ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-275 50-323
License Nos.:	DPR-80 DPR-82
Report No.:	50-275/97-13 50-323/97-13
Licensee:	Pacific Gas and Electric Company
Facility:	Diablo Canyon Nuclear Power Plant, Units 1 and 2
Location:	7 1/2 miles NW of Avila Beach Avila Beach, California
Dates:	August 4-8, 1997
Inspector:	L. T. Ricketson, P.E., Senior Radiation Specialist Plant Support Branch
Approved By:	Blaine Murray, Chief, Plant Support Branch, Division of Reactor Safety

ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

Diablo Canyon Nuclear Power Plant, Units 1 and 2
NRC Inspection Report 50-275/97-13; 50-323/97-13

This announced, routine inspection reviewed external exposure controls, internal exposure controls, dose assessment and dose records, controls of radioactive materials and contamination, surveying and monitoring, and quality oversight of the radiation protection program.

Plant Support

- Generally, external exposure controls were implemented well. However, additional attention to the administration of the dosimetry program was needed (Section R1.1).
- A violation was identified because some individuals were issued incorrectly sized respiratory protection equipment. Other aspects of the internal exposure control program were implemented appropriately (Section R1.2).
- Appropriate radioactive material accountability and instrument calibration programs were maintained (Section R1.3).
- Some radiation protection procedures needed minor revision to clarify guidance (Section R3).
- Nuclear quality services personnel performed an excellent assessment of the dosimetry processing program (Section R7).
- The radiation protection organization's failure to take prompt corrective actions to resolve deficiencies in the dosimetry processing program resulted in a noncited violation (Section R7).

Report Details

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 External Exposure Controls

a. Inspection Scope (83750)

The inspector interviewed radiation protection personnel and reviewed the following:

- Control of high radiation areas
- High radiation area key control
- Radiological posting
- Radiation work permits
- Access controls
- Dosimetry use
- Dosimetry processing
- Dosimetry records
- Notifications

b. Observations and Findings (83750)

Radiation work permits provided appropriate guidance to radiation workers. Personnel observed in the radiological controlled area wore dosimetry devices as required by procedural guidance and radiation work permit instructions. No problems were identified with radiological area posting.

Areas requiring the controls of Technical Specification 6.12.2 (i.e., areas in which radiation dose rates were greater than 1000 millirems per hour) were designated as high high radiation areas. During tours of the radiological controlled area, the inspector determined that high high radiation areas were properly controlled. The licensee accounted for all high high and very high radiation area keys. Key issue records and key inventories were maintained properly.

NRC licensees are required by 10 CFR 20.1501(c) to use dosimetry processed and evaluated by a dosimetry processor holding current accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology. The licensee's accreditation extends through

September 30, 1997. A representative of NVLAP performed the most recent assessment of the licensee's dosimetry program June 4-5, 1996. Four deficiencies associated with the licensee's dosimetry program were identified during the assessment. They were:

1. Lack of an interlaboratory comparison program

2. Lack of annual review of the dosimetry laboratory quality manual; lack of revision date.

3. Lack of periodic, internal audits of the dosimetry laboratory

4. Lack of a formal program for monitoring background radiation levels in all areas where dosimeters were stored or handled

A representative of the radiation protection organization responded to NVLAP in a letter dated July 3, 1996, stating that the deficiencies were corrected. However, nuclear quality services personnel performed an audit of the dosimetry processing program July 8-10, 1997, and concluded that the deficiencies were not corrected.

Through conversations with representatives of NVLAP, NRC personnel determined that the deficiencies were not of such a severity that NVLAP would consider revoking the licensee's accreditation, immediately. NVLAP representatives will review the licensee's corrective actions during the next assessment of the dosimetry program and determine if accreditation should be extended. The individual deficiencies were not violations of NRC requirements, although 10 CFR 20.1501(c) does require accreditation of the dosimetry program. The failure of the radiation protection organization to use the site's corrective action program properly to ensure that the deficiencies in the dosimetry program were corrected is discussed in Section R7.

c. Conclusions

Generally, external exposure controls were implemented well. However, additional attention to the administration of the dosimetry program was needed.

