UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

August 30, 2004

Gregory M. Rueger, Senior Vice
President, Generation and
Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 3
Avila Beach, CA 93424

SUBJECT: DIABLO CANYON, UNITS 1 AND 2 - NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000275/2004-06; 05000323/2004-06

Dear Mr. Rueger:

On June 14 and July 30, 2004, the NRC performed an inspection at your Diablo Canyon Nuclear Power Plant, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on June 24, 2004, with you and members of your staff. Following additional in-office inspection, a discussion was held by telephone with Mr. S. Ketelsen on August 12, 2004 to notify you that one finding was determined to be an apparent violation, pending completion of a Phase 3 significance determination.

This inspection was an examination of activities conducted under your license as they relate to the identification and resolution of problems, and the compliance with the Commission's rules and regulations and the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and representative records, observations of activities, and interviews with personnel. The team also reviewed your improvement plans for significant cross-cutting issues in human performance and problem identification and resolution.

On the basis of the samples selected for review, the team concluded that in general, problems were properly identified, evaluated, and corrected. However, the team identified examples where conditions adverse to quality were not properly entered into the Action Request system, allowing problem recurrence. Some significant issues were identified as routine, delaying determination of the cause and appropriate corrective actions. Weaknesses with the alignment of corrective actions with the problem cause resulted in ineffective corrective action. The team also noted that the Human Performance Improvement Plan did not address problems observed in coordinating and supervising operations during outages.

There were three findings identified, which were determined to be violations of NRC requirements. Each of these findings involved issues that were not properly handled in your corrective action program. The first finding involved the failure to maintain approximately 70 safety-related valves within the analyzed life for environmental qualification. The significance of this finding has not yet been determined, so this finding will be treated as an apparent violation, pending completion of a Phase 3 significance determination. The second finding involved the failure to maintain design control of the diesel engine generator fuel oil transfer system. The

third finding involved the failure to perform surveys to ensure compliance with NRC requirements for posting and controlling high radiation areas. The latter two findings were determined to be violations. They were evaluated under the risk significance determination process as having very low safety significance (Green) and are being treated as non-cited violations (NCVs), consistent with Section VI.A of the Enforcement Policy. These NCVs are described in the subject inspection report. If you contest the violation or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Diablo Canyon Nuclear Power Plant, Units 1 and 2 facility.

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Sincerely,

//RA//

Linda Joy Smith
Plant Engineering Branch
Division of Reactor Safety

Dockets: 50-275
50-323
Licenses: DPR-80
DPR-82

Enclosures:
Inspection Report 05000275/2004-06; 05000323/2004-06
w/Attachment Supplemental Information

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket(s):	50-275; 50-323
License(s):	DPR-80; DPR-82
Report No.:	05000275/2004-06; 05000323/2004-06
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:	June 14 - 25, 2004 onsite and June 26 - August 12, 2004 in-office
Inspector(s):	N. O'Keefe, Senior Reactor Inspector (Team Leader) P. Goldberg, Reactor Inspector M. Hay, Senior Resident Inspector (Waterford) D. Proulx, Senior Resident Inspector
Approved By:	L. Smith, Chief, Plant Engineering Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000275/2004-06; 05000-323/2004-06; on 06/14/2004 - 08/12/2004; Diablo Canyon Nuclear Power Plant, Units 1 and 2: biennial baseline inspection of the identification and resolution of problems. Violations were identified in the areas of problem identification and effectiveness of corrective actions.

The inspection was conducted by two resident inspectors and two regional inspectors. Two Green findings of very low safety significance were identified during this inspection and were classified as non-cited violations. The findings were evaluated using the significance determination process. One apparent violation was identified whose significance was pending completion of a Phase 3 significance determination. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG1649, "Reactor Oversight Process," Revision 3, dated July 2000.

Identification and Resolution of Problems

The team concluded that the licensee was effective in identifying, evaluating, and correcting problems, although the team identified some examples were identified where conditions adverse to quality were not properly entered into the Action Request system, allowing problem recurrence. The team found that the evaluation and prioritization of problems were mostly conducted properly, although some significant issues were identified as routine because the licensee's process assigned significance based on the actual consequences of problems, rather than considering the potential consequences under design basis conditions. Corrective actions were generally implemented in a timely manner. However, the team found weaknesses with the alignment of corrective actions with the cause, and with the quality of operability evaluations for issues assigned routine significance, because the licensee did not assign a probable cause statement to routine issues. Licensee audits and assessments were found to be responsive to plant performance issues and effective in identifying areas for improvement. During interviews, station personnel communicated a willingness to enter issues into the corrective action program. The team reviewed the licensee's improvement plans for significant cross-cutting issues in human performance and problem identification and resolution. Although it was too early to determine if these will be effective, the team noted that the Human Performance Improvement Plan did not address problems observed in coordinating and supervising operations during outages.

A. NRC-Identified and Self-revealing Findings

Cornerstone: Initiating Events

- TBD. A self-revealing apparent violation of 10 CFR 50.49(f) was identified for the failure to maintain approximately 70 safety-related solenoid operated valves within the allowable life analyzed for environmentally qualification. On February 9, 2002, an ASCO solenoid operated valve that was beyond its proper life failed shut, causing a loss of feed to Steam Generator 2-4, resulting in Unit 2 being

manually tripped. The licensee identified that the maximum life to satisfy environmental qualification had been calculated incorrectly, despite the existence of a number of industry operating experience issues on this topic. The cause of the failure also affected numerous other ASCO solenoid operating valve applications affecting multiple cornerstones of safety. This issue was entered into the corrective action program under Action Requests A0596444, A05552407, and A0549024. This finding involved cross-cutting aspects in the area of problem identification and resolution because the original corrective actions did not identify the full scope of the cause and extent of condition, delaying corrective actions for approximately 1 year.

This significance of this apparent violation of 10 CFR 50.49(f) was unresolved pending completion of a Phase 3 significance determination. This finding was greater than minor because, if left uncorrected, these deficiencies would become a more significant safety concern by increasing the failure rate as the components age. There was no immediate safety concern because the licensee had replaced all the safety related solenoid operated valves by the time of this inspection. This finding potentially affected the Initiating Events, Mitigating Systems, and Barrier Integrity Cornerstones (Section 4OA2.e(1)).

Cornerstone: Mitigating Systems

- Green. The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, for the failure to maintain design control of the diesel emergency generator system fuel oil transfer system requirements. Specifically, the fuel supply to each diesel required that an adequate air supply to operate the air-operated day tank level control valve be maintained in the starting air receivers. The team identified that when the licensee recognized that this design basis was not documented, a calculation was performed to support creating the design basis which did not account for operational leakage from the system, nor did it verify that existing leakage would not prevent fulfilling the safety function. This failure potentially affected the ability of each diesel emergency generator to provide sufficient fuel oil to support 7 days of continuous diesel generator operations following a loss of offsite power. This issue was entered into the corrective action program under Action Request A0613008. This finding involved cross-cutting aspects in the area of problem identification and resolution because the original corrective actions did not correct the problem and properly establish the design basis.

