ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-275/96-12
50-323/96-12

Licenses: DPR-80
DPR-82

Licensee: Pacific Gas and Electric Company
77 Beale Street, Room 1451
P.O. Box 770000
San Francisco, California

Facility Name: Diablo Canyon Nuclear Power Plant, Units 1 and 2

Inspection At: Diablo Canyon Site, San Luis Obispo County, California

Inspection Conducted: May 13, 1996, through May 28, 1996

Inspectors: D. Corporandy, Project Engineer
P. Goldberg, Reactor Inspector

Approved: H. J. Wong, Chief, Reactor Projects Branch E — 6/17/96 Date

Inspection Summary

Areas Inspected (Units 1 and 2): Special, announced inspection of the licensee's actions in response to the test results obtained during the April 1996 augmented testing of the Unit 1 main steam safety valves (MSSVs) pressure setpoints.

Results (Units 1 and 2):

Engineering:

- An Unresolved Item was identified involving the licensee's failure to determine the magnitude of AVK test equipment bias, correlation factors (CFs), for all 20 Unit 1 MSSVs during 1R7 as stated in PG&E's letter to the NRC dated November 1, 1996 (Section 1.3).

- An apparent violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified for the licensee's failure to promptly identify and correct out-of-tolerance setpoints on Unit 1 MSSVs following augmented testing of the steam Lead 1 MSSVs on April 2, 1996 (Section 3.3).

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- Two examples of an apparent violation of 10 CFR Part 50, Appendix B, Criterion V, were identified for the licensee's failure to follow procedures: (1) to notify the Operations Shift Foreman of a deficient condition, i.e., three of five MSSVs out-of-tolerance high, and (2) to document a prompt operability assessment within 24 hour of identification (Section 4).

- NRC inspectors identified two weaknesses in the licensee's MSSV augmented testing program which may have contributed to the problems encountered during the April 1996 augmented testing: (1) the MSSV augmented testing program was not sufficiently formalized, and (2) the licensee did not sufficiently plan for the evaluation process and actions to be taken following the augmented testing (Section 5).

Summary of Inspection Findings:

- Unresolved Item 275/96012-01 was opened.

- An apparent violation of 10 CFR Part 50, Appendix B, Criterion XVI, is identified in Section 3.3 (Violation 275/96012-02).

- Two examples of an apparent violation of 10 CFR Part 50, Appendix B, Criterion V, are identified in Section 4 (Violation 275/96012-03).

Attachments:

- Attachment 1 - Persons Contacted and Exit Meeting
- Attachment 2 - Acronyms

DETAILS

1 BACKGROUND

1.1 Overview of April 1996 MSSV Testing

On April 2, 1996, the licensee conducted augmented testing to determine the "as-found" pressure setpoints of the five Unit 1, Steam Lead 1 MSSVs. Testing results showed three of the five MSSVs to be out-of-tolerance (high). On April 11, 1996, the licensee tested the five Unit 1, Lead 2 MSSVs and found three of five MSSVs to be out-of-tolerance (high). On April 12, 1996, preliminary results of the licensee's evaluation of the test results following the Lead 2 testing determined that the out-of-tolerance MSSVs would have caused steam generator pressure to exceed the 110 percent design pressure by 8 psi. The licensee reported this condition to the NRC in accordance with 10 CFR 50.72.

The licensee did not test the MSSVs on the remaining leads until April 14, 1996. At that time, five of five Lead 3 MSSVs and one of five Lead 4 MSSVs were found to be out-of-tolerance (high). The licensee's subsequent evaluation of the condition indicated that the Lead 3 steam generator would have exceeded 110 percent of design pressure by 27 psi.

The inspectors reviewed these events, the available data at the time, and the licensee's actions based on the test results.

1.2 Design Bases of Diablo Canyon MSSVs

Diablo Canyon has five MSSVs on each of four separate main steam leads for a total of 20 MSSVs per unit. Each of the five MSSVs on a lead has a different set pressure varying from a low nominal set pressure of 1065 psig with a tolerance of -2 percent, +3 percent to a high set pressure of 1115 psig with a tolerance of ±3 percent. The primary function of the MSSVs under a design basis accident is to prevent steam generator pressure from exceeding 110 percent of design pressure (1194 psig). In addition, another function of the MSSVs is to limit steam generator pressure to allow the auxiliary feedwater (AFW) pump to maintain required flow greater than 440 gpm. The licensee has submitted a license amendment request to reduce the AFW minimum flow requirement from 440 gpm to 410 gpm. The flow is affected by the lift pressure of the lowest lifting MSSV. The nominal set pressure of the lowest set MSSV is 1065 psig.

