ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-361; 50-362
License Nos.:	NPF-10; NPF-15
Report No.:	50-361/99-18; 50-362/99-18
Licensee:	Southern California Edison Co.
Facility:	San Onofre Nuclear Generating Station, Units 2 and 3
Location:	5000 S. Pacific Coast Hwy. San Clemente, California
Dates:	December 6 to 10, 1999
Inspector:	M. Runyan, Senior Reactor Inspector Engineering and Maintenance Branch
Accompanying Personnel:	T. Scarbrough, Senior Mechanical Engineer Mechanical Engineering Branch Office of Nuclear Reactor Regulation
Approved By:	Dr. Dale A. Powers, Chief Engineering and Maintenance Branch Division of Reactor Safety

ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station, Units 2 and 3
NRC Inspection Report No. 50-361/99-18; 50-362/99-18

Maintenance

- The licensee had established and was implementing a program that was capable of providing continued assurance that motor-operated valves, within the scope of Generic Letter 96-05, are adequately sized and set to perform their design-basis safety functions (Section M1.1).

- An unresolved item was identified concerning the possibility that some accident sequences may not have been properly considered during the development of motor-operated valve design-basis calculations. The concern was based on the inspectors' discovery that the design-basis calculation of one Generic Letter 96-05 motor-operated valve failed to consider an accident mitigation function assumed in the Updated Final Safety Analysis Report (Section M1.1).

Report Details

Summary of Plant Status

Both units were operated at full power during the inspection.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Implementation of Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves"

a. Inspection Scope (TI 2515/140)

This inspection was conducted to assess the licensee's implementation of Generic Letter 96-05, and to provide information necessary for the NRC Office of Nuclear Reactor Regulation to complete a safety evaluation of the licensee's response to this generic letter. Generic Letter 96-05 requested licensees to establish programs to periodically verify that safety-related motor-operated valves (MOVs) are capable of performing their safety functions within the current licensing bases.

The inspectors assessed the licensee's program to determine whether it was consistent with the licensee's commitments and with the recommendations of Generic Letter 96-05. The inspection was conducted through a review of documentation, interviews with licensee personnel, and an in-plant examination of MOVs. To assess the implementation of the licensee's Generic Letter 96-05 program, the inspectors selected a sample of MOVs based on dynamic test data availability, valve type, and risk significance. The inspectors reviewed setpoint and sizing calculations associated with these valves. The selected valves are listed below:

3HV6373	Component Cooling Water From Emergency Cooling Unit 3E402 Containment Isolation Valve (10-inch WKM gate valve)
2HV9340	Safety Injection Tank 2T008 Outlet to Reactor Coolant System Loop 1A Valve (12-inch WKM gate valve)
3HV9377	Shutdown Cooling Suction Containment Isolation Valve (10-inch WKM gate valve)
3HV9306	Emergency Core Cooling System Pumps Combined Miniflow to Reactor Water Storage Tank Train A Valve (4-inch WKM gate valve)
3HV9347	Emergency Core Cooling System Pumps Combined Miniflow to Reactor Water Storage Tank Train B Valve (4-inch WKM gate valve)

2HV8161 Shutdown Cooling Heat Exchanger Bypass Block Valve (14-inch Walworth gate valve)

2HV0517 Reactor Coolant System Hot-Leg Sample Containment Isolation Valve (0.75-inch WKM globe valve)

3HV8161 Shutdown Cooling Heat Exchanger Bypass Block Valve (14-inch Aloyco gate valve)

3HV9971 Containment Normal Chilled Water Isolation Valve (8-inch Fisher butterfly valve)

b. Observations and Findings

(1) Commitments to Generic Letter 96-05 (TI 2515/140, paragraph 03.01)

In its initial response to Generic Letter 96-05, dated November 14, 1996, the licensee stated that it would perform the actions and provide the information as requested by Generic Letter 96-05. In a supplemental letter to the NRC dated May 13, 1997, the licensee provided a periodic verification program description and stated that the plant was currently implementing the requested actions of Generic Letter 96-05. The program included static testing of each valve in the previously-developed Generic Letter 89-10 ("Safety-Related Motor-Operated Valve Testing and Surveillance") program and dynamic testing of valves with low margins. On June 17, 1999, the licensee provided to the NRC a letter describing its risk-informed inservice testing program of MOVs, along with a summary of current results from the periodic verification program.