  This finding was greater than minor because it was similar to Example 3.i of Manual Chapter 0612, Appendix E. This finding affected the mitigating systems cornerstone. This finding was evaluated using NRC Manual Chapter 0609, Significance Determination Process, Phase 1 worksheet under the mitigating systems cornerstone. The finding was determined to be of very low safety significance because the deficiency was confirmed not to result in a loss of function of the diesel engine generator as a power source per Generic Letter 91-18, Revision 1. The licensee was able to demonstrate that compensatory

measures were in place so that this function could be performed manually in a reliable manner because operators would receive a control room alarm which triggered implementation of proceduralized step to manually perform the function. The team confirmed that operators were trained to perform this action (Section 4OA2.e(2)).

Cornerstone: Occupational Radiation Safety

- Green. A self-revealing non-cited violation of 10 CFR 20.1501(a) was identified for the failure to perform required radiation surveys in Unit 2 to ensure compliance with 10 CFR 20.1902(b). Specifically, on January 28, 2003, during the performance of venting the volume control tank radiation protection personnel failed to perform adequate surveys of the Unit 2 Gas Decay Tank Room to post an expected high radiation area that would occur during this evolution. This finding involved cross-cutting aspects in the area of problem identification and resolution because the team noted that corrective actions for a similar event under the same circumstances had been ineffective in preventing recurrence. This issue was entered into the corrective action program under Action Request A0572997.

  The finding is greater than minor because it was associated with one of the occupational radiation safety cornerstone attributes (exposure), and the finding affected the associated cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material. The inspector processed the issues through the Occupational Radiation Protection Significance Determination Process. This issues were determined to be a Green finding because it was not an ALARA planning and control issue, there was no personnel overexposure or substantial potential for personnel overexposure, and the licensee's ability to assess dose was not compromised (Section 4OA2.e(3)).

B. Licensee-Identified Findings

Violations of very low safety significance, which were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective actions are listed in Section 4OA7 of this report.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

a. **Effectiveness of Problem Identification**

(1) Inspection Scope

The team reviewed approximately 107 Action Requests (ARs), Quality Evaluations (QEs), and Non-Conformance Reports (NCRs), along with supporting documentation, including root-cause analyses to determine whether problems were properly identified, characterized, and entered into the corrective action program. Specifically, the team's review included a selection of action requests that had been opened or closed or that related to issues of regulatory non-compliance since April 1, 2002. These issues were selected across the seven cornerstones of safety. Additionally, the team reviewed Event Trend Records (ETRs), which were maintained in a database separate from the corrective action database, but considered in some cases to be a part of the Corrective Action Program.

The team evaluated the action requests to determine the licensee's threshold for identifying problems and entering them into the corrective action program. Also, the team evaluated the licensee's efforts in establishing the scope of problems by reviewing pertinent work orders, engineering modification packages, self-assessment results, and action plans.

Team members attended meetings intended to screen, assign significance and cause assessments, as well as review cause assessment reports and effectiveness of corrective actions. These meetings included an Action Request Review Team meeting, a Corrective Action Review Group meeting, a Plant Safety Review Committee meeting, and a Maintenance, Operations, and Engineering Team meeting. The team also reviewed licensee audit, assessment, and surveillance reports related to the problem identification and resolution program. The effectiveness of the audits and assessments was evaluated by comparing the audit and assessment results against self-revealing and NRC-identified findings.

The team performed a review of problem identification associated with the diesel emergency generators and associated systems for a 5 year period.

Specific documents reviewed by the team are listed in the attachment.

(2) Assessment

Introduction. The team determined that the licensee was mostly effective at identifying problems and entering them into the corrective action program. However, NRC inspection reports documented issues that the licensee had not adequately determined

the extent of some problems or did not recognize the significance of some issues (this is further discussed in Section 4OA2.b). Licensee audits and self assessments were of sufficient breadth and depth and identified issues similar to those that were raised during NRC inspections.

In reviewing the corrective actions processes, the team noted that the corrective actions database was not capable of performing trending functions, so the licensee used a separate database, the Event Trend Record system, to perform the trending function. The team noted that the two systems did not fully overlap. Some Action Requests were not entered into the Event Trend Record system, and some Event Trend Records did not have an associated Action Request. The latter case was of some concern because this could result in conditions adverse to quality which were not properly entered into the corrective actions process and which had no corrective actions assigned. Also, entries into the Event Trend Record process were not subject to review to ensure that appropriate issues were also entered into the Action Request process. The team identified seven similar examples of this.

- Between December 2002 and June 2003, seven Event Trend Records were written to document instances where the radiation area posting at the entrance to the 115-foot yard area was left down after vehicles had accessed the area. The team concluded that these had been incorrectly classified as “not a problem” by radiation protection personnel (since each involved a violation of NRC requirements), apparently because the posting was corrected before the Event Trend Record was written in each instance. Since the instances were not documented as Action Requests, no corrective action was taken to correct the cause until the problem had recurred over a period of months. The trend was identified and corrected through the trending process, and no further examples occurred. This issue is also discussed in detail in Section 4OA2.e(3) and 4OA7.

In response to this concern, the licensee wrote Action Request A0612934 to require that the Action Request Review Team review all Event Trend Records written without an associated Action Request in order to assess whether an Action Request was needed. In the longer term, the licensee was planning to replace the two separate databases with a single program that would allow performing both functions. This will eliminate having to enter issues into a separate database in order to be able to perform trending reviews.

The team noted that the licensee assigned significance to issues during the initial screening process. This significance assignment triggered specific assessment and corrective action activities. In some cases, the licensee assigned routine significance to more significant issues, and as a result, did not perform adequate cause assessments or correct the right problem. Some examples include multiple battery charger failures that were treated without consideration of the repeat nature of the failures (see Special Inspection Report 05000275, 323/2003010), and the failure of a solenoid operated valve that caused a Unit 2 trip due to the incorrect calculation of the service life, documented in Section 4OA2.e(1) below.

b. **Prioritization and Evaluation of Issues**

(1) Inspection Scope

The team reviewed approximately 107 corrective action documents and supporting documentation, including root cause analyses, to ascertain whether the licensee staff's evaluation of the problems identified and considered the full extent of conditions, generic implications, common causes, and previous occurrences. In addition, the team reviewed Action Requests to ascertain if the provisions of NRC Generic Letter 91-18, "Resolution of Degraded and Non-Conforming Conditions," and 10 CFR Part 50, Appendix B, were satisfied regarding timeliness of corrective action. The team also performed a review of problem prioritization and evaluation for diesel engine generators and their support systems for a 5-year period. Specific items reviewed are listed in the attachment.

(2) Assessment

Introduction. The team found that, in general, the licensee was effective in prioritizing and evaluating issues within the corrective action program. Some instances of inappropriately assigning routine significance and priority to more significant issues were identified by the team and NRC inspection reports written during the review period because the licensee's process assigned significance based on the actual consequences of problems, rather than considering the potential consequences under design basis conditions. Corrective actions were generally implemented in a timely manner. However, the team found weaknesses with aligning corrective actions with the cause and with quality of assessment and documentation of operability evaluations for issues assigned routine significance, because the licensee did not assign a probable cause statement to routine issues.