1.3 History of Diablo Canyon MSSVs

Out-of-Tolerance Setpoints: Diablo Canyon has had an history of MSSVs being found outside of the Technical Specification (TS) tolerance. On February 9, 1994, for Unit 1, and on March 5, 1994, for Unit 2, while performing setpoint testing on the MSSVs, 13 Unit 1 valves and 15 Unit 2 valves did not meet the TS setpoint tolerance of ±1 percent. The setpoints of the valves were

out-of-tolerance, both high and low. Trevitest test equipment had been used to perform the tests. The licensee's operability evaluations determined that neither of the units would have exceeded their design basis with the out-of-tolerance MSSVs. During the 1R6 outage which followed the February 1994 testing, the licensee removed the Unit 1 MSSVs and sent them to the Westinghouse Service Center test facility where the valves were refurbished and reset using live steam.

Just prior to the Unit 1 1R7 refueling outage in September 1995, the licensee performed preoutage set pressure testing on the Unit 1 MSSVs. The as-found results of the tests were that 19 of the 20 MSSVs exceeded TS tolerances with the following detailed results:

12	MSSVs with initial set pressure	> 6 percent
4	"	3 - 6 percent
3	"	1 - 3 percent.

Additional testing was conducted on the valves and eight of the twenty required adjustment. The other out-of-tolerance valve setpoints drifted into the acceptable range as more tests were run. Prior to this testing, the licensee had used Trevitest test equipment for MSSV in-situ testing. Commencing with this testing, the licensee switched to AVK test equipment. The licensee's operability evaluation determined that the out-of-tolerance MSSVs would have caused the steam generator pressures to exceed the 110 percent design allowable.

In response to the Unit 1 findings, the licensee initiated testing the 20 Unit 2 MSSVS. On September 22-24, 1995, the licensee completed testing 16 of the 20 valves. The as-found results of the tests were:

5	MSSVs with initial set pressure	> 3 percent
5	"	1 - 3 percent
5	"	< 1 percent
1	"	< -3 percent.

After the sixteenth valve had been tested, Unit 2 experienced a reactor trip and four of the low setpoint MSSVs lifted. The valves were supposed to open at 1065 psig, but all four opened low, between 1023 psig and 1050 psig. Prior to the plant trip, the licensee had adjusted Valve RV-3 by lowering the setpoint, since the as-found setpoint had been out-of-tolerance on the high side. It was also noted that at the time of the reactor trip, RV-7, the valve which lifted at 1023 psig, was in the process of being adjusted, and the adjusting nut/locknut assembly had not yet been retightened when the reactor trip occurred. The licensee used the AVK equipment to test the valves.

Individual MSSV Setpoint Distribution: After the plant trip, the licensee performed a series of tests using the AVK test equipment to determine valve setpoints. Selected valves were set pressure tested 10 to 20 times each. The licensee concluded that each valve had a defined setpoint distribution in the shape of a bell curve. They also concluded that this distribution was valve

dependent and could range outside of the allowable tolerance. The licensee stated that adjustments to the valve setpoint should only be made once the setpoint distribution curve was known. Once known, the licensee concluded that the valve could be adjusted by moving the mean setpoint value.

License Amendment to Increase Allowable MSSV Setpoint Tolerance: On September 30, 1995, the licensee submitted License Amendment Request 95-06, "Request for Emergency Review and Approval of Change to TS 3.7.1.1, Table 3.7-2-2 - Increase in Setpoint Tolerances for MSSVs." The request was made to change the set pressure tolerance of the MSSVs from ±1 percent to +3 percent and -2 percent for the lowest set pressure MSSVs on each steam lead and ±3 percent for the remaining MSSVs. The licensee made this request, since they concluded that each MSSV had a setpoint distribution specific to each valve that might exceed ±1 percent, and because steam generator pressure and AFW flow were demonstrated by analysis to remain within the original design basis with the proposed increased setpoint tolerances. In addition, the licensee stated that the lift distribution would occur whether the valve was set on live steam or with an hydraulic lift device. The licensee based this conclusion on the tests results from the September 12-29, 1995, testing. As a condition of the amendment, the licensee committed to perform augmented testing of all the MSSVs based on a test schedule starting 3 months after the seventh refueling outages for the respective units with the initial augmented testing to involve one steam lead at a time.