R1.2 Internal Exposure Controls

a. Inspection Scope

The inspector interviewed radiation protection personnel and reviewed the following:

- Air sampling techniques
- Respiratory protection program

b. Observations and Findings

As a followup to Inspection Followup Item 50-275;-323/9708-02 (see Section R8.2), the licensee conducted experiments involving differing air sampling equipment configurations. The intent of the experiments was to determine if sampling results were significantly affected by the placement of the sample holders (air filters) and sample line losses. The study concluded that placing the sample holder near the sampling pump and extending the sample hose into the airborne area was not significantly different from placing the sample holder on the end of the sampling hose. However, licensee representatives acknowledged that the low airborne contamination levels (1E-11 microcuries per cubic centimeter) made the results of the study questionable. The licensee and the inspector agreed that additional sampling at higher contamination levels should be performed before reaching a final conclusion regarding the appropriateness of the differing sampling configurations. Licensee representatives stated that the additional study, with greater airborne contamination levels, would not be possible until the next refueling outage. The inspector stated that the inspection followup item would remain open until the results of the additional studies could be reviewed.

Most elements of the respiratory protection program were implemented properly. However, during a comparison of negative pressure respirator issue records and respirator user qualification records, the inspector identified examples in which individuals were issued respirators of a size different than that for which they were qualified to use.

The inspector reviewed selected examples of respirators issued during the most recent refueling outage. Within this sample, two individuals were issued incorrectly sized respirators for use in radiological areas. One of the two individuals was issued incorrectly sized respirators on multiple occasions. A third individual was issued the wrong sized respirator for nonradiological use.

Technical Specification 6.11 states:

> Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained, and adhered to for all operations involving personnel radiation safety.

10 CFR 20.1703(a)(3)(iv) states:

> If the licensee uses respiratory protection equipment to limit intakes pursuant to 10 CFR 20.1702, the licensee shall implement and maintain a respiratory protection program that includes written procedures regarding selection, fitting, issuance, maintenance, and testing of respirators.

The licensee implemented and maintained such procedures. Radiation Protection Procedure RP1.ID3, Section 4.2.1.d. stated:

> Prior to permitting the wearing of a respirator which is operated under negative pressure, an individual shall pass a quantitative respiratory fit test wearing the type of respirator to be used.

Licensee personnel acknowledged that "type of respirator" meant "size of respirator," as well. If individuals wore incorrectly sized respirators, there was no assurance the respirators provided protection from airborne radioactivity.

Permitting the wearing of respirators, which were operated under negative pressure by individuals who did not pass a quantitative respiratory fit tests wearing the same sizes of respirators, is a violation of Technical Specification 6.11 (50-275/-323-9713-01).

The inspector noted that respiratory protection training material instructed radiation workers to ensure that the respirators they received were the same size as that worn during fit testing. This was not done. Also, radiation protection technicians issuing respirators mistakenly believed that a computer program verified all that the important aspects of respirator user qualifications were current and correct.

The inspector determined the computer program performed some checks, but not all. The computer program checked the dates of training, physical examinations, and fit testing, and confirmed these qualifications requirements had not expired. However, the computer program did not verify that respirator sizes matched the sizes of respirators worn by individuals during successful fit testing.

To correct the violation, the licensee issued an electronic mail message to the radiation protection technicians informing them of the finding and instructing them to verify that individuals were provided with the proper size respirator by reviewing the workers' fit testing results. Additionally, the licensee initiated a request to modify the computer program. When implemented, the modification will revise the computer program so that it will compare the size of the respirator to be issued with the size of the respirator listed in each individual's latest fit test results and alert the issuing technician if the sizes do not match.

Licensee representatives reviewed whole body counting records and determined the individuals receiving incorrectly sized respirators did not experience uptakes of radioactive materials.

The licensee has already provided the information it plans to implement to prevent recurrence of this violation, and the licensee's corrective actions are considered appropriate to address the violation.

c. Conclusions

A violation was identified because some individuals were issued incorrectly sized respiratory protection equipment. Other aspects of the internal exposure control program were implemented appropriately.

R1.3 Control of Radioactive Material and Contamination; Surveying and Monitoring

a. Inspection Scope (83750)

The inspector interviewed radiation protection personnel and reviewed the following:

- Source accountability
- Source leak testing
- Personnel contamination events
- Portable survey instrument calibration
- Personnel contamination monitors and tool monitor calibration
- Alarming dosimeters/pocket ion chambers calibration
- Whole body counter calibration

b. Observations and Findings

The licensee performed source inventories every calendar quarter. Leak tests of applicable sources were performed every 6 months. The inspector selected examples from the licensee's inventory records and verified that the sources were stored where indicated.

Portable survey instruments were properly calibrated at the identified intervals.

