U.S. NUCLEAR REGULATORY COMMISSION
REGION V

Report Nos. 50-275/84-27, 50-323/84-19

Docket No. 50-275, 50-323

License Nos. DPR-76 and CPPR-69

Licensee: Pacific Gas and Electric Company
77 Beale Street
Room 1435
San Francisco, California 94106

Facility Name: Diablo Canyon Units 1 and 2

Inspection at: San Luis Obispo County, California

Inspection conducted: August 13-17 and August 27-31, 1984

Inspectors: E. M. Garcia — 10/19/84
E. M. Garcia, Radiation Specialist — Date Signed

Approved by: G P Yuhas — 10/19/84
G. P. Yuhas, Chief, Reactor Radiation Protection Section — Date Signed

Summary:

Inspection on August 13-17, and August 27-31, 1984 (Report Nos. 50-275/84-27 and 50-323/84-19)

Areas Inspected: Routine unannounced inspection by a regionally based inspector including Unit 1 start up tests; Unit 2 preoperational tests, radiation monitor calibrations, implementation of NUREG 0737, Items II.B.3 and II.F.1; followup on IE Information Notices, seismic analysis of the plant vent noble gas monitor RE-29, inoperability of containment purge monitors, positioning of incore neutron detectors, and allegation RV-84-A-0086. The inspection also involved review of the internal exposure control program. This inspection involved 72 hours on site by one inspector.

Results: Of the eight areas inspected no violations or deviations were identified.

DETAILS

1. Persons Contacted

a. Pacific Gas and Electric Co. Staff

*R. C. Thornberry, Plant Manager
+ R. Patterson, Plant Superintendent
*J. M. Gisclon, Assistant Plant Manager
+*W. B. Kaefer, Assistant Plant Manager
+*J. V. Boots, Chemistry and Radiation Protection (C&RP) Manager
*J. A. Sexton, Operations Manager
+*L. F. Womack, Engineering Manager
*C. L. Eldridge, Quality Control Manager
+*E. M. Conway, Personnel and General Services Manager
+ B. W. Giffin, Instrument and Control (I&C) Manager
+*C. M. Seward, Onsite Quality Assurance Supervisor
+ M. N. Norem, Start Up Engineer
+*E. T. Murphy, Regulatory Compliance Supervisor
+*W. T. Rapp, Onsite Safety Review Group Chairman
*W. A. O'Hara, Senior C&RP Engineer
S. J. Fahey-Benson, C&RP Engineer
H. W. Fong, C&RP Engineer
W. Kelly, Power Production Engineer
*L. T. Moretti, C&RP Foreman
H. A. Ferguson, C&RP Foreman
B. Peterson, I&C Gerneral Foreman
D. Norton, I&C Foreman

b. Contractors Staff

+*R. E. Harris, Supervisor Radiation Protection (NUMANCO)
C. G. Rao, Start up Engineer (Bechtel)

c. NRC Resident Inspectors

*M. M. Mendonca, Senior Resident Inspector
*M. L. Padovan, Resident Inspector
*T. M. Ross, Resident Inspector
+*T. J. Polich, Resident Inspector

*Indicates those individuals attending the exit interview on August 31, 1984.

+Indicates those individuals attending the preliminary exit interview on August 17, 1984.

In addition to the individuals noted above, the inspector interviewed other members of the licensee's and contractor's staff.

2. Unit 1 Start Up Tests

The inspector reviewed selected start up test procedures and discussed them with the responsible start up engineer. Test procedures reviewed and inspector comments follow:

FSAR No.: 4.10 Current No.: 1.17 Chemical and Radiochemical Analysis

(1) This test procedure does not include specific acceptance criteria to demonstrate that chemical and radiochemical controls meet the design values. This includes such items as decontamination factors for demineralizers and filters. The test does not include a list of the components that will be tested.

(2) This test procedure does not include acceptance criteria for correlating the Boron Concentration Measurement System values to laboratory analysis values.

FSAR No.: 4.11 Current No.: 1.16 Effluents and Effluent Monitoring

(1) This test procedure does not include specific acceptance criteria for correlating effluent monitor readings to "grab" samples analysed in the laboratory.