The licensee had elected to not participate in an industry-wide program developed by the Joint Owners Group, which was designed to share test data among various nuclear plants. The licensee's reason for not joining this effort was that it had a large number of valves (WKM) that were unique and dissimilar to valves used by other nuclear utilities, e.g., transfer of test information would have been of limited value.

(2) Generic Letter 89-10 Long-Term Actions (TI 2515/140, paragraph 03.02)

In NRC Inspection Report 50-361; -362/96-10, the NRC closed its review of the licensee's Generic Letter 89-10 program, based on the licensee's actions to verify the design-basis capability of its safety-related MOVs and to periodically reconfirm this capability. In that report, the NRC stated that the understanding was that the licensee would perform special differential pressure tests of two MOVs (2HV9348 and 3HV9306) that had exhibited unusual behavior during previous testing. That report also noted a lack of quality assurance involvement in the Generic Letter 89-10 program, as exemplified by a lack of audits and self-assessments.

The testing of Valves 2HV9348 and 3HV9306 was performed by the licensee and the results were reviewed by the NRC during a previous inspection that led to the conclusion that these valves were performing acceptably. During this inspection, the inspectors noted that a recent (November 1998) self-assessment of the MOV program had been performed, as well as a series of quality assurance surveillances. This information adequately resolved the long-term issues from the Generic Letter 89-10 program.

In Generic Letter 89-10, the NRC recommended that MOV performance be trended on a long-term basis. Procedure SO123-V-3.4, "MOV Periodic Verification and Trending Program," Revision 3, provided guidance for the preparation of MOV performance indicator reports, issued every 18 months following each refueling outage. These reports provided a narrative summary of problem or marginal valves and a trend report for each valve in the program, showing open margin, close margin, coefficient of friction, and pullout ratio (peak opening thrust divided by peak closing thrust). Trends of valve factor were shown for valves that were being periodically tested under dynamic conditions. The inspectors considered the licensee's trending program to be consistent with the recommendations of Generic Letters 89-10 and 96-05. However, the inspectors noted the lack of trending for MOV motor parameters. Such data could be instrumental in detecting a degrading motor that may, over time, deliver less torque to the actuator gear train than that assumed in the design calculations. The licensee's representative acknowledged this point and, during the inspection, appropriately incorporated average running current and peak seating current into the trending program.

(3) Generic Letter 96-05 Program (TI 2515/140, paragraph 03.03)

The Generic Letter 96-05 program was described partly in Procedure SO123-V-3.4, with additional elements of the program described in other documents. The inspectors noted that no concise, all-encompassing, description of the program was available. In response, a licensee representative stated that Procedure SO123-V-3.50, "Technical Division's Administration of the GL 89-10 MOV Program," Revision 3, will be updated to provide encompassing guidance for implementing all elements of the Generic Letter 96-05 program, including testing, preventive maintenance, and trending.

The inspectors reviewed various attributes of the Generic Letter 96-05 program, as discussed below:

(a) Motor-Operated Valve Program Scope

Based on a sample review, the inspectors found that the selection of valves included in the licensee's MOV periodic verification program was consistent with the recommendations of Generic Letter 96-05. The list of valves assigned to the Generic Letter 96-05 program was identical to the valves included in the Generic Letter 89-10 program.

The inspectors noted, based on discussions with licensee personnel, that MOVs placed in a non-safety position for operational reasons, testing, or maintenance were either determined to be capable of returning to their safety position or else declared inoperable when so positioned.

(b) Motor-Operated Valve Design Bases

The licensee had updated its MOV program and calculations in response to new information and design changes. This information was incorporated into separate setpoint calculations generated for each MOV in the program.

The inspectors noted that the licensee had not fully incorporated new ac motor actuator efficiency information issued by the actuator vendor, Limitorque Corporation, in its Technical Update 98-01, "Actuator Output Torque Calculation." This effort was in progress during the inspection. The delay in incorporating this information into the MOV program was caused by the licensee's independent evaluation of MOV performance in lieu of incorporating the vendor's guidance. When preliminary results from this program did not support modification of the vendor's guidance, the licensee initiated a revision of its program to be consistent with vendor's guidance. The inspectors noted that the licensee had not provided an interim evaluation of its valves under the vendor guidance, pending the receipt of information from the independent effort. Fortuitously, this delay did not result in failure to promptly identify any inoperable condition. This issue is discussed in greater detail later in this report.