Testing Methods: Both Trevitest and AVK test equipment use an hydraulic lift assist methodology whereby the steam pressure present at testing is "assisted" by an additional hydraulic force to lift the safety valve disk off its seat; hence, providing an onset of steam flow through the safety valve. The principal difference between the Trevitest and AVK test methodology is that Trevitest detects the onset of safety valve opening by relying on the test technician to hear a hiss or pop from the valve, whereas the AVK test equipment uses an acoustic sensor to electronically detect the onset of safety valve opening.

AVK Correlation Factor (CF): The licensee stated that in 1994 they had conducted a test program testing the MSSVs at the Westinghouse Service Center using both live steam and the AVK device. The licensee stated that they found that there was good correlation between the setpoints measured on live steam and the AVK device. In PG&E Letter DCL-95-241 of November 1, 1995, the licensee committed to perform additional testing during the seventh refueling outages for each unit to determine the magnitude of the AVK test equipment bias compared to live steam. During the seventh refueling outages for each unit, the licensee measured AVK test method lift distributions to develop CFs between live steam and AVK testing. Apparently, due to equipment problems at the test facility and the licensee's decision not to delay the refueling outage, CFs were developed for only nine of the 20 Unit 1 MSSVs. CFs were developed for all five of Steam Generator (SG) 1-1 MSSVs, and four of five SG 1-2 MSSVs. CFs have not yet been developed for the MSSVs of SGs 1-3 and 1-4. CFs for the nine Unit 1 MSSVs averaged about 1 percent with a maximum CF of 1.4 percent.

The licensee did not inform the NRC of the decision not to determine the magnitude of AVK test equipment bias for all 20 Unit 1 MSSVs as committed in the November 1, 1995, letter until after restart from 1R7. This is identified as an Unresolved Item pending the licensee's review and discussion with the NRC of the basis for the decision (URI 50-275/96012-01).

1.4 Periodic TS Surveillance Testing Versus Augmented MSSV Testing

The licensee uses AVK test equipment for both periodic TS surveillance testing and augmented MSSV testing to obtain MSSV setpoint pressures. As-found setpoints are required to be within the amended TS tolerances. One MSSV at a time is tested. Before proceeding to the next MSSV to be tested, the tested MSSV is returned to within ±1 percent of its nominal setpoint. This is demonstrated by achieving two consecutive lifts within the required tolerance. Uncorrected out-of-tolerance MSSVs are subject to the actions required by TS 3/4.7.1 "Turbine Cycle, Safety Valves."

All 20 MSSVs of a unit are tested during the periodic TS surveillance testing. Under the licensee's commitment to perform augmented testing of the MSSVs (refer to PG&E Letter DCL-95-241 dated November 1, 1995, and LER 1-96-003-00), the Unit 1 augmented testing involves testing the MSSVs of one steam header at a time conducted on a staggered basis at 3 month intervals. The TS surveillance testing is performed under licensee Test Procedure STP M-77, "Safety and Relief Valve Testing," which requires verification that the valves meet lift setpoint requirements of the ASME Boiler and Pressure Code, Section XI, 1977, with Addenda through Summer of 1978. ASME Section XI requires testing of additional valves, if any valves in the sample set are found to be out-of-tolerance.

1.5 Assumptions on the Causes of MSSV Set Pressure Drift

The licensee postulated causes for the set pressure drift of the MSSVs as follows:

Thermal bonding/Micro-welding: The MSSVs have different materials for the disc and nozzle seats. The licensee postulated that, since the nozzle and disc seats were of different materials with different coefficients of thermal expansion, during valve heatup the valve seats could gall. The licensee postulated that galling would provide a mechanism for micro-welding and thermal bonding of the seats which would cause the first lift to be high. In April 1996, the licensee believed that this was the probable cause of the high initial set pressures. The licensee further postulated that subsequent lifts would tend to exhibit lift pressures which would drift to the initial set pressure assuming the valves remained at temperature. The licensee also considered that time interval between lifts might be a factor in the thermal bonding of the valve seats.