Quality of Significance Determinations

The team noted that Procedure OM7.ID1, "Problem Identification and Resolution - Action Requests," Revision 17, instructed station personnel to assign significance of issues based on the consequences of the actual event or plant conditions existing at the time the issue was raised. As discussed in the battery charger special inspection (Special Inspection Report 05000275, 323/2003010), this practice excluded other factors that could cause the problem to be considered more significant. In the case of the battery charger failures, most of the failures were identified during an outage, with the equipment out of service. The failures were assigned a low significance because the chargers were out of service and not required to function by Technical Specifications to mitigate a loss of ac power. The team determined that, since the battery charger inspection, the licensee had improved the quality of review performed by the Action Request Review Team prior to assigning a significance level; however, no improvements had been made in the guidance for assigning greater than routine significance to an issue. In the cases mentioned, the licensee did not adequately consider the fact that the failures had actually occurred much earlier, when they were in service and required to be functional by Technical Specifications. Also, the licensee had

failed to consider that the presumed failure mechanism represented a common mode failure potential in the other chargers, because extent of condition reviews were not being performed. As a result, the cause of the failures were not identified until multiple and repeat failures had occurred.

Quality of Extent of Condition Reviews

The proper determination of the extent of condition, extent of cause, and potential of common cause failure was also identified as a concern during the battery charger inspection. The team determined that since the battery charger inspection, the licensee had strengthened their processes to stress the importance of considering the extent that the condition and the cause existed in other equipment or processes. The Corrective Actions Review Board was observed to be setting a high standard in this area, but the team noted that this primarily affected issues that were already being treated with elevated significance. It was not clear that the same consideration was being given to issues assigned routine significance, as was the case with the battery chargers. These improvements were not completely effective yet, as illustrated in the following examples:

- Action Request A0598902 documented the failure of a motor operated auxiliary saltwater valve at the conclusion of a routine test. The team noted that the extent of condition and cause for this failure were adequately addressed. However, in performing extent of condition checks on two similar valves in the other unit, the valves would not operate normally in manual for a different reason. The declutch mechanism tripper fingers were found to be misadjusted such that the valves could only be operated manually by holding the declutch level. This method of operation was not allowed by station procedures. These valves were required to be manually operated during certain accidents, as are additional motor operated valves. However, component engineering personnel concluded that no other valves needed to be checked for this condition, since the condition could be worked around by changing Procedure OP O-9, Operating Order 0-9, Manual Seating of Motor Operated Valves, Revision 16, to allow holding the declutch lever down, if necessary. This procedure change included instructions to write an Action Request to repair the valve if this method was needed to operate a valve. While the significance of the specific issue was very low, it shows that extent of condition reviews for equipment issues with routine significance were inconsistent.

- The team noted that the licensee missed an opportunity to identify the problems that existed in the Environmental Qualification (EQ) program when they did not fully evaluate the extent of condition when a solenoid operated valve (SOV) associated with a main feedwater regulating valve failed and resulted in a Unit 2 trip on February 9, 2002, Unit 2. The licensee determined that the valve had failed because it had exceeded its coil service life. The coil service life had been incorrectly determined for thermal effects, in part because the EQ service life was calculated incorrectly. The same error was later found to exist in calculations of elastomer life in the same component, which were used in approximately 70 applications in the two units. The team concluded that the

wider problems in the EQ program were not identified for a year because the licensee did not determine the full cause and extent of condition associated with the observed failure.

Quality of Root Cause Assessments and Probable Cause Statements

Special Inspection Report 05000275, 323/2003010 identified concerns about the effectiveness of the root cause assessment for the battery charger failures. That inspection noted that the licensee was not always using root cause assessment methods that were tailored to the type of problem being assessed, and that the scope of the assessment was narrow. The team noted that the licensee made improvements in this area toward the end of this review period. This effort was still ongoing, and more time will be necessary to measure improvement. The licensee had recently performed internal and external reviews of approximately half of the formal root cause assessments performed in the previous 2 years. This resulted in improving the quality of documentation, upgrading the cause assessment, or adding additional corrective actions in about half of the samples. This effort helped establish a new standard for root cause assessments.

The licensee also established a Corrective Action Review Board of senior management personnel, which was responsible for reviewing draft and final root cause assessment for quality and appropriateness of recommendations. Team members observed a meeting of the Corrective Action Review Board, and concluded that this group was vigorous in challenging the conclusions and the bases for several root cause assessments. Training was also conducted for root cause assessors on multiple root cause assessment methods.

The team identified that the licensee did not expect or require a statement of the probable cause for any issues assigned routine significance. This made reviewing the effectiveness of corrective actions for these issues difficult. In many cases, corrective actions for issues assigned routine significance were based on the problem statement or primary symptoms, rather than the cause. As discussed in the battery charger special inspection report and in the discussion of troubleshooting the inverter above, addressing equipment failures in this way has led to correcting symptoms rather than the cause, allowing recurring problems in some cases. While this aspect of the licensee's program did not violate 10 CFR 50, Appendix B, Criterion XVI, since this only requires preventing recurrence of significant conditions adverse to quality, this practice contributed significantly to having repeat battery charger failures and other issues that included lack of rigorous troubleshooting.

Trending of Issues

The trending process was noted to have been ineffective during the battery charger special inspection. Of particular concern was the conclusion that the licensee had no process for trending equipment problems. The team noted that the licensee had made significant improvements in trending toward the end of the evaluation period. Trending of equipment problems was started and appeared to be effective, although the

effectiveness was limited by not having gone back to enter trendable data from before the start of the new process. Each work group had an individual assigned to perform problem trending on a daily and quarterly basis, and an overall site trending coordinator was assigned. Improvements were made to the software to improve trending capabilities, although some limitations continued to exist. The licensee had a plan to install improved software within about 2 years to address the limitations. The team noted that the licensee had not yet incorporated the improved practices into OM7.ID10, Trend Analysis Program, Revision 7.

Quality of Self-Assessments

The team concluded that the licensee was proactive in performing self-assessments. The assessments reviewed by the team were performed with participation from outside experts and industry peers, as well as internal efforts. The scope of the assessments were good, and the reports identified issues that were consistent with those identified in NRC inspection reports. Some self-assessments were added to the schedule or performed early when a need was identified, demonstrating that the Quality Verification group was responsive to station issues and trends. The Quality Verification group appeared to be fully engaged in assessing station performance in a timely manner, and was communicating its assessments in a vigorous and independent way.

Quality of Operability Assessments

A number of NRC inspection reports identified concerns with the licensee's implementation of its operability evaluation process during the review period. Some examples include:

- Failure to initiate an operability assessment for non-conforming condition associated with diesel engine generator fuel storage capacity. (AR A0553285)

- Failure to evaluate the capability of core exit thermocouples to monitor core radial temperature gradient when three cables were inadvertently swapped (AR A0597575)

- Failure to promptly identify and correct a leak in one check valve and another installed backwards in the auxiliary feedwater system (NCR N0002164)

- Failure to perform a prompt operability assessment for a battery charger with degraded electrical termination (AR A0561835)

- Multiple failures to perform prompt operability assessments for battery charger failures

The team reviewed the procedures which govern problem identification and operability assessment, then reviewed numerous issues with operability aspects. Action requests with Prompt Operability Assessments or Operability Evaluations were reviewed (see list in Documents Reviewed) for completeness and quality in assessment the operability

issue, as well as the appropriateness and formality of any compensatory actions specified to assure operability. For issues with less-formal documentation of the basis for operabilty, the team reviewed the adequacy of the basis for operability provided. This included an assessment of the licensee's threshold in assessing issues for operability.

