

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.: 50-361
50-362

License Nos.: NPF-10
NPF-15

Report No.: 50-361/99-08
50-362/99-08

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: May 16 through June 26, 1999

Inspectors: J. A. Sloan, Senior Resident Inspector
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ATTACHMENT: Supplemental Information

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EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station, Units 2 and 3
NRC Inspection Report No. 50-361/99-08; 50-362/99-08

This routine announced inspection included aspects of licensee operations, maintenance, engineering, and plant support. This report covers a 6-week period of resident inspection.

Operations

- Operators thoroughly and methodically prepared for and conducted evolutions. Management and supervisors provided close oversight of operational activities. Procedure use and operator communications were generally consistent with written licensee management expectations (Section O1.1).

Maintenance

- Maintenance and surveillance activities performed were thorough, with the work packages and procedures present and in active use. Technicians were knowledgeable and professional. Supervisors and system engineers monitored job progress (Sections M1.1 and M1.2).
- The material condition of the facility was generally good with minor exceptions observed (Section M2.1).
- A noncited violation (NRC Enforcement Policy, Appendix C) of Technical Specifications 3.7.5 (pre-1996) and 3.7.11 (post-1996) occurred when the allowed outage times for the control room emergency air cleanup system boundary were intermittently exceeded during maintenance activities because of a drawing error. However, the safety consequence of these boundary breaches was minimal since the positive control room pressure could have been maintained despite the breach. This violation is in the corrective action program as Action Request 981100593 (Section M8.1).

Plant Support

- Changes to the emergency action levels with respect to tornadoes, although not congruent with NRC guidance, were acceptable (Section P8.1).

Report Details

Summary of Plant Status

Unit 2 operated at essentially 100 percent power during this inspection period.

Unit 3 began this inspection period in Mode 3 since operators had manually tripped the reactor on May 15, 1999, after a main feedwater regulating valve failed open. On May 16 the reactor was restarted. The unit returned to full power on May 17 and operated at essentially 100 percent power for the remainder of this inspection period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

The inspectors observed routine and nonroutine operational activities throughout this inspection period. Some of the activities observed included:

- Place non-1E battery charger in service on Battery 3D4 (Unit 3)
- Operator rounds (Unit 3)
- Operator response to a degraded emergency diesel generator (Unit 3)

Operators thoroughly and methodically prepared for and conducted evolutions. Management and supervisors provided close oversight of operational activities. Procedure use and operator communications were generally consistent with written licensee management expectations.

O8 Miscellaneous Operations Issues (92901)

O8.1 (Closed) Inspection Followup Item 362/97023-01: applicability of instrumentation to emergency diesel generator Technical Specifications.

a. Background

This item was initiated to evaluate a Technical Specifications Bases change that would have specified that postaccident monitoring instrumentation should be excluded as a redundant feature as designated in Technical Specification 3.8.1, Action B.2.

In a letter dated December 5, 1997, the licensee requested an interpretation of Technical Specification 3.8.1, Action B.2, from the Office of Nuclear Reactor Regulation, in accordance with NRC Information Notice 97-80, "Technical Specifications Interpretations." Specifically, because the San Onofre Technical Specifications or Bases did not identify the features, the licensee requested an interpretation of the applicable features. The licensee indicated that the specific features: (1) would include items that required Class 1E power from the 4.16 kV busses; (2) would not include items that did not result in a complete loss of safety function, fail in a safe position on a loss of power, or did not require power; and (3) did not include instrumentation that had battery

backup since it would not have a complete loss of safety function. The licensee also provided a specific list of the systems that it considered to be included within the scope of Technical Specification 3.8.1, Action B.2.

On May 12, 1999, the NRC staff provided the interpretation for Technical Specification 3.8.1, Action B.2. In this letter, the staff agreed that features are redundant systems or components that require electrical power to perform their safety function; therefore, components that fail in a safe position on a loss of electrical power or do not require electrical power are not covered by Technical Specification 3.8.1, Action B.2. Also, the staff indicated that instrumentation required in the long term that only had battery backup but lacked diesel generator backup could not be excluded. The staff indicated that this was especially true of postaccident monitoring instruments, which would be needed long-term. Finally, the staff indicated that neither a Technical Specifications interpretation nor the Technical Specifications Bases was the appropriate place to exclude systems or components from applicability. The appropriate place to exclude items would be in a Technical Specification, and the Bases should be used to explain the Technical Specification.