Setting on Live Steam Versus AVK Method: The licensee stated that differences were observed in lift pressures depending on whether the lift was achieved entirely due to steam pressure or in part due to steam pressure plus hydraulic

lift assist from the AVK test equipment used at Diablo Canyon. During the April Unit 2 outage, the licensee performed MSSV set pressure testing on the 20 Unit 2 valves at a test facility. The licensee noted that there were differences in measured set pressures between testing using only steam pressure to initiate and measure lift point and testing using partial steam pressure (approximately 90 percent of the lift point) plus hydraulic assist from the AVK test equipment. The licensee developed CFs for each valve and, as noted above, found that on average the CFs were ±1 percent with a maximum of ±1.4 percent.

Lift Distribution/Signature: As mentioned in Section 1.3 of this report, the licensee concluded from additional testing in September 1995, that each valve had a defined setpoint distribution similar to a bell curve. The licensee also concluded that this distribution was valve dependent and could range outside of the setpoint tolerance. This was one consideration in the licensee's application for a TS amendment to increase the allowable MSSV out-of-tolerance setpoint values.

It appears that the licensee recognized this phenomenon as a result of investigating out-of-tolerance problems with Diablo Canyon's pressurizer safety valves. The pressurizer safety valve design is similar to the MSSV design. The licensee identified that under loading the safety valve spring experiences minute buckling which apparently caused the safety valve setpoint pressure repeatability problems, an industry-wide problem.

The licensee sponsored development of a prototype valve with a modified upper spring washer assembly designed to reduce the spring buckling and pivoting. Preliminary results of the prototype testing showed a significant reduction in lift distribution (i.e., significant improvement in setpoint pressure repeatability). The valve manufacturer acknowledged that the modification would not affect the ability of the valve to lift, relieve its rated capacity, and close (i.e., maintain its overpressure protection function and reclose after blowdown).

2 SEQUENCE OF EVENTS

On April 2, 1996, the licensee performed augmented testing on the five Unit 1, Lead 1 MSSVs as specified in the licensee's TS amendment submittal. All five Lead 1 MSSVs had AVK CFs. Upon completion of the Lead 1 testing (and resetting of MSSV lift setpoints as necessary), the licensee noted that the as-found setpoints of three of the five MSSVs were out-of-tolerance (high). Initially, the site engineering personnel responsible for performing the test decided not to document a prompt operability assessment (POA), because they believed that the conditions observed on April 2 were enveloped by conditions already evaluated in a previous operability evaluation (OE 94-02, Revision 4, "Operability of MSSVs with Potentially High Initial Lift Setpoints").

According to the licensee, although the decision was made not to document a POA, offsite engineering was tasked with analyzing the as-found conditions observed on the five Lead 1 MSSVs and projecting the results to the other

three Unit 1 leads. In addition to projecting the out-of-tolerance high lift setpoints to the MSSVs on the other leads, the in-tolerance MSSVs were assumed to be high at the maximum allowable (3 percent above nominal) setpoint for their respective MSSVs. Engineering also modelled an additional 3 percent of nominal pressure to account for pressure accumulation during the initial lift. The results of the analysis showed that the maximum allowable steam generator pressure, 110 percent of design pressure, would not have been exceeded.

On April 4, 1996, Engineering conveyed the results of this analysis as an update to the action request associated with the April 2 testing. Engineering did not document their evaluation of the adequacy of AFW flow. However, in response to questioning by the inspectors, offsite engineering explained that they did not document an evaluation of AFW flow adequacy because they did not consider it to be a problem. At the time, they did not believe it to be a problem because AFW flow is not credited in the accident analyses until 60 seconds after the beginning of the design basis event. AFW flow depends on the lift pressure of the MSSV with the lowest lift point. For the first 60 seconds an MSSV would be expected to cycle open several times. The April 2 testing showed that once the initial lift of the low setpoint MSSV was achieved, subsequent lifts demonstrated a lower lift pressure than the initial lift pressure. This data was consistent with the licensee's thermal bonding/micro-welding assumption.