(2) This test procedure does not specify which monitors will be tested. The inspector noted that NPO procedure CAP D-19 revision 0, "Correlation of Rad (Sic) Monitors to Radioactivity" includes a list of process and effluent monitors, however the test procedure does not specifically reference this procedure.

(3) This test procedure does not include checks for effluent streams that are not expected to be radioactive release streams.

FSAR No.: 4.13 Current No.: 1.15 Radiation Surveys and Shielding Effectiveness

The inspector did not identify any deficiencies in this test procedure.

The licensee stated that the inspector's comments will be considered. The licensee's actions with respect to these tests will be examined in future inspections (50-275/84-05-01, Open).

No violations were identified in this area.

3. Unit 2 Preoperational Tests, Radiation Monitors Calibrations, and NUREG-0737 Items

Inspection Report 50-323/82-12 listed those preoperational tests selected for review that remain open. According to the Lead Start up Engineer, although some of these test had been completed none had received final acceptance by station staff. (50-323/82-12-01, Open)

Inspection Report 50-323/83-26 listed those area, process, and effluent

monitors identified in Section 11.4 of the Final Safety Analysis Report that had been accepted and calibrated by the station staff, and those that had not received final acceptance and/or calibration. At the time of the inspection no additional monitors had received final acceptance and/or calibration. (50-323/81-05-02, Open)

To fulfill the commitments made in response to the recommendations of NUREG-0737 Items II.B.3 and II.F.1 Attachments 1, 2 and 3, the licensee has installed a number of monitoring/sampling systems. In Inspection Report 50-323/83-26 it was noted that these monitors have similar deficiencies to those noted in Unit 1 systems. The licensee had prepared Design Change Requests (DCRs) for Unit 2 systems. Work on these DCRs has been initiated, however at the time of this inspection none of these Unit 2 systems are considered accepted, calibrated and/or operational. (50-323/83-26-01, Open)

Emphasis on tasks related to Unit 1 by the station staff was cited as the reason for not completing the items above. No violations or deviations were identified in this area.

4. Followup on IE Information Notices

The inspector reviewed the licensee's records to determine if the following Information Notices had been received and reviewed:

a. IN-84-15 "Reporting of Radiological Releases." (IN-84-15, Closed)

b. IN-84-34 "Respirator User Warning: Defective Self-Contained Breathing Apparatus Air Cylinders." (IN-84-34, Closed)

c. IN-84-40 "Emergency Worker Doses." (IN-84-40, Closed)

d. IN-84-50 "Clarification of Scope of Quality Assurance Programs for Transport Packages Pursuant to 10 CFR 50, Appendix B." (IN-84-50, Closed)

These Information Notices had been received and preliminary review had taken place. All but IN-84-15 were pending formal Plant Safety Review Committee (PSRC) review.

IN-84-15 had received final PSRC review on July 5, 1984. Minutes of the July 5, 1984 meeting of the PSRC state that "(Emergency Procedures) G-1 and G-3 provide adequate guidance in reporting radiological releases. Appropriate telephone lists (NRC back-up phone numbers) are being revised. No further action is required regarding this notice."

On the morning of August 29, 1984, the inspector gave a set of hypothetical release conditions to the Shift Supervisor and requested that the hypothetical release be classified, and that the percent of the Technical Specification release limit be determined. The Shift Supervisor requested that the Shift Technical Advisor (STA) respond to this request. Within a few minutes the STA had properly classified the event and determined the percent of the Technical Specification release limit. To

accomplish this last task the STA used Emergency Procedure R-2, "Release of Airborne Radioactive Materials", and some initiative. This procedure does not explicitly describe how to calculate the percent of the Technical Specification release limit, but it does provide some of the data that is needed for this calculation.

At the exit interview the inspector complemented the work of the STA. The inspector also commented that the corporate and PRSC reviews apparently did not consider in their evaluation of Information Notice IN-84-15 the need to use Emergency Procedure R-2 to classify and analyze a radiological release. The inspector further commented on the lack of specific instructions in Emergency Procedure R-2 for calculating percent of Technical Specification. The licensee stated that Emergency Procedure R-2 would be reviewed in light of the inspectors comments.