The team concluded that since the battery charger inspection, the licensee had made improvements in the operability assessment process. Operations management was actively involved in operability issues. Operations personnel took ownership of the operability assessment process, and raised the standard for evaluating and documenting operability questions in the more formal operability assessments (POAs and OEs). However, the team noted that the licensee had not formally addressed the quality of review and documentation for operability questions that did not go outside the operations department for review. This concern had the following aspects:

> Action Request forms required assessing whether the equipment was "unavailable," which was not defined in the applicable procedure, and does not directly correlate to operability. Further, the licensee's program did not specify a minimum expectation for documenting operability assessments. As a result, non-complex issues that stayed within the operations department often had little or no documentation to define whether appropriate operability issues were adequately addressed. This contributed to an example discussed in Section 4OA2.e(2) where the NRC and the licensee questioned the ability of the diesel engine generators' starting air receivers to support the day tank fuel oil level control valve during a 7 day run, and both times the problem was not correctly defined or adequately answered. It also contributed to inadequate assessment of operability of diesel engine generators when the exhaust stack support was found to be damaged; the initial assessment did not consider the support's seismic role, and extent of condition assessment was based on a limited inspection from an excessive distance, but the documentation was not specific enough to demonstrate what was or was not considered.
>
> Also, the team found that operability questions were being addressed in the specific context of the actual event or plant conditions existing at the time the issue was raised. This was demonstrated repeatedly in the case of battery charger failures. This practice was proceduralized in the action request program for assigning significance, but the practice appeared to have been carried over into operability assessment process. The team concluded that this practice was inconsistent with Generic Letter 91-18 guidance to assess the capability to perform the intended safety function under all applicable design basis conditions. It was also inappropriate for assigning significance, as was documented in the special inspection for the battery charger events.

The following examples of inappropriate operability assessments illustrate the above points:

- In response to identifying that numerous ASCO solenoid operated valve (SOV)

coils had exceeded their environmentally qualified (EQ) service life, the licensee performed a narrowly focused operability evaluation. OE 2002-04, "Operability of Units 1 and 2 Normally Energized ASCO Solenoid Valves that are in Service Beyond their Qualified Life," dated April 26, 2002, concluded that the affected valves were acceptable because they would fail-safe (closed) in the de-energized state, which was the failure mode of a coil. A year later, the licensee recognized that the EQ life of the SOV elastomers had also not been properly calculated. A new operability assessment was not performed because the earlier OE was stated to be bounding, apparently based on age. The inspectors identified that the licensee had not considered that the failure mode associated with elastomers in SOVs was valve binding, so the SOV would fail as-is instead of going to its fail-safe position. Therefore, the team determined that the licensee had inappropriately determined operability for the degraded elastomer of the SOVs. This issue is further discussed in Section 4OA2.e(1).

- On October 3, 2003, the licensee identified a broken shim for a diesel emergency generator exhaust stack. This was initially determined not to affect the operability of the associated diesel. It was later recognized that this was a seismic support, and did in fact affect the operability of the associated diesel in the event of an earthquake. This triggered an extent of condition review, which concluded that no other diesels were affected. This was based on observation from below using binoculars, since the supports of interest were a considerable distance above the turbine deck. Under pressure from the Quality Verification group, a proper inspection was performed, which identified another failed shim in the exhaust stack for a different diesel emergency generator. The team concluded this was an example of inadequate assessment of operability, but one which was identified and corrected. This issue was documented in Non-Conformance Report N0002170.

- As discussed in Special Inspection Report 05000275, 323/2003010, between January 1999 and May 2003, multiple safety-related battery charger failures did not receive operability assessments. In most cases, the chargers were out of service for testing at the time the problems were discovered. However, by not assessing the impact of the failure as it existed when the equipment was still in service, the licensee failed to recognize the appropriate significance, and failed to identify the root cause and prevent recurrence.

c. **Effectiveness of Corrective Actions**

(1) Inspection Scope

The team reviewed problem evaluation requests, trending reports, effectiveness reviews, and self assessments to verify that corrective actions were identified, implemented in a timely manner commensurate with safety. Corrective actions were evaluated for effectiveness in correcting the problem, including corrective actions to address common cause or generic concerns. The team reviewed corrective actions for selected violations to verify compliance was restored. The team also performed a

review of corrective actions for diesel engine generators and their support systems for a 5-year period. A listing of specific documents reviewed during the inspection is included in the attachment to this report.

(2) Assessment

Introduction. The team concluded that, in general, the licensee implemented effective corrective actions to address problems in a timely manner. However, the team noted that the licensee did not require or expect apparent cause statements for most routine problems. Therefore, many routine issues received corrective actions to address the most prominent symptom, rather than the cause. In the cases of battery charger failures discussed in the special inspection and Inverter SEC-INV issue from this report, repeated failures were allowed to occur because the most prominent symptom was not the cause. This practice also made it difficult for the team or the licensee to perform a review of the appropriateness of some corrective actions. Problems with greater than routine significance received appropriate root cause assessments.

The team identified some problems with the effectiveness or untimely corrective actions

- On February 19, 2001, during performance of surveillance test Procedure SP 312, the Diesel Generator SEC-DSL output breaker tripped open. Maintenance personnel satisfactorily tested the breaker. Design engineering personnel concluded that the output breaker over-current setting was marginal and recommended the breaker setting be increased several steps. Since the output breaker and the diesel generator had tested satisfactorily and there was no spare output breaker available at the time, the breaker setting change was not implemented. On December 22, 2003, during a performance of Procedure SP 312, the diesel generator output breaker tripped open. The breaker setting change was implemented at that time. The team determined that corrective actions for the diesel output generator breaker were formulated but not implemented in a timely manner, allowing the problem to recur. While this was not a violation, since this equipment is not subject to Appendix B, it did reflect on the corrective action program effectiveness.

- The team noted that ineffective corrective actions resulted in the failure to adequately resolve a design deficiency. On February 20, 2004, the licensee identified that the design basis for the diesel emergency generator fuel oil level control valves (LCV) was not documented. Engineering implemented corrective actions to document that the LCVs were required to operate to support the 7-day mission time of the diesels, and had to be provided with an adequate air volume from the starting air receivers to perform this function. This design change was incorporated into Design Criteria Memorandum S-21, “Diesel Engine System,” Revision 18, and supported by Calculations M-108 and M-1078. The inspectors noted that these corrective actions were not completely effective. The calculations incorrectly determined the air pressure required to support 7 days of operation, because it did not account for any operational air leakage. The inspectors noted that minor air leaks existed in each train, since the starting air

compressors automatically cycled periodically to maintain the pressure. Since the starting air compressors were not available during a loss of offsite power, when the diesels were required to run, the air receivers needed to be capable of delivering this air without recharging. The licensee agreed that additional measures were needed to address both design and testing deficiencies and initiated Action Request A0613008. This issue is discussed in Section 4OA2.e(2).