b. Observations and Findings

As discussed in NRC Inspection Report 50-361/97-23; 50-362/97-23, Section O3.1, on October 20, 1997, the licensee had declared the reactor vessel level monitoring portion of the qualified safety parameter display system (QSPDS) inoperable because it had failed. The operators entered Technical Specification 3.3.11 for one train of this postaccident monitoring instrument being inoperable. On October 21, 1997, at 2:40 a.m., operators declared the Train B diesel generator inoperable for scheduled maintenance. At approximately 9 a.m. on October 21, 1997, the inspectors questioned Unit 2 licensed operators about the operability of the reactor vessel level monitoring portion of QSPDS Train B. Subsequently, the operators declared Train B reactor vessel level monitoring inoperable.

During this inspection period, the inspectors used the results of the NRC Technical Specifications interpretation and applied it to the circumstances that occurred in 1997. Unit 2 Technical Specification 3.8.1, Action B.2 requires, in part, that within 4 hours of declaring a diesel generator inoperable, those features powered from the same train as the inoperable diesel, with equivalent opposite train features inoperable, must be declared inoperable and the appropriate action statements entered. If this is not done, then operators must place the unit in Mode 3 within the next 6 hours. The inspectors determined that on October 21, 1997, the licensee had not declared the Train B redundant reactor vessel level monitoring QSPDS channel inoperable for 7 hours 20 minutes. The inspectors concluded that no violation of Technical Specifications had occurred since the licensee did not exceed the 10 hours allowed for the mode change prior to declaring the redundant feature inoperable.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62707)

The inspectors observed all or portions of the following work activities:

- Calibrate Emergency Diesel Generator 2G002 electrical motor (Unit 2)
- Clean and inspect Battery Charger 3B004 (Unit 3)
- Replace circuit cards and potentiometer in Battery Charger 3B004 (Unit 3)
- Perform Fire Pump MP220 diesel engine biennial inspection and tests (Units 2 and 3)

b. Observations and Findings

The inspectors found the work performed under these activities to be thorough. All work observed was performed with the work package present and in active use. Technicians were knowledgeable and professional. The inspectors frequently observed supervisors and system engineers monitoring job progress, and quality control personnel were present whenever required by procedure. When applicable, appropriate radiation controls were in place.

M1.2 General Comments on Surveillance Activities

a. Inspection Scope (61726)

The inspectors observed all or portions of the following surveillance activities:

- Plant protection system functional check (Unit 2)
- High pressure turbine stop and governor valve testing (Unit 2)
- Auxiliary feedwater quarterly valve test (Unit 3)
- Train A excore nuclear instrument calibration (Unit 3)
- AC sources verification (Units 2 and 3)
- Weekly electrical bus checks (Units 2 and 3)
- Emergency Diesel Generator 2G002 monthly surveillance (Unit 2)

b. Observations and Findings

The inspectors found all surveillances performed under these activities to be thorough. All surveillances observed were performed with the work package present and in active use. Technicians were knowledgeable and professional. The inspectors frequently

observed supervisors and system engineers monitoring job progress, and quality control personnel were present whenever required by procedure. When applicable, appropriate radiation controls were in place.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Review of Material Condition During Plant Tours - Units 2 and 3

a. Inspection Scope (62707)

The inspectors conducted routine plant tours and evaluated the material condition of the units.

b. Observations and Findings

On May 18, 1999, the inspectors observed that the local breaker indication for the pressurizer heaters (Breaker 2B0402) indicated closed with the control room indicating open. The inspectors informed the control room supervisor of the differing indications. Operators cycled the breaker and obtained positive indication that the breaker operated properly except for the local indication. The licensee generated Action Request 990501532 and a subsequent maintenance order to address the breaker indication problem.

On June 14, 1999, the inspectors observed that portions of a berm around spent fuel pool Cooling Pump 2P010 were missing. The inspectors informed the licensee of the condition. The licensee indicated that the berm had originally been placed around the pump to contain contaminated water should a leak develop. The licensee surveyed the area, found it free of contamination, and indicated that the berm would be repaired as a precautionary measure.

c. Conclusions

The material condition of the facility was generally good with minor exceptions observed (Section M2.1).

M8 Miscellaneous Maintenance Issues (92700)

M8.1 (Closed) Licensee Event Report 361; 362/1998-024-00: inadequate control room emergency air cleanup system (CREACUS) boundary control during component maintenance.