On April 8, 1996, the licensee discussed the Lead 1 test results with NRC personnel (Region IV and NRR). During the April 8 discussion, the licensee expressed their intention to test the Unit 1 Lead 2 MSSVs. It was noted that four of five of the Lead 2 MSSVs had AVK CFs.

Upon completion of the Lead 2 testing on April 11, 1996, the licensee noted that the as-found setpoints of three of the five MSSVs had been out-of-tolerance (high). On April 12, 1996, the licensee's operability evaluation concluded that 110 percent maximum allowable pressure (Steam Generator 1-2) would have been exceeded as a result of the out-of-tolerance Lead 2 MSSVs. The licensee reported the condition to the NRC in accordance with 10 CFR 50.72. On April 12, the NRC questioned the licensee as to the potential for the MSSVs on the other two untested leads to be out-of-tolerance and whether the plant remained within its design basis. The licensee erroneously responded that the plant remained within design basis based on the first ten MSSVs having been reset to ± 1 percent.

The licensee did not test the MSSVs on the other two leads until Sunday, April 14, 1996. The April 14 testing revealed that five of five MSSVs on Lead 3 (Steam Generator 1-3) were out-of-tolerance (high) and one of five MSSVs on Lead 4 was out-of-tolerance (high). According to the licenseee's calculations, the Lead 3 results would put Steam Generator 1-3 outside its design basis.

The inspectors also noted that at the conclusion of the April 11, 1996, testing, one MSSV on Lead 2 was left at 1.2 percent out-of-tolerance, and at the conclusion of testing on April 14, 1996, one MSSV on Lead 3 was left at

1.2 percent out-of-tolerance. This was discussed with the NRC. On April 21, 1996, the two MSSVs were reset to within ±1 percent using the AVK test equipment.

3 UNIT 1 AUGMENTED TESTING

3.1 Evaluation of Data Following the April 2, 1996, Testing

Evaluation of OE 94-02, Revision 4: Following the April 2, 1996, testing of the Unit 1 Lead 1 MSSVs, onsite engineering decided not to document a POA, because they believed that the conditions observed on April 2 were enveloped by conditions already evaluated in a previous operability evaluation (OE 94-02, Revision 4). The inspectors reviewed OE 94-02, Revision 4, and the April 2 test results. The inspectors observed that OE 94-02, Revision 4, evaluated AFW flow adequacy based on the 1065 psig nominal setpoint valve lifting at 3 percent high. The April 2 as-found lift setpoint of the Unit 1, Lead 1 1065 psig valve was 7.5 percent high, and therefore, not enveloped by the OE 94-02 evaluation as assumed by the licensee. The licensee acknowledged the inspectors observations.

Evaluation Considering September 1995 Unit 1 Test Results: The inspectors noted that in addition to OE 94-02, information from the recent September 1995 test results was available. The inspectors compared the April 2 Lead 1 test results with the September 1995 data. The inspectors noted that the April 2, 1996, test results were generally consistent with the results of the September 1995 testing in that the as-found setpoints were all above the nominal setpoint. The only exception was MSSV RV-6, which had an as-found setpoint 1.9 percent below the nominal setpoint. This apparent anomaly may be explained by previously established setpoint behavior characteristics, namely, the setpoint bell curve distribution and the AVK CF for RV-6. The inspectors noted that the licensee's evaluation of the September 1995 out-of-tolerance MSSVs was available at the time and that it demonstrated that the 110 percent design basis steam generator pressure would have been exceeded. Since the Unit 1 April 2, 1996, test results were generally consistent with the Unit 1 September 1995 test results, it would seem prudent to have considered the September 1995 results as well as the April 2, 1996, results when evaluating the potential for out-of-tolerance conditions to exist on the remaining untested Unit 1 MSSVs.

3.2 Response to Results of April 11, 1996, Testing

On April 11, 1996, the licensee tested the Unit 1 Lead 2 MSSVs and found three of five Lead 2 MSSVs to be out-of-tolerance (high). The licensee performed a POA which was completed on April 12, 1996. The POA showed that the out-of-tolerance MSSVs would have caused the 110 percent design basis SG pressure to be exceeded. The licensee did not test the remaining ten Unit 1 MSSVs until April 14, 1996.