- The team noted that ineffective corrective actions resulted in multiple instances were radiological surveys were not adequate to comply with high radiation posting requirements in response to expected changing radiological conditions. During the Unit 2 refueling outage performed in 2003, several examples were identified. On January 28, 2003, A0572997 was written to document a failure to perform an adequate survey to post a high radiation area for the Unit 2 gas decay tank during a venting evolution of the volume control tank. On January 31, 2003, A0573453 was written to document a failure to perform an adequate survey to post a high radiation area for the Unit 2 waste gas surge tank during a venting evolution of the volume control tank. On February 4, 2003, A0573555 was written to document a failure to perform an adequate survey to post a high radiation area for the Unit 2 liquid holdup tank discharge line during a crud burst clean up of the reactor coolant system. The licensee had previously performed these evolutions under the same conditions, and had experienced high radiation conditions. The licensee had implemented corrective actions in the form of procedural guidance to ensure these areas would be properly posted, but these corrective actions were ineffective since they did not prevent recurrence of the problem. These issues are discussed in Sections 4OA2.e(3) and 4OA7. The team noted that the licensee had taken additional corrective actions following these occurrences which were effective, since no additional examples of this type occurred during the subsequent outage.

Human Performance Improvement Program Review

A significant cross-cutting issue in the area of human performance was reported in the NRC's Mid-Cycle Assessment letter to Diablo Canyon, dated August 27, 2003. The team assessed the licensee's plan to address this issue. The licensee performed self-assessments with the help of industry peers to help identify areas of focus and develop corrective actions. The team concluded that the licensee's improvement plan was generally appropriate to address the issues.

The licensee had appropriately identified human performance and error reduction during outages as a special area of focus in this improvement plan. While the team noted some improvement during the recently completed outage, human performance continued to be of concern, particularly in the area of plant system configuration control. The team noted that there were six events during this outage which had human performance among the principal causes. These events each had a cross-cutting aspect related to inadequate planning, supervision, and coordination of outage evolutions. The team identified that these causes were not being addressed as part of

the Human Performance Improvement Plan. Licensee senior management agreed with this observation and added this to the scope of the improvement plan. The six events are addressed in detail in Inspection Report 05000275, 323/2004-003, although the following summarize the events:

- While draining the reactor vessel without venting, operators drew a vacuum in the head that caused the indicated level to be falsely high, then observed an unexpected 2 foot level indication drop when the vent was opened. This issue was documented in Action Request A0603803.

- Operators inadvertently transferred 13,000 gallons from the refueling water storage tank to spent fuel pool as a result of simultaneously performing two incompatible evolutions. This issue was documented in Action Request A0604858.

- Control room operators failed to comply with the Outage Safety Plan requirement to have at least one steam generator with greater than 15 percent water level as a backup method of decay heat removal in Mode 5 because control room operators were unfamiliar with the plan. This issue was documented in Action Request A0603349.

- Operators inadvertently filled the reactor cavity through a different flow path than intended. This issue was documented in Action Request A0603873.

- Control room operators exceeded pressurized heatup rate limits while establishing a steam bubble. This issue was documented in Action Request A0609107.

- Operators changed plant operating modes with auxiliary feedwater inoperable, in violation of Technical Specification, because the system alignment was not properly verified. This issue was documented in Action Request A0611033.

Problem Identification and Resolution Improvement Plan Review

A significant cross-cutting issue in the area of problem identification and resolution was reported in the NRC's End of Cycle Assessment letter to Diablo Canyon, dated March 3, 2004. The licensee performed a self-assessment of the corrective action program in March 2004. This area was being addressed with a formal improvement plan, but the scope had been only partially developed at the time of this inspection. The plan included improvements to corrective action program software and trending practices. The most significant progress was in the area of setting standards for the implementation of the corrective actions process. Other improvements are discussed throughout this report.

Correction of Top Equipment Issues

The team reviewed and observed the licensee's process used to report and track the top priority issues that need special resources to resolve, the Long-term Equipment Issues List. The Maintenance, Operations, and Engineering (MOE) Team was responsible for maintaining the list, creating improvement plans, and assigning resources to fix the problems. This process appeared to have a proper methodology and a senior level of management involvement. The team noted that the schedules to resolve the issues extend far into the future, in some cases several refueling outages, which appeared to be inconsistent with the high priority intended for these items.

One of the issues on this list was reviewed in detail by the team. The main condensers in both units had experienced low-level seawater leaks during most operating cycles. Salt water leaks into the condensate system had the potential to bypass demineralizers and contaminate the steam generators, increasing pitting corrosion of the primary pressure boundary. Major work had been performed during the recently-completed refueling outage in Unit 1 to seal the tube sheets, to correct current leakage and avoid future leakage between the tubes and tube sheets. This work did not improve salt water leakage into the condenser. During the MOE team meeting observed by the inspection team, the licensee reconfirmed the plan to do the same work in the other unit during the upcoming outage without considering why the repair had not resulted in any improvement. Technical discussions with engineering and chemistry personnel indicated that the condensers had experienced leaks from tube walls as well as from tube-to-tube sheet joints. No cause assessment had been performed or was planned, despite the level of management involvement and the resources being committed. Therefore, the team concluded that the corrective action plan for this issue was ineffective so far, and unlikely to resolve the issue in a timely manner without knowing all the causes of the problem.

Review of Troubleshooting Effectiveness

Troubleshooting was identified as a concern in a number of findings during the review period. In particular, the NRC was concerned that troubleshooting was not always performed when appropriate, or, if performed, was done informally without documenting the plan or results. The team reviewed a selection of issues that involved or appeared that they should have involved troubleshooting. The team determined that the licensee made improvements in the procedure on how to perform troubleshooting following the battery charger special inspection, but noted that the procedure continued to allow informal troubleshooting and documentation, and did not establish a low threshold for initiating troubleshooting. It appeared that in practice the licensee did not perform troubleshooting unless an equipment issue was either complex or any initial repair efforts were unsuccessful. This was consistent with the observed station practice of not routinely determining the causes of routine problems discussed above. The following example illustrates where informal troubleshooting was ineffective and not documented, despite limited improvements.

- On March 17, 2003, during performance of Procedure SP 312, the “AC Input Failure” alarm was received by operators. This indicated that the inverter had switched to the backup power source. The licensee was unable to find a cause, so monitoring was performed during regular testing for the next three months without the problem recurring. On December 24, 2003, another “AC Input Failure” alarm occurred during the performance of Procedure SP 312. The PG&E staff determined that the cause of the alarm was an indication problem. On January 19, 2004, during performance of Procedure SP 312, operators again received an “AC Input Failure” alarm and indication that the associated battery was discharging. On February 17, 2004, during performance of Procedure SP 312, operators again received an “AC Input Failure” alarm and indication that the associated battery was discharging. Informal troubleshooting identified higher than expected voltage at the output of the diesel generator, which would cause the inverter to switch to the backup power source. Once it was clear that the problem was not with the inverter itself, troubleshooting identified that the generator voltage rheostat was corroded and needed to be replaced. The team determined that PG&E staff missed prior opportunities to identify and correct the problem with the diesel generator voltage control due to narrow and informal troubleshooting, despite efforts to improve in this area.

d. **Assessment of Safety-Conscious Work Environment**

(1) Inspection Scope

Each team member interviewed several members of the licensee's staff, which represented a cross-section of functional organizations and supervisory and non-supervisory personnel, regarding their willingness to identify safety issues. These interviews assessed whether conditions existed that would challenge the establishment of a safety-conscious work environment.

