's program since the last inspection of this area (50-133/89-01).

The review of the licensee's annual "Facility Status and Survey Report", for 1989 was described in Inspection Report No. 50-133/90-01. During this inspection, the inspector reviewed selected data to date that will be submitted in the licensee's 1990 annual report. The review included discharge canal sample results, groundwater monitoring well sample results, caisson sample results, and offsite and onsite direct radiation measurements (TLDs). No activity had been detected in the discharge canal. As previously reported, very low level concentrations of tritium continued to be detected in onsite monitoring well No. 11. The inspector noted that the sample data reviewed indicated no abnormal changes in the plant status or apparent impact on the environment.

The inspector reviewed records of the licensee's radiochemical intra-company laboratory cross-check program. There had been no changes in this program since the last inspection of this area. Samples continue to originate from PG&E's Technical and Ecological Services (TES) group with the Diablo Canyon Power Plant and HBPP participating. As described in previous inspection reports, TES prepares the sample by dilution of known standard solutions traceable to the National Institute of Standards



and Technology. The types of samples prepared for analysis included mixed gamma emitting radionuclides in liquid and air particulate filters, and gross alpha and beta in water. These samples were prepared and analyzed two times a year. TES reports of sample measurement results indicated that HBPP showed adequate agreement for all of the samples.

Records of licensee tests and controls for assuring the quality of radioactive counting equipment measurement results were examined. The inspector noted that there had been no changes in counting equipment since the last inspection of this area. The licensee's program includes routine testing for performance, reproducibility and efficiency of the counting equipment. The inspector noted that the licensee's software program calculated the level of radioactivity that can be detected above natural background for each measurement. The licensee calls this value the "critical level". During the inspection, the licensee was not able to present documentation that describes how the critical level is determined. Accordingly, the inspector compared the licensee's critical level to the concept used by the NRC and described in NUREG-0472 as the lower limit of detection (LLD).

The LLD is considered as an "a priori" (before the fact) estimate of the measurement systems capability and not as an "a posteriori" (after the fact) limit for a particular measurement.

The inspector used the licensee's sample measurement results for the ponds, described in Section 4.e above, as a comparison. The results of this comparison for Cs-137 is noted below.

<u>Detector</u>	<u>Pond</u>	<u>Measurement</u>	<u>Critical Level</u>	<u>LLD</u>
No. 1	B	1.4E-9 uCi/ml	7.39E-9 uCi/ml	2.69E-9 uCi/ml
No. 2	A	6.0E-9 uCi/ml	1.45E-8 uCi/ml	4.71E-9 uCi/ml

For environmental radioactivity measurements, the NRC typically expect licensee's to have a LLD of 1.8E-8 uCi/ml (NUREG-0472). Although the licensee's measurement in this particular case appeared to meet the intent of the NRC's expectations, the lack of documentation for the derivation and use of the critical level was discussed with the licensee during the inspection and at the exit interview. The inspector will review the licensee's action regarding this matter in a subsequent inspection and is considered as an open item (50-133/90-03-01).

The inspector also visited the licensee's offsite continuous air sampling stations (Nos. 3 and 45) and toured a selected portion of the site boundary to observe the direct radiation monitoring stations. The sampling equipment appeared to be adequately maintained and within their current calibration period. The direct radiation monitoring stations were in good condition and as depicted in Figure V-2 of the TS. The inspector also noted that the site perimeter fence was in good condition at the locations toured.

The licensee's program appeared adequate to the accomplishment of its safety objectives. No violations or deviations were identified.

6. Fire Prevention and Emergency Preparedness (64704 and 88050)

The inspection of this program was described in Inspection Report No. 50-133/90-02. However, during this inspection (50-133/90-03) the inspector had the opportunity to observe a portion of the hands-on fire fighting training of the licensee's fire brigade provided by the Greater Eureka Fire Fighting Association, and observed the licensee's 1990 annual announced emergency drill.

The fire fighting training was being conducted at a nearby location within the City of Eureka. The City's Fire Captain and Operations Commander outlined the purpose and scope of the training being provided. The inspector observed one segment of the days training which involved the use of fire hoses to protect a school bus from heat due to a nearby ruptured natural gas line. This portion of the training appeared very realistic and the training objective was met. Subsequent training was to include classroom and actual hands on search and rescue operations in the training fire tower. Based on discussions with the individuals conducting the training and observations at the training site, the inspector had no concerns with the quality of the training being provided or the ability of the licensee's fire brigade to respond to onsite emergencies.

The scenario for the licensee's annual announced emergency drill involved No. 1 Fuel Storage Tank tank exploding due to an unexplained reason that resulted in several site conditions such as (1) spewing flaming oil to the the office portion of the facility and influent canal, (2) the loss of office personnel, (3) the Drawing Control and Training Building being engulfed in flames, (4) the fire hose reel stations near No. 1 tank being destroyed, (5) all three fire pumps coming on line and (6) the auxiliary steam and condensate return lines to the tankage area being severed. The drill was primarily associated with operations with the fossil-fueled plants and did not involve radioactive materials. The inspector noted that the drill appeared to mock realistic conditions, was properly classified, the appropriate outside agencies were notified, adequately critiqued and identified deficiencies were being adequately addressed. The deficiencies primarily involved the need to improve onsite communications and accountability of personnel. The inspector did not identify any deficiencies that were not identified by the licensee.

Based on the inspectors observations, the licensee was adequately meeting their safety objectives. No violations or deviations were identified.

7. LERs (90712)

Based on an in-office review and onsite discussions, LER No. 90-01-00, "Failure of Motor Control Center (MCC) to Transfer to Load Center (LC) 5 During Surveillance Testing", dated July 23, 1990, was closed out by the inspector.

The LER was reviewed for event description, root cause, corrective actions, generic applicability and timeliness of reporting.

No violations or deviations were identified.

8. Exit Interview (30703)

The inspector met with the licensee representatives, denoted in Section 1, at the conclusion of the inspection on November 9, 1990. The scope and findings of the inspection were summarized.

The licensee was informed that no violations or deviations were identified.