The inspectors considered that on April 12, 1996, the licensee had determined that the out-of-tolerance Unit 1 Lead 2 MSSVs would have placed the plant in a

condition outside of its design basis. These conditions were steam lead dependent. In other words, the fact that the Lead 2 MSSVs had been reset had no bearing on the condition of the MSSVs on steam Leads 3 and 4. If the MSSV out-of-tolerance conditions on steam Leads 3 or 4 were similar to those found on the Lead 2 MSSVs, then their respective SG would also be outside of the design basis.

The inspectors considered that the test information available to the licensee after completion of the POA on April 12, provided a reasonable doubt about the setpoint tolerances on the remaining 10 Unit 1 MSSVs and their ability to maintain their respective steam generators within the design basis in the event of a postulated accident.

3.3 Conclusion

The inspectors considered that the lack of a documented POA contributed to the licensee's incomplete evaluation of the April 2 test results, which resulted in a missed opportunity to promptly identify and correct the out-of-tolerance conditions which existed for MSSVs on the untested steam leads. Consequently, the licensee did not recognize the potential for the untested MSSVs to place the steam generators outside the design basis (110 percent of design pressure), or to possibly exceed the TS setpoint tolerances.

On April 2, 1996, the pressure lift setpoints on three of five MSSVs on main steam Lead 1 were identified by testing to exceed their allowable TS tolerances, a condition adverse to quality. Failure to promptly identify the possible out-of-tolerance conditions on the remaining Unit 1 MSSVs resulted in placing the plant in a condition outside of its design basis. The MSSVs on main steam Lead 2 were not tested until April 11, 1996, when three of five MSSVs were found to be out-of-tolerance. The MSSVs on main steam Leads 3 and 4 were not tested until April 14, 1996, when six of ten MSSVs were found to be out-of-tolerance.

The operability evaluation, which modelled the out-of-tolerance MSSVs showed that the maximum allowable SG pressures on SG 1-2 and 1-3, would have been exceeded by 8 and 27 psi respectively under design basis conditions.

Based on the above, the inspector identified an apparent violation of 10 CFR Part 50, Appendix B, Criterion XVI, which requires, in part, that conditions adverse to quality such as deficiencies are promptly identified and corrected (Violation 275/96012-02).

NRC Inspection Manual, Part 9900, "Operable/ Operability: Ensuring the Functional Capability of a System or Component," states that timeliness of corrective actions is determined by the safety significance of the issue. Specifically, "The Allowed Outage Times contained in TS generally provide reasonable guidelines for safety significance." Diablo Canyon's TS allowed outage time for the MSSVs is 6 hours. The inspectors determined that the licensee's corrective actions to identify and restore MSSV setpoints within TS allowed tolerance were untimely.

4 IMPLEMENTATION OF PROCEDURE FOR EVALUATING DEGRADED CONDITIONS

The inspectors reviewed licensee Procedure OM7.ID8, Revision 2, "Operability Evaluation" and the licensee's implementation of the procedure during the April 1996 augmented testing of the Unit 1 MSSVs. The inspectors identified two examples of an apparent violation for the licensee's failure to follow Procedure OM7.ID8.

10 CFR Part 50, Appendix B, Criterion V, requires that activities affecting quality shall be prescribed by documented procedures and shall be accomplished in accordance with those procedures. Diablo Canyon Procedure OM7.ID8, Revision 2, Subsection 2.2.3, requires that: "For Degraded Conditions impacting Structure, System and Component operability identified by physical evidence at DCPP, the POA should be completed and documented during the operating shift in which the physical evidence was identified. In all cases, the POA shall be completed and documented within 24 hours following identification of a Degraded Condition."

On April 2, 1996, licensee test engineers identified three of five MSSVs on steam Lead 1 of Unit 1 to be out-of-tolerance (high), but as of May 14, 1996, NRC inspectors identified that the licensee had not documented a POA of the degraded condition (namely three of five MSSVs out-of-tolerance high). This is considered as an example of an apparent violation for the failure to meet the requirements of 10 CFR Part 50, Appendix B, Criterion V and Procedure OM7.ID8 (Violation 275/96012-03).

Diablo Canyon Procedure OM7.ID8, Revision 2, Subsection 4.1 requires that "The individual and his/her group supervisor identifying a Degraded Condition or an Issue Needing Validation is responsible for: Immediately notifying the Shift Foreman, if the condition is an observed physical Degraded Condition at the plant that could adversely affect the Operability of a Structure, System, and Component."