(2) Assessment

During interviews, station personnel communicated a willingness to enter issues into the corrective action program. The team evaluated whether the Event Trend Record process or other department-specific tracking processes were being used to address problems outside the corrective action program. No significant findings were identified.

e. **Specific Issues Identified During This Inspection**

(1) Noncompliance of Solenoid Operated valves with 10 CFR 50.49 requirements

(a) Introduction. A self revealing apparent violation of 10 CFR 50.49 was identified for the failure to maintain approximately 70 safety related solenoid operated valves in an environmentally qualified condition. This failure contributed to Unit 2 being manually tripped on February 9, 2002, due to lowering Steam Generator 2-4 water level that was not able to be corrected by manual operator actions. The coil of an ASCO solenoid operating valve failed, resulting in closure of Main Feedwater Regulating Valve FW-2-FCV-540. Numerous other ASCO solenoid operating valve applications affecting multiple cornerstones of safety were found to have the same latent condition. The significance of this finding has not yet been determined, pending completion of a Phase 3 significance determination.

(b) Description. On February 9, 2002, Unit 2 was manually tripped due to lowering Steam Generator 2-4 water level that was not able to be corrected by manual operator actions. Main Feedwater Regulating Valve FW-2-FCV-540 failed closed due to failure of an ASCO solenoid operated valve. The licensee determined the failure was due to thermal aging degradation of the coil wire insulation. A review of the equipment qualification records revealed that inappropriate criteria were used in determining the acceptable qualified life of the solenoid coils. Approximately a year later, the licensee recognized that a similar error was made in calculating the qualified life of elastomers in the same valves, which was slightly more limiting than the coil life. The team concluded that this significant delay in determining the full extent of the problem was due to an inadequate extent of condition review associated with the cause of the observed valve failure, although the licensee did subsequently identify it during an unrelated self-assessment. These discrepancies resulted in the qualified life of the solenoid operated valves being corrected from approximately 22 years to 7 years. This calculation error resulted in having approximately 70 components in both units which did not meet environmental qualification requirements described in 10 CFR 50.49.

The team determined the licensee failed to effectively utilize operating experience that specifically discussed failure of ASCO solenoids to perform their safety function due to degraded elastomer. This information was discussed in NRC Information Notices IN 88-43, “Solenoid Valve Problems,” IN 89-66, “Qualification Life of Solenoid Valves,” IN 85-17, “Possible Sticking of ASCO Solenoid Valves,” IN 86-57, “Operating Problems with Solenoid Operated Valves at Nuclear Power Plants,” and IN 84-23, “Results of the NRC-Sponsored Qualification Methodology Research Test on ASCO Solenoid Valves.” The team reviewed the licensee’s responses to these notices and determined that in general the licensee’s responses were narrowly focused. For example, the licensee determined that a solenoid problem would not be seen at their facility because they were not using the same model number that was being discussed in the notice, even though the issue concerned elastomer material degradation due to elevated temperatures.

The licensee also stated that they did not have an operating history of sticking or binding ASCO SOVs. The team reviewed all the failure reports of ASCO SOVs at the facility

and noted that there were failures of ASCO SOVs due to sticking or binding conditions. The inspectors did note that the licensee had experienced relatively few failures of the SOVs used in safety related applications. However, based on operating experience and failures the licensee had experienced, it was unreasonable to assume that the degraded SOVs could not fail due to binding or sticking due to elastomer qualification deficiencies. Following these discussions the licensee concluded that they had not effectively evaluated the degraded elastomer condition.

(c) Analysis. The deficiency associated with this finding was the failure to maintain numerous solenoid operated valves in a condition which satisfied environmental qualification requirements per 10 CFR 50.49. These requirements were intended to ensure that these components would function in the harsh environment expected during a design basis accident. While the licensee determined that the failure mode of the coil was that the SOVs would go to a fail-safe position, the failure mode associated with elastomers was to fail as-is. By not promptly identifying this second failure mode, the licensee delayed correcting the problem significantly.

This finding involved cross-cutting aspects in the area of problem identification and resolution because the original corrective actions did not identify the full scope of the cause and extent of condition, delaying corrective actions for approximately 1 year.

This finding was greater than minor because, if left uncorrected, these deficiencies would become a more significant safety concern by increasing the failure rate as the components age. This finding potentially affected the Initiating Events, Mitigating Systems, and Barrier Integrity Cornerstones. The significance of this issue will be evaluated in a Phase 3 significance determination. There was no immediate safety concern because the licensee had replaced all the safety related solenoid operated valves by the time of this inspection.

(d) Enforcement: Section (a) of 10 CFR 50.49 states that each licensee shall establish a program for qualifying specified electric equipment. Section (a)(1) of 10 CFR 50.49 specifies the environmental qualification requirements for safety-related equipment. Section (f) of 10 CFR 50.49 requires each item of electric equipment important to safety to be environmentally qualified by: (1) testing of identical or similar equipment under identical or similar conditions, with a supporting analysis to show that the equipment to be qualified is acceptable; (2) experience with identical or similar equipment under similar conditions, with a supporting analysis; or (3) analysis in combination with partial type-test data that supports the analytical assumptions and conclusions. The failure to maintain the environmental qualifications of numerous safety related ASCO solenoid operated valves is being considered an apparent violation of 10 CFR 50.49(f). Because the significance of this finding has not yet been determined, this issue will be tracked as an apparent violation: APV 05000275, 323/2004006-01, Multiple Solenoid Operated Valves Operated Beyond Their Environmentally Qualified Lifetime. This issue has been entered into your corrective action program as Action Request A0613008.

(2) Inadequate Design Controls for the Diesel Emergency Generator Fuel Oil Transfer System Level Control Valves

(a) Introduction. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, for the failure to maintain design control of the diesel emergency generator fuel oil transfer system requirements. This failure potentially affected the ability of each diesel to provide sufficient fuel oil to support 7 days of continuous diesel generator operations following a loss of offsite power and a design-bases accident.

(b) Description. On February 20, 2004, quality assurance personnel identified a design control deficiency affecting the diesel fuel oil system level control valves. The level control valves are air operated valves and receive air from their respective diesel air receivers. The safety function of the valves is to open on a low level in the diesel fuel oil day tank to refill the tank from the fuel oil storage tank. The auditor noted that there was no analysis to establish that enough air would be maintained in the starting air receivers to support the level control valves seven day post accident mission time following a loss of offsite power. The auditor also noted that there was no isolation check valve between a seismic and non-seismic section of 1/4 inch tubing of each starting air system. In response to this concern the licensee performed an analysis to evaluate the rate of pressure drop assuming a 1/4 inch line break and implemented procedural compensatory measures associated with isolating a receiver air leak and taking manual control of the level control valves.