The inspectors identified a discrepancy in the design-basis assumptions for Valve 3HV9377, "Shutdown Cooling Suction Containment Isolation Valve." In Calculation M-8910-SP-3HV9377, "GL 89-10 Setpoint Calculation: 3HV9377," Revision 0, the maximum expected differential pressure in the closing direction for this valve was listed as 0 psid. This result, which was documented in Calculation M-8910-1201-OB-001, "GL 89-10 Operational Basis Calculation for SDC Suction Isolation Valves," Revision 0, was based on an assumption of an intact system boundary, and the fact that the operators have been instructed to stop the low pressure safety injection pumps prior to closing the valve. However, the inspectors noted that the response to Question 212.132 in "Responses to NRC Questions," of the Updated Final Safety Analysis Report, stated that the shutdown cooling suction containment isolation valves (including Valve 3HV9377) were assumed to isolate a 1.092 square-inch break at the low pressure safety injection pump discharge, which produces a leakage of 965 gallons per minute. The inspectors questioned the licensee's representative whether the 0 psid assumption in the closing direction was consistent with the design-basis function to isolate a break in the system.

The licensee determined that this design-basis scenario was missed in the operational basis calculations for the shutdown cooling suction containment isolation valves. Action Request 991200445 was initiated to review this oversight and any potential generic implications. The licensee determined that the operability of Valve 3HV9377 and the other shutdown cooling suction containment isolation valves were not affected by this oversight. The inspectors agreed with this conclusion.

Criterion III of 10 CFR Part 50, Appendix B, "Design Control," states, in part, that design control measures shall provide for verifying or checking the adequacy of the design. Calculations addressing the capability of Generic Letter 96-05 MOVs are safety-related and are subject to the requirements of 10 CFR 50, Appendix B. This issue was identified as an unresolved item (50-361; -362/9918-01) pending completion of the licensee's review to determine whether any design-basis assumptions for other safety-related MOVs were similarly in error and whether any errors result in an operability impact.

(c) Degradation Rate for Potential Increase in Required Valve Thrust or Torque

In its letter to the NRC dated March 13, 1997, the licensee stated that gate valves in the Generic Letter 96-05 program would be sized and set, where possible, using a valve factor (a proportionality assumption relating valve disc area and fluid differential pressure to stem thrust required to overcome that differential pressure) sufficiently high to bound any potential degradation in valve performance. This bounding valve factor was specified as 0.8. In Procedure SO123-V-3.4, the licensee specified that any gate valve in the program having an available valve factor (the output capability of the MOV motor actuator converted to an equivalent valve factor for the valve's specific operating conditions) less than 0.8 or having less than 20 percent margin above the design-basis thrust requirement would be dynamically tested on a periodic basis (at least once every three refueling outages). In its letter to the NRC dated June 17, 1999, the licensee noted that these bounding capability criteria were based on the following considerations: (1) the highest valve factor observed during MOV testing at the San Onofre Nuclear Generating Station was 0.65, (2) valve test results and friction studies by the Electric Power Research Institute showed similar values, and (3) initial test results from the Joint Owners Group program on MOV periodic verification were consistent with these criteria. The licensee was currently conducting periodic dynamic tests of nine gate valves that did not meet its bounding capability criteria.

In its letter to the NRC dated June 17, 1999, the licensee discussed the evaluation of potential performance degradation of globe and butterfly valves within the Generic Letter 96-05 program. The licensee predicted that no significant degradation of the dynamic performance of globe

valves would occur based on review of its MOV test data and valve operating characteristics. With respect to butterfly valves, the licensee considered that any significant bearing degradation, which is the most likely mechanism for butterfly valve capability loss, would be identified during static diagnostic tests. The licensee had established sizing and setup requirements for its globe and butterfly valves that were intended to accommodate any unexpected degradation. In response to discussions with the inspectors regarding the need to validate performance assumptions for globe and butterfly valves, the licensee strengthened the provision in Procedure SO123-V-3.4 to evaluate industry information (e.g., that being developed by the Joint Owners Group program on MOV periodic verification) and to incorporate lessons learned into the long-term periodic verification of globe and butterfly valves at the San Onofre Nuclear Generating Station. Based on the information reviewed during the inspection, the inspectors did not identify near-term capability concerns with any of the gate or butterfly valves in the Generic Letter 96-05 program.