The two whole body counters were properly calibrated every 12 months.

c. Conclusions

Appropriate radioactive material accountability and instrument calibration programs were maintained.

R3 Radiological Protection and Chemistry Procedures and Documentation

a. Inspection Scope (83750)

The inspector reviewed the procedures listed in the attachment to this report.

b. Observations and Findings

No procedural guidance was provided related to the frequency of calibration of the licensee's whole body counters. Radiation protection personnel evaluated this finding and initiated revisions to the whole body counter operation procedures. The inspector concluded that the lack of procedural guidance did not constitute a problem in this case because the licensee had performed calibrations more frequently than the manufacturer's recommendations. No regulatory concerns were identified.

Radiation Control Procedure RCP 6-614, "Release of Solid Materials From the Radiologically Controlled Areas," Revision 3, Section 7.1, stated:

> All material unconditionally released from the RCA must meet the following criteria:
>
> < 1000 dpm/100 sq. cm beta/gamma removable contamination
> < 20 dpm/100 sq. cm alpha removable contamination
> < 5000 dpm/100 sq. cm beta/gamma total contamination
> < 100 dpm/100 sq. cm alpha total contamination

A literal interpretation of the procedural guidance would allow the uncontrolled release of very low level radioactive material. For example, an object with removable contamination producing 999 disintegration per minute per 100 centimeters squared would be releasable. Radioactive material released in this manner would constitute a violation of 10 CFR 20.2001, "General Requirements for Waste Disposal," since there has been no level established that is below regulatory concern. Radiation survey requirements were discussed in Health Physics Positions 072 and 073 in NUREG/CR-5569, Revision 1, and NRC Information Notice 85-92.

Radiation protection technicians stated that, in practice, they released nothing with detectable amounts of radioactive material. The inspector identified nothing to contradict the technicians' statements.

Licensee representatives stated that they would review the guidance provided by this procedure to determine the best means of revising it to reflect their actual practice for maintaining control of radioactive material.

c. Conclusions

Some radiation protection procedures needed minor revision to clarify guidance.

R7 Quality Assurance in Radiological Protection and Chemistry Activities

a. Inspection Scope

The inspector reviewed the following:

- Quality performance assessment reports
- Audit checklists
- Action Requests

b. Observations and Findings

The assessment of the dosimetry processing program by nuclear quality services personnel, discussed initially in Section R1.1, identified numerous deficiencies and concluded that deficiencies identified by NVLAP remained uncorrected. The original deficiencies were documented by Action Requests A0406150, A0406152, A0406157, and A0406160. The official records of these action requests listed dates when corrective actions were supposedly complete. However, the nuclear quality services assessment verified that corrective actions were not implemented in at least three of the four examples of deficiencies. Nuclear quality services' findings were documented in Action Request A0440727, initiated July 30, 1997. Radiation protection personnel had not had time to respond to the findings of the assessment.

10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," states in Criterion XVI:

> Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment and nonconformances are promptly identified and corrected.

Chapter 17.2.1 of the Diablo Canyon Final Safety Analysis Report addresses quality assurance program applicability. In part, it states:

> In addition, the QA Program includes requirements that apply to nonsafety-related programs for:
>
> . . . (4) Radiation Protection

Inter-Departmental Administrative Procedure OM7.ID1, "Problem Identification and Resolution - Action Requests," Revision 7, Section 1.1, states:

> This inter-departmental, administrative procedure establishes a method for identifying, documenting, and resolving problems that relate to Nuclear Power Generation activities, regardless of quality classification or whether they are hardware related or administrative.

Section 5.8, of the procedure states:

> The responsible organization shall ensure the problem is resolved and the action request is closed.

The failure of the radiation protection organization to ensure the deficiencies identified by NVLAP were resolved is a violation of 10 CFR Part 50, Appendix B, Criterion XVI (50-275/-323-9713-02).

Radiation protection personnel determined that prompt corrective actions were not implemented because certain radiation protection personnel did not perform as expected, by management. Subsequently, the matter was treated as a personnel issue. A contributing cause was a lack of management oversight of the dosimetry program.

Corrective actions proposed by radiation protection personnel included:

1. Correction of the original deficiencies by September 21, 1997

2. Performance of an internal assessment of dosimetry laboratory practices by radiation protection personnel

3. Performance of an independent assessment by a technical expert or experts from another dosimetry laboratory

4. Review of all nuclear quality service findings and the development of an action plan to correct the findings and improve the performance of the laboratory

This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

c. Conclusions

Nuclear quality services personnel performed an excellent assessment of the dosimetry processing program. The radiation protection organization's failure to take prompt corrective actions to resolve deficiencies in the dosimetry processing program resulted in a noncited violation.