No violations or deviations were identified in this area.

5. Seismic Analysis of Plant Vent Noble Gas Monitor RE-29

During the inspection of June 20-22, 1984 an inspector noted that the plant vent noble gas accident monitor RE-29 was supported at the end of two I-beams some 12-15 feet above the 140 foot grade level and adjacent to the plant vent. This monitor has a shield that according to the cognizant C&RP engineer weighs "less than 900 pounds." This monitor was installed by the licensee as part of their commitments to NUREG-0737. The inspector inquired if an analysis had been performed to determine if this monitor could survive a major seismic event. The licensee noted that NUREG-0737 did not require this type of analysis for this monitor and they had not committed to one, but they would determine if an analysis had been performed, and if not, one would be made by the end of August 1984.

At the time of the inspection the licensee's site staff had not received the results of the seismic evaluation. This task had been assigned to the Project organization for analysis. (EG-84-01, Open)

No violations or deviations were identified in this area.

6. Containment Purge Monitors Inoperable

Paragraph 2.b of Inspection Report 50-275/84-26 discusses the circumstances during the containment purge of August 22-24, 1984, related to the inoperability of plant vent radioactive gas monitors RE-14A and RE-14B. This inspector examined the radiological significances of this event.

Action statement 53 of Technical Specification 3.3.3.10 requires that if neither RE-14A or RE-14B is operable the venting and purging of radioactive effluents from containment must be immediately suspended. A total of three "grab" samples had been collected prior to and during the purge. Analysis of these samples indicates that no radioactive materials were detected. Prior to being made inoperable neither monitor indicated any radioactive material release. The inspector concurs with

the licensee that action statement 53 of the Technical Specification was not violated.

During this review the inspector noted that the record of the last calibration/maintenance performed on radiation monitor RE-14B was missing from the licensee's files. There was also some confusion among the different departments as to who was responsible for reviewing and maintaining records of functional tests for these monitors. Also, the records of the last few months functional tests for these monitors were not available at the time of the inspection. The licensee stated that the confusion was due to the fact that the two responsible engineers in this area were not on site at that time. The maintenance of calibration/maintenance and functional test records of radiation monitors will be reviewed at a future inspection. (50-275/84-27-01, Open)

No violations or deviations were identified in this area.

7. Incore Neutron Detectors

Paragraph 2.c of Inspection Report 50-275/84-26 describes the circumstances regarding the improper positioning of the incore neutron detectors in the seal table room. This inspector reviewed the circumstances for their radiological significance.

These detectors are used inside the reactor core and can become extremely radioactive. Information Notices 84-19 and 82-51 described several instances of overexposures and near overexposures due to individuals entering the reactor cavity when the incore detectors were being moved. Although this event did not take place in the reactor cavity, the source of the radiation would be the same, namely, the incore detectors.

The incore detectors had been used for flux mapping at zero power level. The applicable procedure requires that when mapping is completed the incore detectors must be returned to the "stored" position. On August 24, 1984 the licensee determined that the incore detectors were not in the "stored" position but just above the seal table. At the time of the inspection, neither the specific circumstances or the time frame surrounding this event was known.

The licensee has routinely conducted radiation surveys of the seal table room and these surveys did not measure any significant radiation exposure above background. A contact reading taken on the week of August 31 of one of the detectors read less than 0.02 mr/hr. Review by the licensee of the multipoint recorder record for the area monitor in that room did not identify any change in the room background. The licensee's preliminary evaluation is that this event did not result in any significant personnel radiation exposure. The licensee intends to prepare a written evaluation on the radiological significance of the event, and is also considering design changes to minimize and further control the access to the seal table room.

Based upon the preliminary evaluation it does not appear that this incident resulted in significant personnel exposures. The resident

inspector will continue to followup on the licensee's investigation and resolution of this event. Until such time as all pertinent facts have been collected, this event will be tracked as an unresolved item by the resident inspector. (50-275/84-26-01, Open)

8. Followup on Allegation RV-84-A-0086

An individual employed by the licensee contacted Region V to express a concern involving radiation protection activities.