Based on this review, the inspectors found that the licensee had established an acceptable program for ensuring the long-term capability of Generic Letter 96-05 MOVs. The program relied on either a bounding valve factor or, where margin was limited, periodic dynamic testing for gate valves. The program also included provisions to incorporate lessons learned from industry experience to account for potential degradation of globe and butterfly valves.

(d) Degradation Rate for Potential Decrease in Motor-Operated Valve Motor Actuator Output

As described in its letter to the NRC dated March 13, 1997, the licensee was conducting static diagnostic tests of each Generic Letter 96-05 MOV at least once every three refueling outages, not to exceed 6 years. The licensee noted that it might adjust the static diagnostic testing frequency for its Generic Letter 96-05 MOVs when implementing ASME Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants, OM Code-1995, Subsection ISTC," as part of its proposed risk-informed inservice testing program currently undergoing NRC review.

Procedure SO123-I-9.30, "Motor Operated Valve Analysis and Test System," Revision 0, described the licensee's use of MOVATS ® testing equipment in performing MOV diagnostic tests. The licensee was monitoring MOV actuator output by measuring several parameters during diagnostic testing, including actuator output thrust and torque, stem friction coefficient, and motor current, as applicable.

The licensee was lubricating the exposed stem thread of each Generic Letter 96-05 MOV every refueling outage. The licensee was conducting preventive maintenance on the actuator of each Generic Letter 96-05 MOV as part of the static diagnostic test activity (currently conducted once every three refueling outages for each valve). Based on the results of this preventive maintenance, the licensee might disassemble the MOV for a more detailed inspection and a complete lubrication of the stem.

In Action Request 991200139 dated December 3, 1999, the licensee responded to the updated guidance on ac-powered MOV motor actuator output provided in Limitorque Technical Update 98-01, and its Supplement 1. The licensee obtained preliminary information from its MOV diagnostic vendor in Proprietary Report "Crane MOVATS STR-22.0, "Special Test Report for San Onofre Motor Torque and Efficiency Analysis," Revision 0, dated November 16, 1999. This preliminary report did not support the use of "run" efficiency (predicted ratio of torque applied to the actuator stem nut to the torque applied to the motor pinion gear when the motor and gear train are running at steady speed: this was the original definition of this term; however, recent tests indicate that measured efficiencies do not always meet the published run efficiencies) in predicting the torque output of motor actuators in all cases. This conclusion was based on evaluations of motor and actuator torque from motor control center data and spring pack displacement during testing at the San Onofre Nuclear Generating Station. As a result, the licensee evaluated the ac-powered MOVs in its Generic Letter 96-05 program using the updated guidance in Limitorque Technical Update 98-01, including actuator "pullout" efficiency (predicted ratio of torque applied to the actuator stem nut to the torque applied to the motor pinion gear when the motor and gear train are at low speed) and a 0.9 application factor.

The licensee identified reduced margins in the capability of several Generic Letter 96-05 MOVs to perform their safety functions. For example, the licensee identified Valve 3HV9377, "Shutdown Cooling Suction Containment Isolation Valve," as having potentially insufficient capability to achieve control switch trip under design-basis conditions. Although the valve was not tested under these conditions, it had an ample analytical closing thrust margin and, therefore, could be assumed to close as required. However, based on calculations, the motor would potentially stall and become disabled after the valve closed because the control switch may not trip to stop the motor. Because no subsequent opening function existed, this condition did not represent an operability concern. The licensee determined that Valve 3HV9377 receives full voltage under both normal and design-basis conditions and closes under only a small differential pressure condition in the event of the pipe break in the shutdown cooling line. Testing of Valve 3HV9377 on August 20, 1995, under static conditions, revealed that a peak valve-closing motor current of 3.20 amps (only minimally greater than the running current of 2.11 amps and significantly less than nameplate locked rotor current of