R8 Miscellaneous Radiological Protection and Chemistry Issues

8.1 (Closed) Violation 50-275;-323/9708-01: Failure to follow radiation work permit requirements

The inspector determined that the corrective actions to prevent recurrence of this item, as described in the licensee's response letter of June 27, 1997, were implemented. No similar problems were identified.

8.2 (Open) Inspection Followup Item 50-275;-323/9708-02: Air sample hose factor evaluation

The inspector determined that additional action was needed before this item can be closed. See Section R1.2.

V. Management Meetings

X1 Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at an exit meeting on August 8, 1997. The licensee acknowledged the findings presented. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

C. Belmont, Director, Nuclear Quality Services
H. Fong, Engineer, Radiation Protection
R. Gray, Director, Radiation Protection
T. Grebel, Director, Regulatory Services
T. Irving, General Foreman, Radiation Protection
S. Ketelsen, Supervisor, Regulatory Services
J. Knight, Foreman, Radiation Protection
L. Moretti, Foreman, Radiation Protection
S. LaForce, Engineer, Regulatory Services
G. Lautt, Engineer, Radiation Protection
R. Lund, Foreman, Radiation Protection
J. Molden, Manager, Operations Services
L. Sewell, Engineer, Radiation Protection
M. Somerville, Senior Engineer, Radiation Protection
M. Wang, Engineer, Radiation Protection

NRC

M. Tschiltz, Senior Resident Inspector
D. Allen, Resident Inspector
G. Johnston, Senior Project Engineer

INSPECTION PROCEDURES USED

83750	Occupational Radiation Exposure

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-275;323/9713-01	VIO	Issuance of incorrect respirator size
50-275;323/9713-02	NCV	Failure to take prompt corrective actions

Closed

50-275;323/9713-02	NCV	Failure to take prompt corrective actions
50-275;323/9708-01	VIO	Failure to follow radiation work permit requirements

Discussed

50-275;323/9708-02 IFI Air sample hose factor evaluation

LIST OF DOCUMENTS REVIEWED

Radiation Protection Organization Chart - July 30, 1997
Assessment of 1R8 Performance/Nuclear Quality Services
Action Request Q0011966, "Deficiencies Identified in Dosimetry Lab"
Action Request A0406150, "Administrative System Misc/Multiple FEG's (Deficiency 1)
Action Request A0406152, "Administrative System Misc/Multiple FEG's (Deficiency 2)
Action Request A0406157, "Administrative System Misc/Multiple FEG's (Deficiency 3)
Action Request A0406160, "Administrative System Misc/Multiple FEG's (Deficiency 4)

Procedures

Inter-Departmental Administrative Procedure OM7.ID1, "Problem Identification and Resolution - Action Requests," Revision 7

Inter-Departmental Administrative Procedure RP1ID3, "Respiratory Protection Program," Revision 2A

RCP D-330, "Personnel Dosimetry Evaluations," Revision 2

RCP D-351, "Operation of the PC Based Helgeson 'Quicky 3' In Vivo Whole Body Counter," Revision 1

RCP D-361, "Operation of the PC Based Helgeson 'Do-It-Yourself' HPGE In Vivo Whole Body Counter," Revision 1

RCP D-410, "Selection and Use of Respiratory Protection Equipment," Revision 3

RCP D-500, "Radiation and Contamination Surveys," Revision 11A

RCP D-610, "Control of Radioactive Materials," Revision 14

RCP D-614, "Release of Solid Materials from Radiologically Controlled Areas," Revision 3

RCP D-731, "Operation of the Dynatech Fittester 3000 Respirator Fit Test System," Revision 1

RCP D-900, "Performance Tests for Selected Radiation Protection Instruments," Revision 16B

RCP DP-1, "Personnel Dosimetry Program Overview," Revision 0

RCP DP-18, "Issue and Processing of Quarterly Personnel Dosimetry-Routine Operations," Revision 0

RCP DP-25, "Selection and Use of Reference," Revision 0

RCP DP-26, "Equipment Calibration Schedule," Revision 0

RCP DP-28, "In-House Performance Testing," Revision 0

Training Documentation

Current Issues for Respiratory Protection - Third Quarter 1997