The individual expressing concerns works as a Relief Shift Chemistry and Radiation Protection Technician at Diablo Canyon.

This individual believed that PG&E had improperly assigned him neutron exposure. Specifically, the exposure that he received while working with the primary startup sources was not included in his exposure history. The specific job involved dealt with the change out of the primary sources. The individual also maintained that the Special Work Permit (SWP) and associated survey records related to the job described above had been misplaced by the PG&E. He believed that the records were missing because of conversations he has had with a clerk preparing records for microfilming and his own efforts to find these records. The individual stated that this work was done in late October or early November 1983 and the serial number of the missing SWP is around 83-165.

The individual first brought these concerns to the attention of his foreman, a Chemistry and Radiation Protection Engineer, and a Quality Control Inspector on July 6, 1984. These concerns were later expressed to the Manager and Supervisors of Chemistry and Radiation Protection on August 2, 1984. The individual formally requested his exposure records from PG&E by letter, posted August 10, 1984.

The individual stated that on August 16, 1984 he was suspended due to insubordination. He refused to remove tinted prescription glasses he was wearing after requested to do so by his foreman. The individual believes that his suspension is the result of his expressing the concerns noted above.

The individual called the licensee's Quality Hot Line and expressed his concerns. The licensee established file number QCSR78 for this matter. The individual has also discussed this issue with his Union Business Representative. The inspector has informed the individual of his right to seek redress from discrimination through the Department of Labor.

Three specific avenues of inspection resulted from this allegation. These are:

(1) The licensee may not be properly assigning neutron exposures.

(2) The licensee may not be properly maintaining records of radiation surveys.

(3) The licensee may be discriminating against individuals expressing safety concerns.

Questions of labor discrimination are examined by the Department of Labor. The individual has been informed both orally and in writing of his right to pursue this matter with the Department of Labor. This inspection did not pursue this avenue any further.

The two other avenues were examined during this inspection. The inspector's approach was to examine available records and to discuss the matter with the individuals involved.

The exposure files indicate that, for the period of September 1 to December 31, 1984, the concerned individual was originally assigned a whole body exposure of 0.015 rem gamma and 0.000 rem neutron. The file also includes two letters signed by the Chemistry and Radiation Protection Engineer responsible for radiation dosimetry. The subject of these letters are "Revised Annual Employee Radiation Dose Report", and are addressed to the individual concerned. The reported external radiation doses are:

	Date of Letter	Aug. 14, 1984	Aug. 21, 1984
Doses:	whole body	0.033 rem	0.037 rem
	extremity	0.010 rem	0.010 rem
	skin of whole body	0.000 rem	0.000 rem

These letters reflect changes on the assigned neutron exposures from 0.018 rem to 0.022 rem respectively. The change from the August 14 to the August 21 letter is due to the identification of additional SWPs where the individual received neutron exposure. The licensee does not expect that there will be additional changes. According to the Manager of Chemistry and Radiation Protection, the values reported for extremity and skin of whole body should be interpreted to be the amount above the whole body value. The inspector commented that the way values are reported is confusing, particularly since the letters do not state the licensee's interpretation. On August 23, 1984 the licensee responded to the formal request by the individual for his exposure. This response included the letter of August 21, 1984 and a copy of the latest revised NRC Form-5. The concerned individual expressed to the inspector and later to the licensee that the information provided was not fully responsive to his request. Namely, he had requested the documents upon which his exposure was based, and he had only received the summary data. The inspector informed the licensee that it appears that under the specific request made by the concerned individual, that they should provide the detailed information requested. On September 11, 1984, the individual was provided with the information upon which the revised assigned exposure is based. This information includes such things as radiation survey records and time keeping sheets.