9 amps) was needed to achieve control switch trip. The licensee determined that the large margin in observed performance of Valve 3HV9377 under static conditions provided sufficient confidence in its capability under design-basis conditions, including ambient temperature effects. Through Action Request 991200139, the licensee was to determine a final method for predicting ac-powered MOV motor actuator output, identify those MOVs needing adjustment or modification, and implement those actions. The licensee did not identify any MOV operability concerns from its evaluation of the updated ac-powered MOV output guidance. The inspectors reviewed this material and agreed with the licensee's conclusion.

The Generic Letter 96-05 program for each unit included five dc-powered MOVs. The licensee applied "pullout" efficiency and a 1.0 application factor (a sizing factor originally intended to account for random differences in motor performance) in its sizing and setting calculations for these 10 MOVs. The inspectors noted that these MOVs each had at least 15 percent margin above their design-basis requirements. The licensee was monitoring the ongoing industry effort to update the guidance for predicting dc-powered MOV motor actuator output. The licensee intended to address any new guidance as appropriate when that effort is completed in early 2000.

Based on the sample review, the inspectors found that the licensee had established adequate means to monitor the output performance of its safety-related MOVs. This process included on-going consideration of new guidance on ac-powered MOV output and plans to address any new guidance from the industry effort on dc-powered MOV output.

(e) Periodic Test Method

In its letter dated March 13, 1997, the licensee stated that it would perform, as part of its inservice testing program, an individual surveillance test of all Generic Letter 96-05 MOVs at least once every refueling outage to verify successful opening and closing capability. In its letter to the NRC dated September 28, 1999, the licensee reported that stroke-time testing for high-risk MOVs in its Generic Letter 96-05 program would be initially retained in accordance with the frequency (quarterly, cold shutdown, or refueling outage based on practicability) specified by the ASME Code of record at the San Onofre Nuclear Generating Station.

The licensee established plans to conduct periodic static diagnostic tests of all Generic Letter 96-05 MOVs at least every three refueling outages, not exceeding 6 years. The licensee had established bounding margin requirements for gate valves in its Generic Letter 96-05 program with periodic dynamic testing specified if those requirements cannot be achieved. The licensee had evaluated the current capability of globe and

butterfly valves in its Generic Letter 96-05 program and had established provisions to address industry experience for long-term performance of those valves. The licensee had applied risk insights in its Generic Letter 96-05 program through the planned implementation of ASME Code Case OMN-1, as part of its proposed risk-informed inservice testing program.

Based on review of test methods, MOV sizing and setup requirements, and provisions for addressing any new information on performance of globe and butterfly valves, the inspectors found that the licensee had established periodic test methods for identifying MOV degradation consistent with the recommendations of Generic Letter 96-05.

(f) Motor-Operated Valve Performance Evaluation

The licensee evaluated MOV test performance in accordance with Procedure SO123-V-3.4. The licensee reviewed test results to ensure continued MOV capability and to resolve indications of reduced capability margin. For example, the licensee measured thrust or torque, stem friction coefficient, and motor current as applicable during the valve stroke. The licensee also obtained as-found and as-left MOV performance data where possible. The licensee had established provisions to re-evaluate MOV test frequency upon identification of a 5 percent loss in capability margin, and to re-assess MOV capability upon identification of a 15 percent loss in margin. The inspectors found these criteria to be appropriate.

The licensee reviewed qualitative and quantitative parameters for trends in MOV performance. Trended quantitative parameters included thrust and torque margin for valve opening and closing, stem friction coefficient, thrust pullout ratio for gate valves, average running motor current during valve opening and closing strokes, and peak motor current at control switch trip during valve closing strokes, as applicable. As noted above, motor current trending was added during the week of this inspection following discussions between the inspectors and the licensee's staff.

The licensee conducted a review of qualitative trends through evaluation of the operating history of its Generic Letter 96-05 MOVs and industry MOV experience. The licensee prepared a report on the identified trends in MOV performance following each refueling outage. The inspectors considered the licensee's most recent MOV periodic verification/trend report, dated December 4, 1999, to provide a detailed review of MOV performance at San Onofre. For example, the licensee noted that the stem lubricant used on Valve HV4716, "Auxiliary Feedwater Turbine Trip and Throttle Valve," dried under high temperature conditions. Consequently, the licensee applied and tested another grease more suited for high temperature applications. The trend report also included review of industry MOV experience.