The team noted that the licensee had failed to implement adequate design controls to ensure the safety function of the fuel oil level control valves was satisfied. Specifically, the inspectors reviewed Design Calculation M-1078 that determined the air consumption requirement for level control valve operation for a 7 day diesel operation without offsite power. The team noted that the analysis calculated the minimum acceptable air pressure without assuming normal system air leaks. Upon questioning, the licensee was not able to support this assumption based on air leak testing results. Additionally, the licensee had not established any periodic testing to determine if the leakage was low enough to satisfy the safety function of the level control valves.

(c) Analysis. This finding was greater than minor because it affected the mitigating systems cornerstone objective of ensuring the capability of the emergency ac power to respond to initiating events to prevent undesirable consequences. This finding was evaluated using NRC Manual Chapter 0609, Significance Determination Process, Phase 1 worksheet under the mitigating systems cornerstone. The finding was determined to be of very low safety significance because the deficiency was confirmed not to result in a loss of function per Generic Letter 91-18, Revision 1. The team concluded that this function could be performed manually in a reliable manner because operators would receive a control room alarm which triggered implementation of proceduralized step to manually perform the function. The team confirmed that operators were trained to perform this action.

This finding involved cross-cutting aspects in the area of problem identification and resolution because the original corrective actions did not correct the problem and properly establish the design basis.

(d) Enforcement. 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” states in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. The failure to establish design controls to ensure the safety function of the diesel emergency generators' level control valves was maintained is a violation of NRC requirements. Because the issue was of very low safety significance and has been entered into the corrective action program as Action Request A0613008, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000275, 323/2004006-02, Inadequate Design Controls of the Diesel Emergency Generators' Fuel Oil Level Control Valves.

(3) Failure to Survey and Post a High Radiation Area

(a) Introduction. A self revealing, Green, noncited violation of 10 CFR 20.1501(a) was identified for the failure to perform required radiation surveys in Unit 2 to ensure compliance with 10 CFR 20.1902(b). Specifically, on January 28, 2003, during the performance of venting the volume control tank the licensee failed to perform adequate surveys of the Unit 2 gas decay tank room to post an expected high radiation area that would occur during this evolution.

(b) Description. On January 28, 2003, while venting the volume control tank, the licensee failed to perform adequate surveys of the Unit 2 gas decay tank room to post an expected high radiation area that would occur during this evolution. During this evolution operators received an alarm that high radiation conditions existed in the gas decay tank room. Following the alarm radiation protection personnel surveyed and posted the area appropriately. Radiological surveys determined that dose rates on Gas Decay Tank 2-1 were 400 millirems per hour on contact and 280 millirems per hour at 30 centimeters from the source.

The team determined that a similar event had occurred during a previous outage under the same circumstances. That evolution had also created a high radiation area. Corrective actions for that event had been ineffective in preventing recurrence.

(c) Analysis. The inspector determined that the licensee’s failure to perform a radiation survey as required by 10 CFR 20.1501(a) was an example of a performance deficiency. The finding is greater than minor because it was associated with one of the occupational radiation safety cornerstone attributes (exposure), and the finding affected the associated cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material. The inspector processed the issues through the Occupational Radiation Protection Significance Determination Process. These issues were determined to be a Green finding because they were not an ALARA planning and control issue, there was no personnel overexposure or substantial potential for personnel overexposure, and the licensee’s

ability to assess dose was not compromised.

This finding involved cross-cutting aspects in the area of problem identification and resolution because the team noted that corrective actions for a similar event under the same circumstances had been ineffective in preventing recurrence.

(d) Enforcement. 10 CFR 20.1501(a) requires, in part, that a licensee make or cause to be made, surveys that are necessary for the licensee to comply with the regulations in this part to evaluate the radiation levels, the concentrations or quantities of radioactive material, and the potential radiological hazards. Radiation surveys are necessary to verify compliance with 10 CFR 20.1902(b) that requires high radiation areas be conspicuously posted. Section 20.1003 of 10 CFR defines a high radiation area as an area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 0.1 rem (100 millirems) in 1 hour at 30 centimeters from the radiation source or 30 centimeters from the surface that the radiation penetrates.

The failure to perform required radiation surveys and evaluate radiological hazards associated with venting the volume control tank is being identified as a 10 CFR 20.1501(a) violation. Because the finding was of very low safety significance and was entered into the corrective action program as Action Request A0572997 this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000323/2004006-03, Failure to Perform Radiological Survey.

4OA6 Meetings, Including Exit

On June 25, 2004, the inspectors presented the inspection results to Mr. G. Rueger, Senior Vice President, Generation, and other members of his staff who acknowledged the findings. An additional discussion was held by telephone with Mr. S. Ketelsen on August 12, 2004 to notify the licensee that one finding was determined to be an apparent violation, pending completion of a Phase 3 significance determination. The inspectors confirmed that proprietary information was not provided or examined during this inspection

4OA7 Licensee-Identified Violations

a. 10 CFR 20.1501(a) requires that surveys be made to comply with the regulations in 10 CFR Part 20, including 10 CFR 20.1902(b) for posting of high radiation areas. On January 31, 2003, the licensee failed to adequately survey in the vicinity of the Unit 2 waste gas decay tank during venting of the volume control tank. On February 4, 2003, the licensee failed to adequately survey the Unit 2 liquid hold up tank discharge line during a crud burst cleanup evolution. Both instances resulted in the failure to post high radiation areas. These events are documented in the licensee's corrective action process as Action Request A0573453 and A0573555. These findings are only of very low safety significance because they were not an ALARA planning and control issue, there

was no personnel overexposure or substantial potential for personnel overexposure, and the licensee's ability to assess dose was not compromised.

b. 10 CFR 20.1003 defines a radiation area as an area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 5 millirem in an hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates. 10 CFR 20.1902 requires that each radiation area be posted with a conspicuous sign or signs. On six occasions from December 13, 2002, through June 6, 2003, the licensee identified that required radiation area postings were not properly maintained in the 115 foot yard area. All these examples involved signs at the entry to a radiation area that were removed and not replaced. These events were entered into the licensee's corrective action process under Action Request A0580418. These events were also addressed in the licensee's event tracking record system under V0042102, V0042647, V0042799, V0043434, V0043944, and V0045009. These findings are only of very low safety significance because they were not an ALARA planning and control issue, there was no personnel overexposure or substantial potential for personnel overexposure, and the licensee's ability to assess dose was not compromised.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

J. Becker, Vice President - Diablo Canyon Operations and Station Director
C. Belmont, Director, Nuclear Quality, Analysis, and Licensing
M. Burgess, Supervisor, Engineering Services
R. Burnside, Supervisor, Employee Concerns Program
S. Chesnut, Director, Engineering Services
R. Cheney, Supervisor, Nuclear Quality Assurance and Licensing
K. Condron, Quality Engineer, Nuclear Quality Assurance and Licensing
S. David, Manager, Operations
C. Dougherty, Senior Engineer, Regulatory Services
S. Fridley, Assistant to the Vice President and General Manager
C. Gillies, Manager, Problem Prevention and Resolution
B. Goelzer, Supervisor, Engineering Services
E. Green, System Engineer
D. Hampshire, BOP Supervisor, Engineering Services
P. Heyde, Cause Analyst, Nuclear Quality Assurance and Licensing
B. Hite, Manager, Radiation Protection
L. Hopson, Manager, Chemistry
S. Ketelsen, Manager, Regulatory Services
J. Knisley, Acting Manager, Operations
M. Lemke, Manager, Emergency Preparedness
D. Miklush, Director, Strategic Projects
D. Oatley, Vice President and General Manager
L. Parker, Supervisor, Regulatory Services
G. Rueger, Senior Vice President, Generation
P. Roller, Director, Operations Services
D. Taggart, Manager, Quality Verification
B. Terrell, CAP Supervisor, Nuclear Quality Assurance and Licensing
J. Tompkins, Director, Site Services
L. Walter, Manager, Engineering Services
L. Womack, Vice President, Nuclear Services