CREACUS provides control room positive pressure and/or isolation in order to protect control room operators from toxic gases or high radiation levels. The licensee determined that heating, ventilation, and air conditioning (HVAC) drawing errors present since initial startup of Units 2 and 3 resulted in not implementing appropriate actions when personnel temporarily removed HVAC duct access panels for maintenance.

Train A and B emergency cabinet coolers (located on the 50-foot level of the control building) are connected to the CREACUS envelope (located around the control room and back cabinet areas) on the 30-foot level of the control building via ducting. Piping and instrumentation diagrams and HVAC drawings had shown air dampers associated with these two emergency coolers as being "back draft" dampers (these dampers act as check valves, allowing air flow in one direction). Licensee personnel had used this information to remove panels in the duct, while still considering the CREACUS boundary intact. However, the damper vanes were, in fact, fixed in place; consequently, removing the access panels, in some instances, breached the CREACUS boundary.

Both CREACUS trains were affected and the allowed outage times of Technical Specification 3.7.5 (pre-1996) and Technical Specification 3.7.11 (post-1996) were intermittently exceeded during maintenance activities. However, the licensee determined that the safety consequence of these CREACUS boundary breaches was minimal since the positive control room pressure could have been maintained despite the breach. The rooms where the emergency cooling units were located were relatively small and included fire doors that would have mitigated the loss of air through the breach by pressurizing the room. In addition, any radiological threats to the control room operators would have been detected by radiation monitoring, and appropriate actions would be taken in the control room. Increase in core damage frequency, due to the possibility of toxic gases entering the CREACUS envelope, was characterized in the licensee event report as in the 10E-7 to 10E-8 range, which was a minimal increase from normal core damage frequency.

This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy (NCV 361; 362/99008-01). This violation was in the licensee's corrective action program as Action Request 981100593.

III. Engineering

E8 Miscellaneous Engineering Issues (92903, Temporary Instruction 2515/141)

E8.1 Y2K Review - Units 2 and 3

The inspectors conducted an abbreviated review of Y2K activities and documentation using Temporary Instruction 2515/141, "Review of Year 2000 (Y2K) Readiness of Computer Systems at Nuclear Power Plants." The review addressed aspects of Y2K management planning, documentation, implementation planning, initial assessment, detailed assessment, remediation activities, Y2K testing and validation, notification activities, and contingency planning. The reviewers used NEI/NUSMG 97-07, "Nuclear Utility Year 2000 Readiness," and NEI/NUSMG 98-07, "Nuclear Utility Year 2000 Readiness Contingency Planning," as the primary references for this review.

The results of this review will be combined with the results of other reviews in a summary report to be issued by July 31, 1999.

- E8.2 (Closed) Unresolved Item 361; 362/98014-03: NRC review of the results of the planned heat exchanger performance testing and licensee review of past operability determination.

The failure to update heat exchanger performance curves to address thermal performance data obtained prior to Cycle 8 and 9 refueling outages was identified as an unresolved item, pending NRC review of the performance data obtained prior to the Cycle 10 refueling outage and licensee review of past operability.

The performance data from baseline testing conducted prior to the Cycle 7 refueling outage provided the bases for the heat exchanger performance curves shown in Calculation M0027-023, "CCW/SWC Heat Exchanger Operability," Revision 0, Calculation Change Notice 1. The performance data for three of the component cooling water heat exchangers tested prior to Cycle 8 and 9 refueling outages exceeded the fouling factor determined during the baseline testing. The inspectors reviewed Action Request 981001913, which was initiated to resolve the heat exchanger issue. The fouling factors determined from the most recent heat exchanger tests (Cycle 10) were less than the fouling factors determined from the baseline tests and were bounded by Calculation M0027-023. The inspectors determined that the component cooling water heat exchangers were operable based on reviewing the Cycle 10 test results.

The inspectors discussed the Cycle 8 and 9 test results with the licensee and found that some factors of the test data were not known, making the test results difficult to interpret. For instance, the licensee did not know if the back flushings performed prior to the Cycle 8 and 9 tests were as effective as the back flushing done prior to the baseline tests. The licensee back flushes the component cooling water heat exchangers on increasing differential pressure to remove macro-fouling such as seaweed. The inspectors determined that this was acceptable since one of the bases for the heat exchanger operability was the differential pressure across the heat exchanger.