The inspectors found the licensee to be appropriately monitoring potential changes in MOV operating requirements and actuator output. In response to discussions with the inspectors, the licensee revised (during the inspection week) Procedure SO123-V-3.4 to clarify some of its provisions related to MOV trending.

The licensee performed periodic validation and verification of its computer software for MOV calculations and evaluation of test data. The inspectors reviewed the most recent validation and verification report for the licensee's MOCALCS computer software in "San Onofre MOCALCS Release 05.01.00 V&V Plan," dated October 28, 1999, and its accompanying reports. The inspectors considered the licensee to be maintaining proper validation and verification of its MOV calculational software.

The licensee referenced ASME Code Case OMN-1 in Procedure SO123-V-3.4 and considered this procedure to meet the intent of the Code case. The inspectors discussed the coordination of the Generic Letter 96-05 program and the proposed risk-informed inservice testing program with licensee personnel responsible for work activities in these areas. The inspectors noted the importance of providing assurance that all aspects of ASME Code Case OMN-1 were addressed by the MOV program as the licensee transitions to its proposed risk-informed inservice testing program when approved by the NRC. The licensee's staff agreed with this point and indicated that risk-informed inservice testing personnel would prepare a "road map" to ensure that the provisions of ASME Code Case OMN-1 are appropriately and comprehensively addressed by plant procedures.

Based on the sample review, the inspectors found that the actions taken or planned by the licensee to improve its MOV program will provide adequate evaluation of MOV performance as well as effective feedback of information into the Generic Letter 96-05 program.

(g) Motor-Operated Valve Test Interval

In addition to MOV surveillance testing under the inservice testing program at the San Onofre Nuclear Generating Station, the licensee established a static diagnostic test interval for all Generic Letter 96-05 MOVs of at least every three refueling outages, not to exceed 6 years. The licensee established plans to perform dynamic diagnostic testing at least every three refueling outages for gate valves in its Generic Letter 96-05 program that were evaluated to have less than the bounding capability margin.

Based on review of program documents and discussions with licensee representatives, the inspectors determined that the licensee was to incorporate the program elements discussed in the remainder of this paragraph. Dynamic diagnostic testing intervals for globe and butterfly valves was to be based on the licensee's review of industry experience. The licensee was to obtain information on MOV operating requirements and actuator output through a combination of static and diagnostic testing. The test schedule was to provide MOV performance information over the first 5-year interval by implementation of the licensee's stagger-test approach where some MOVs are tested during each operating cycle. The MOV diagnostic test interval was to not exceed 10 years based on implementation of ASME Code Case OMN-1. The licensee was to continue to evaluate MOV test data to provide confidence that the MOV sizing and setup requirements bound the effects of potential valve age-related degradation.

Based on the sample review, the inspectors found that the licensee had justified a periodic test interval that ensured continued MOV design-basis capability until the next scheduled test.

(h) Physical Condition of Valves

The inspectors observed approximately 30 safety-related MOVs in Unit 3 during a plant walkdown. The valves were clean with very few indications of grease breakdown. In all, the valves appeared to be in excellent material condition.

c. Conclusions

Based on a review of selected MOVs, licensee submittals, calculations, test packages, procedures, trending results, and the licensee's ongoing activities, the inspectors determined that the licensee had established and was implementing a program that was capable of providing continued assurance that MOVs within the scope of Generic Letter 96-05 are adequately sized and set to perform their design-basis safety functions.

The information obtained during the inspection will be utilized in the preparation of an NRC safety evaluation addressing the licensee's response to Generic Letter 96-05.

An unresolved item was identified concerning the possibility that some accident sequences may not have been properly considered during the development of MOV design-basis calculations. The concern was based on the inspectors' discovery that the design-basis calculation of one Generic Letter 96-05 MOV failed to consider an accident mitigation function assumed in the Updated Final Safety Analysis Report.