On April 2, 1996, licensee test engineers identified three of five MSSVs on steam Lead 1 of Unit 1 to be out-of-tolerance (high), but did not notify the Shift Foreman. This is considered as another example of an apparent violation for the failure to follow the requirements of 10 CFR Part 50, Appendix B, Criterion V and Procedure OM7.ID8 (Violation 275/96012-03).

The first example of the violation may have contributed to the delay in testing the other MSSVs following the April 2 Lead 1 MSSV testing. The second example, in effect, excluded Operations from the process of responding to the MSSV deficiencies identified on April 2.

5 WEAKNESSES IN MSSV AUGMENTED TESTING PROGRAM

Interviews of licensee personnel who performed the initial augmented testing revealed that they had considered the test to be important for gathering data, but did not consider that it would require the same actions in response to test results as would be required with periodic surveillance testing. The

inspectors noted that one of the apparent violations, failure to inform the Operations Unit Shift Foreman of the degraded condition (three of five MSSVs out-of-tolerance) on April 2, 1996, resulted in part, because the individuals who performed the augmented testing had not considered the test to be governed by the licensee's formal procedures. The inspectors did note that shortly following the April 2 augmented testing, the individuals performing the MSSV testing were made aware of the necessity to follow the licensee's formal processes for reporting and evaluating test results. The inspectors observed that the Shift Foreman's log following the April 11, 1996, testing did contain documentation pertaining to the MSSV as-found out-of-tolerance setpoints.

The inspectors observed that the licensee had not developed an action plan and had not documented any guidelines or procedures to be used once the data from the augmented testing was obtained. Interviews with licensee personnel revealed that some of the delays in testing after April 2 occurred because they were unsure about which other MSSVs should be tested and how the as-found test results should be evaluated (e.g., there was uncertainty about what would be done with the as-found test results for the MSSVs for which AVK CFs had not yet been developed).

The inspectors concluded that two weaknesses in the licensee's MSSV augmented testing program contributed to the problems encountered during the implementation of the testing. The licensee did not sufficiently formalize the MSSV augmented testing program prior to its implementation, and the licensee did not sufficiently plan for the evaluation process and actions to be taken following the augmented testing.

ATTACHMENT 1

1 PERSONS CONTACTED

1.1 Licensee Personnel

* S. Allen, ES/EOP, Engineering Services
* J. Alviso, Regulatory Services, NRC Engineering Assistant
*#D. Brosnan, Acting Director, Regulatory Services
* W. Coley, Engineer, Regulatory Services
* W. Crockett, Manager, Nuclear Quality Services
* W. Fujimoto, Vice President, Operations and Plant Manager
#S. Furnis-Lawrence, Engineer, Nuclear Quality
#T. Grebel, Director, Licensing and Design Basis
*#C. Groff, Director, Engineering Services
*#C. Harbor, Regulatory Services, NRC Interface
* C. Joyce, Engineer, Nuclear Performance Monitoring
* D. Miklush, Manager, Engineering Services
* D. Taggart, Director, Nuclear Performance Monitoring/NSE
* B. Waltos, Director, Engineering Services

1.2 NRC Personnel

* S. Boynton, Resident Inspector
*#D. Corporandy, Reactor Engineer
*#P. Goldberg, Reactor Inspector
#M. Tschiltz, Senior Resident Inspector
#H. Wong, Chief, Reactor Project Branch E

*Denotes those attending the initial exit meeting on May 17, 1996.
#Denotes those attending the telephone exit meeting on May 28, 1996.

In addition to the personnel listed above, the inspectors contacted other personnel during this inspection.

2 EXIT MEETING

A preliminary exit meeting was conducted on May 17, 1996, and a final exit meeting was conducted on May 28, 1996. During these meetings, the inspectors reviewed the scope and findings of the report. The licensee acknowledged the inspection findings documented in this report. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.

ATTACHMENT 2

ACRONYMS

AFW	auxiliary feedwater
CF	correlation factor
DCPP	Diablo Canyon Power Plant
MSSV	main steam safety valve
POA	prompt operability assessment
SG	steam generator
TS	Technical Specifications