IV. Plant Support

P8 Miscellaneous EP Issues (92904)

- P8.1 (Closed) Inspection Followup Item 361; 362/98004-07: inconsistent emergency classification.

This item involved assessing whether or not licensee emergency action levels, prescribed by the licensee procedure for tornadoes, agreed with NRC guidance. The inspectors reviewed portions of the following: Procedure SO123-VIII-1, "Recognition and Classification of Emergencies," Temporary Change Notice 11-1; NRC Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Plants," Revision 3; NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1; and NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," April 1990.

Procedure SO123-VIII-1, Temporary Change Notice 11-1, had been issued on May 10, 1999, and contained the current guidance for classifying emergency events. The inspectors compared Procedure SO123-VIII-1 to NUREG-0654 and NUMARC/NESP-007 with respect to tornadoes. Regulatory Guide 1.101 stated that licensees may use either the NUREG or the NUMARC guidance in developing emergency action level schemes.

In general, the licensee's classification levels for tornadoes touching down in the protected area, and/or causing damage to the site, resulted in a lower level of classification than NUREG-0654 guidance. NUREG-0654 classified the loss of ability to maintain cold shutdown because of a tornado strike, with the reactor in any initial mode, as an alert. The licensee classified a loss of ability to maintain cold shutdown as an alert only if the reactor was initially in Modes 4-6. In addition, NUREG-0654 classified any tornado on site as an unusual event; however, the licensee only classified a tornado in the protected area as an unusual event.

The licensee's classification strategy for tornadoes was as stringent as the NUMARC guidance, with one exception. The NUMARC guidance was to declare an alert if a tornado caused damage to a safety-related structure (including buildings). The licensee's classification strategy was to declare an alert if a tornado struck a safety-related building or component and resulted in a loss of the capability to maintain hot shutdown (reactor initially in Modes 1-3) or cold shutdown (reactor initially in Modes 4-6). For example, if a tornado damaged both refueling water storage tanks and the reactors were both initially in Mode 1, this would result in a licensee classification of an unusual event, while the NUMARC guidance was to classify this as an alert.

On June 10, 1999, the inspectors met with licensee Emergency Preparedness personnel, who stated that the event classification scheme was not event driven, but damage driven. The event classification scheme and changes had to be approved by an interjurisdictional planning committee consisting of representatives from various local, county, and state agencies and organizations. The licensee stated that this committee was hesitant to provide for event classifications that would "over classify" events, and draw local, county, and state assets to the licensee when they might be needed elsewhere. The inspectors understood this concern and considered the classification scheme acceptable, even though it was less conservative than the guidance in NUMARC/NESP-007 or NUREG-0654. This classification scheme had been previously reviewed and approved by members of the NRC staff as a part of the Emergency Plan.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the exit meeting on June 30, 1999. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Brieg, Manager, Station Technical
J. Fee, Manager, Maintenance
J. Hirsch, Manager, Chemistry
R. Krieger, Vice President, Nuclear Generation
J. Madigan, Manager, Health Physics
D. Nunn, Vice President, Engineering and Technical Services
A. Scherer, Manager, Nuclear Regulatory Affairs
K. Slagle, Manager, Nuclear Oversight
T. Vogt, Units 2 and 3 Plant Superintendent, Operations
R. Waldo, Manager, Operations

INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering
IP 40500: Effectiveness of Licensee Process to Identify, Resolve, and Prevent Problems
IP 61726: Surveillance Observations
IP 62707: Maintenance Observations
IP 71707: Plant Operations
IP 71750: Plant Support Activities
IP 92700: On Site LER Review
IP 92901: Followup - Operations
IP 92902: Followup - Maintenance
IP 92903: Followup - Engineering
IP 92904: Followup - Plant Support
TI 2515/141: Review of Year 2000 (Y2K) Readiness of Computer Systems

ITEMS OPENED AND CLOSED

Opened and Closed

361/99008-01	NCV	allowed times for CREACUS boundary breach exceeded (Section M8.1)
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Closed

362/97023-01	IFI	applicability of instrumentation to emergency diesel generator Technical Specifications (O8.1)
361; 362/1998-024-00	LER	inadequate CREACUS boundary control during component maintenance (Section M8.1)

361; 362/98014-03	URI	NRC review of the results of the planned heat exchanger performance testing and licensee review of past operability determination (Section E8.2)
361; 362/98004-07	IFI	inconsistent emergency classification (Section P8.1)