III. Engineering

E8 Miscellaneous Engineering Issues (92903)

E8.1 (Open) Inspection Followup Item 50-361; -362/9814-02: re-evaluate quality standards for non-Class 1E components.

In Report M86420, "Spurious Actuation Evaluation, Component Cooling Water System Operability Assessment," dated February 1990, the licensee made an assumption that certain non-Class 1E components would be able to withstand a seismic event. When questioned by the NRC, the licensee was unable to verify that the current configuration of these components matched the configuration that was evaluated in Report M86420. Therefore, there existed a question as to whether seismic assumptions for non-Class 1E equipment as delineated in Report M86420 were still valid.

The licensee had not completed actions to address this concern. However, the scope of the effort had been expanded beyond the configuration control of solely seismic issues to include additional traits of non-safety equipment that might affect the performance of safety-related components. This effort was scheduled for completion in August 2000.

V. Management Meetings

XI Exit Meeting Summary

The inspectors presented the inspection results in an exit meeting to members of licensee management on December 10, 1999. The licensee's management acknowledged the findings presented. The inspectors asked whether any materials examined during the inspection should be considered proprietary. The licensee's management stated that one proprietary document, "Crane MOVATS STR-22.0, Special Test Report for San Onofre Motor Torque and Efficiency Analysis," Revision 0, dated November 16, 1999, was reviewed by the inspectors. The inspectors did not remove a copy of this document from the site and did not discuss any proprietary information from this document, or from any other source, within this inspection report.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

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NRC Personnel

J. Kramer, Resident Inspector
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J. Sloan, Senior Resident Inspector

INSPECTION PROCEDURES USED

TI 2515/140	Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves (Generic Letter 96-05)
92903	Followup - Engineering

ITEMS OPENED AND DISCUSSED

Opened

50-361/9918-01; 50-362/9918-01	URI	Adequacy of Design-Basis Assumptions for Safety-Related MOVs

Discussed

50-361/9814-02; 50-362/9814-02	IFI	Re-evaluate Quality Standards for Non-Class 1E Components

DOCUMENTS REVIEWED

MOV Test Packages

2HV9348 Train B Combined ECCS Miniflow, December 19, 1996
3HV9307 HPSI Header to RCS Loop 1A Isolation Valve, April 30, 1997

Action Requests

991200139, December 3, 1999
991200445, December 9, 1999

Calculations

M-8910-SP-3HV9377, "GL 89-10 Setpoint Calculation: 3HV9377," Revision 0

M-8910-SP-2HV0517, "GL 89-10 Setpoint Calculation: 2HV0517," Revision 1

M-8910-SP-2HV8161, "GL 89-10 Setpoint Calculation: 2HV8161," Revision 0

M-8910-SP-3HV6373, "GL 89-10 Setpoint Calculation: 3HV6373," Revision 0

M-8910-SP-2HV9340, "GL 89-10 Setpoint Calculation: 2HV9340," Revision 0

M-8910-SP-3HV9306, "GL 89-10 Setpoint Calculation: 3HV9306," Revision 1

M-8910-SP-3HV9347, "GL 89-10 Setpoint Calculation: 2HV9306," Revision 1

M-8910-SP-3HV8161, "GL 89-10 Setpoint Calculation: 3HV8161," Revision 0

M-8910-SP-3HV9971, "GL 89-10 Setpoint Calculation: 3HV9971," Revision 0

M-8910-1201-OB-001, "GL 89-10 Operational Basis Calculation for SDC Suction Isolation Valves," Revision 0

San Onofre MOCALCS Release 05.01.00 V&V Plan, dated October 28, 1999

Procedures

SO123-V-3.4, "MOV Periodic Verification and Trending Program," Revision 3
SO123-V-3.50, "Technical Division's Administration of the GL 89-10 MOV Program," Revision 3
SO123-I-9.30, "Motor Operated Valve Analysis and Test System," Revision 0

Trend Reports

MOV Periodic Verification Trend Report, December 4, 1999

Surveillance Report

SOS-046-99, June 29, 1999

Self Assessment

Action Request 981100852, November 13, 1998

Miscellaneous

Crane MOVATS STR-22.0, "Special Test Report for San Onofre Motor Torque and Efficiency Analysis," Revision 0, November 16, 1999