The original assigned exposure was based on the results of NTA film and TLD dosimeters worn by the individual. The revised dose is based on calculations made from time keeping sheets and neutron dose rate surveys

of those jobs involving possible neutron exposure. The licensee believed that for the conditions (relatively low exposures) and type of sources involved (Californium-252) the use of dosimeters was sufficient; however, since the individual has expressed the degree of concern over this matter the exposure has been reassigned based on calculations. The licensee has also revised the assigned neutron exposure of fifteen individuals that were identified in the same SWPs as is the concerned individual. These other individuals' additional exposures range from 0.000 to 0.040 rem neutron, and the new whole body total exposures for the year 1983 range from 0.002 to 0.127 rem. The licensee is reviewing records to determine if any other recorded exposures will need to be revised under this policy.

The licensee stated that the evolution of replacing the primary startup sources took place on August 31 through September 2, 1983 and the applicable SWP is number 83-127. The work did not take place in November 1983 and under a SWP near 83-165 as the concerned individual remembered. The records for SWPs number 83-164 and 83-165 are missing. The SWP log for the year 1983 was also misplaced for some time, and this added to the confusion as to what work was scheduled to be done under SWP 83-164 and 83-165. This log was located during the inspection, and it was determined that these two SWPs did not refer to the evolution in question, and in fact the jobs were never carried out. Review of records of the shift supervisor log, control operator log, records of Special Nuclear Material movement, and the SWP log, support these statements.

The inspector reviewed the survey records associated with SWPs 83-127, 83-174, and 83-177. The values calculated from the time sheets and dose rates are consistent with those calculated by the licensee.

The applicable regulations regarding neutron exposure are 10 CFR 20.202 and 20.401, guidance is provided in Regulatory Guides 8.14, "Personnel Neutron Dosimeters", and 8.4 "Direct-Reading and Indirect-Reading Pocket Dosimeters." Although, Regulatory Guide 8.14 permits the use of calculated neutron dose equivalent to supplement neutron dosimeters, the regulations do not require that the licensee use time keeping methods.

10 CFR 20.401 requires that records of radiation surveys conducted to assure compliance with the regulations in Part 20 be maintained. The licensee has been collating records associated with the 1983 SWPs and has identified that of 198 SWPs issued in 1983 three are missing. Notes on the 1983 SWP log indicate that of these three SWPs one was cancelled, and the work on the other two was not initiated. The licensee is also collating records of radiation surveys. Review of the 1984 Survey Log indicates that for approximately 1400 surveys conducted from January 1 through August 31 less than one percent of the survey records had not been located. The licensee has initiated efforts to improve maintenance of SWPs and survey records.

The fact that some records were missing was identified by the licensee in their efforts to collate the records for microfilming. The number of missing records is small in comparison to the number being generated. Corrective action has been initiated. The inspector concludes that there

has not been a major breakdown in the maintenance of records and that the problem is being addressed.

The inspector noted during the inspection that it appears that the portable neutron instrument used for the survey associated with SWP 83-127 was due for calibration. The licensee's Adminstrative Procedure AP C-450 Revision 2, "Routine Preventive Maintenance --I&C Department" describes the routine preventive maintenance program, including calibration of portable radiation protection instruments. Appendix 1 to this procedure titled "Radiation Protection Instrument Calibration Schedule" specifies the calibration frequency. The instrument used was an Eberline Portable REM Counter, PRS-1, ID number RP 3.6.2. This instrument has a calibration frequency of 3 months. The instrument was due for calibration on August 11, 1984, it had last been calibrated on May 11, 1984. It was used on September 1 and 2, 1984. The licensee identified that the instrument was due for calibration, but due to the lack of an alternative instrument, decided to use it after making some correlation measurements to a AmBe source. Calibrations of this instrument are performed by a vendor offsite.

The industry standard on the calibration of portable instruments is ANSI N323-1978, "Radiation Protection Instrumentation Test and Calibration." Section 4.7.1 states in part "...calibration will be required at least annually". Since the licensee could establish a calibration frequency of once a year, and the last calibration of this instrument was less than four months old, the licensee actions are acceptable.

At the exit interview the inspector stated that the response that was originally provided to the concerned individual could be a violation of the requirements of 10 CFR 19.13 but that he needed to consult with Regional management. This matter was therefore left as an unresolved Item.