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000275, 323/2004006-01	APV	Multiple Solenoid Operated Valves Operated Beyond Their Environmentally Qualified Lifetime (Section 4OA2.e(1))
05000275, 323/2004006-02	NCV	Inadequate Design and Test Controls of the Diesel Emergency Generator Fuel Oil Level Control Valves (Section 4OA2.e(2))

05000323/2004006-03NCV Failure to Perform Radiological Survey of a High Radiation Area (Section 4OA2.e(3))

LIST OF DOCUMENTS REVIEWED

Procedures

OM7.ID1, Problem Identification and Resolution - Action Requests, Revision 17

OM7.ID2, Quality Evaluations, Revision 12

OM7.ID3, Nonconformance Report and Technical Review Group, Revision 12

OM7.ID4, Root Cause Analysis, Revision 6

MO7.ID8, Operability Evaluation, Revision 11

OM7.ID10, Trend Analysis Program, Revision 7

OM7.ID12, Operability Determination, Revision 7

OP AP-20, Condenser Tube Leak, revision 10

OP AP-26, “Abnormal Operating Procedure Loss of Offsite Power,” Revision 7B

OP O-9, Operating Order 0-9, Manual Seating of Motor Operated Valves, Revision 16

OP1.DC3, “Operator Routine Plant Equipment Inspections,” Revision 7

OP1.DC12, Conduct of Routine Operations, Revision 25

OP1.DC39, Reactivity Management Program, Revision 4

PPR-3, Corrective Action Review Board Charter, Revision 1

AR PK16-09, “Annunciator Response Diesel 11 Strt-Turbo Air Pressure,” Revision 11

AR DG11-3-3, “Annunciator Response Turbo Air & Low Starting Air Pressure,” Revision 2

PMT-21.11, “Diesel Generator 2-3 Multiple Start Tests,“ Revision 0

PEP EN-1, ”Plant Accident Mitigation Diagnostic Aids and Guidelines,” Revision 14

AR PK16-07, “Annunciator Response Diesel 11 Fuel Oil System,” Revision 10

STP M-10A, “Surveillance Test Procedure Diesel Fuel Oil Storage Tank Inventory,” Revision 16

STP M-9I, “Diesel Generator Start and Load Tracking,” Revision 18

STP V-302, "Exercising Valves DEG-214, 225, 236, 247, 258, and DEG-269," Revision 10

Calculations

M-0108, “Pressure Decay from Diesel Generator Air Receiver,” Revision 1

M-1078, “Determine Air Consumption Requirement for LCV Operation,” Revision 0

M-786, “Determine the Required Diesel Fuel Oil Storage to Meet DCPP Licensing Bases for Operating Minimum ESF Loads,” Revision 13

Self-assessments:
2003 Operations Activities Audit, dated December 12, 2003

Independent Assessment of NCRs and QEs

2003 Maintenance Activities Audit, dated September 9, 2003
Self-assessment of Diesel Exhaust Stack Missing Shims POA, dated October 8, 2003

Quick Hit Assessment of Operability Determination/Operability Evaluation Review, April - May, 2004

2004 Corrective Actions Audit, dated March 26, 2004

Independent Assessment of Closed Root Cause Analyses for Quality Evaluations and Non-Conformance Reports

Quality Verification Independent Review of Non-Cited Violations, dated June 4, 2004

Problem Prevention and Resolution Health Report, dated April 2004

Quality Verification Audit Report 010540018, Audit of the Environmental Qualification Program, dated June 14, 2002

Audit #04008010101, "2004 Diesel Generator Safety System Functional Audit and Review," dated June 16, 2004.

Improvement Programs:

Human Performance Cross-Cutting Issue and Observation Program

Action Plant fo Problem Identification and Resolution Improvement dated May 28, 2004

Action Requests:

A0598902	A0516360	A0118852	A0118879	A0577709
A0612934	A0600991	A0426768	A0309127	A0573374
A0613008	A0601055	A0128358	A0600370	A0574018
A0603626	A0264203	A0155250	A0601909	A0589539
A0609709	A0602053	A0336457	A0611033	A0577809
A0610991	A0606074	A0266603	A0609107	A0583161
A0611077	A0602003	A0308560	A0603873	A0561835
A0611516	A0599335	A0396704	A0604858	A0571480
A0611842	A0600370	A0396586	A0603803	A0554228
A0612476	A0601909	A0397918	A0603349	A0631008
A0612564	A0608370	A0266546	A0597194	A0599211
A0465048	A0608319	A0608426	A0600691	A0600647
A0467444	A0598951	A0118852	A0597030	A0613008
A0469863	A0530938	A0118860	A0578735	A0572997
A0476509	A0600716	A0118865	A0525925	A0573453
A0477219	A0266546	A0118867	A0574789	A0573555
A0493728	A0610687	A0118869	A0583098	A0612934

Quality Evaluations:
Q0012354
Q0012369
Q0012365

Non-Conformance Reports:
N0002137
N0002155
N0002156
N0002170
N0002177
N0002178
N0002184

Operability Evaluations:

OE 99-05, Revision 9
OE 01-01, Revision 2
OE 02-04, Revision 2
OE 02-05, Revision 2
OE 02-06, Revision 2
OE 03-02, Revision 1

Prompt Operability Assessments:

A0552297	A0586882	A0594240	A0600952
A0555077	A0589167	A0594256	A0601561
A0574572	A0592155	A0597516	A0602058
A0576937	A0592204	A0598902	A0602346

Miscellaneous Documents

PG&E Letter No. DCL-92-036, “Increase Emergency Generator Fuel Oil Storage Requrements,” dated February 14, 1992

Audit #040080101, “2004 Diesel Generator Safety System Functional Audit and Review,” January 20 - May 21, 2004

Cause Analysis for NCR N0002155, “Unit 2 Steam Generator Tube Leakage: U-Bend Indications,” March 14, 2003

M-06288, “Replacement Part Evaluation DEG Fuel Injection Tube,” Revision 2

96-11829, "Unit 1 Turbine Building Round Sheet," Revision 1

Cause Analysis for NCR N00002155, "Problem Statement 2 R44C45 Bobbin Voltage Increase form 2.0 volts to 21.5 volts," Dated July 24, 2003

Apparent Cause Evaluation and Corrective Action Effectiveness Evaluation, "Unit 1 Steam Generator U-Bend Indications - SG1-3 and SG1-4," April 21, 2004

Design Criteria Memorandum S-21, “Diesel Engine System,” Revision 18