Since the licensee provided the information requested by the concerned individual at a later date, but within the thirty day response time, the Region concludes that this item has been resolved, and has been found to be acceptable.

Also at the exit interview, the matter of the calibration of the neutron instrument was left as an unresolved item. As discussed above, this item is now resolved and is found acceptable.

No violations or deviations were identified in this area.

9. Internal Exposure Control Program

(83-25-14, Open) Respiratory protection procedures had not been fully developed and implemented. This open item was established from the list of improvement areas identified in the Emergency Preparedness Appraisal. During this inspection an examination of the licensee's internal exposure control program was initiated.

By a letter from P. A. Crane, Jr. to R. H. Engelken dated June 16, 1980, the licensee notified Region V of their intent to use respiratory

protection equipment for the purpose of limiting the inhalation of airborne radioactive materials. This letter fulfills the requirement 10 CFR 20.103(g).

According to the C&RP Engineer in charge of the day to day operation of the respiratory protection program, the program's procedures have been developed and implemented. The inspector reviewed some of these procedures:

Number	Rev.	Date	Title
NPAP A-205	1	04/15/83	Qualification and Responsibilities of the Respiratory Protection Director
NPAP B-205	1	08/01/83	Respirator Training Program
AP A-205 S1	0	03/26/83	The Diablo Canyon Power Plant Respiratory Protection Program
AP B-60E	0	03/26/84	Access Control: Radiologically Controlled Area Access Requiring Use of Respirator Equipment
RCS-2	7	04/23/84	Radiation Control Standard Internal Dose Control
RCP G-3	2	04/16/84	Radiation Control Procedure Personnel Internal Exposure Control

The inspector noted that these procedures are generally consistent with requirements of Part 20, with the exception of Figure 1 of RCP G-3, "Respiratory Protection Decision Flow Diagram", this flow diagram does not include the requirement of 10 CFR 20.103(b)(2) to perform an evaluation of the causes, and take appropriate corrective action to prevent recurrence, if an inhalation results in exceeding the 40-hour control measure. This procedure is also lacking in other areas including but not limited to (1) no specific procedure for calculating inhalation concentration from bioassay and related data; (2) not requiring air samples for breech of systems other than primary systems that may contain radioactive material, e.g., radioactive waste system; (3) no instructions in the use of the "Airborne Entry Log". The Senior C&RP Engineer responsible for radiation protection agreed that this procedure was lacking and stated that he was planning to revise it. The inspector further commented that a number of the procedures lack internal consistency between the Corporate Standards and the Site implementing procedures. These inconsistencies relate to assigned organizational responsibilities and refer to titles that are no longer in use. This matter was discussed during the preliminary exit interview on August 17, 1984. The licensee agreed to examine these procedures in light of the inspector comments.

The inspector also observed the area currently assigned for the decontamination and cleaning of respirators. This area is the

personnel decontamination sink and shower area. The inspector noted that this area is too small to serve both functions, particularly during heavy use of respirators, e.g., refueling outages. The cognizant Senior C&RP Engineer stated that they were aware of the limitations and that plans for a new respirator service area were included in the new radioactive waste building. If the need developed for processing large number of respirators prior to the new facility being completed the licensee intends to contract for a decontamination trailer. He estimated that this service would be provided with about 48 hours notice.

The inspector also observed the location of the air compressor and the three compressed air tank fill stations. The licensee was in the process of preparing a procedure for filling compress air tanks on site. The review of the licensee's respiratory protection program will continue in another inspection.

No violations or deviations were identified in this area.

10. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. Paragraphs 7 and 8 discussed items that were identified as unresolved at the end of the inspection. The item in Paragraph 8 has been found to be acceptable based on information provided after the inspection. The item in Paragraph 7 remains unresolved and will be followed up by the resident inspector.

11. Exit Interview

The inspector met with the individuals noted in Paragraph 1 at the end of the first week of the inspection, and again at the end of the inspection. The licensee was informed of the preliminary findings of the inspection. Specific areas discussed are described in Paragraphs 2 through 9. The licensee was informed that no violations had been identified.