UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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April 20, 2000

Harold B. Ray, Executive Vice President
Southern California Edison Co.
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

SUBJECT: NRC ROUTINE INSPECTION REPORT NO. 50-361/00-05; 50-362/00-05

Dear Mr. Ray:

This refers to the inspection conducted on February 27 through April 1, 2000, at the San Onofre Nuclear Generating Station, Units 2 and 3, facility. The enclosed report presents the results of this inspection.

During the 5-week period covered by this inspection, your conduct of activities at the San Onofre facility was generally characterized by safety-conscious operation, sound engineering and maintenance practices, and careful radiological work controls.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/RA/

Linda Joy Smith, Chief
Project Branch E
Division of Reactor Projects

Docket Nos.: 50-361
50-362
License Nos.: NPF-10
NPF-15

Enclosure:
NRC Inspection Report No.
50-361/00-05; 50-362/00-05

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-361 50-362
License Nos.:	NPF-10 NPF-15
Report No.:	50-361/00-05 50-362/00-05
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:	February 27 through April 1, 2000
Inspectors:	J. A. Sloan, Senior Resident Inspector J. G. Kramer, Resident Inspector J. J. Russell, Resident Inspector P. A. Goldberg, Reactor Inspector
Approved By:	Linda Joy Smith, Chief, Branch E Division of Reactor Projects

ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station, Units 2 and 3
NRC Inspection Report No. 50-361/00-05; 50-362/00-05
Inspection Period 2/27/00 - 4/1/00

This routine announced inspection included aspects of licensee operations, maintenance, engineering, and plant support. This report covers a 5-week period of resident inspection and also documents closure of a previously-inspected security issue.

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 management expectations (Section O1.1).

Maintenance

- Personnel performed maintenance and surveillance activities in a thorough manner with the work package present and in active use. Technicians were knowledgeable and professional. Supervisors and system engineers frequently monitored job progress, and Quality Control personnel were present whenever required by procedure. When applicable, appropriate radiation controls were in place (Sections M1.1 and M1.2).

- Work Control personnel demonstrated nonconservatism by declaring a train of saltwater cooling operable when a required valve apparently failed postmaintenance acceptance testing. A 96-hour grace period provided for in the ASME Code for inservice testing was inappropriately used. Upon further review, the system was shown operable because incorrect but conservative acceptance criteria had been used for the timed valve stroke test. When the correct acceptance criteria were applied, the stroke time for the valve was satisfactory (Section M1.3).

- The material condition of the facility was generally adequate with several minor deficiencies observed (Section M2.1).

Plant Support

- Some radiological practices observed during plant walkdowns were poor. A radioactive waste material release log was not being used in accordance with management's expectation. Some labeled radioactive material barrels were not properly sealed to prevent rainwater intrusion (Section R1.1).

Report Details

Summary of Plant Status

Both units operated at essentially 100 percent reactor power during 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:

- Insert and remove plant protection system bypasses (Unit 3)
- Change core protection calculator addressable constants (Unit 3)
- Prejob briefings (Units 2 and 3)
- Swap turbine plant cooling water pumps (Unit 2)
- Response to loss of Control Element Assembly Calculator 1 (Unit 2)

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.

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 postaccident sampling system germanium detector (Units 2 and 3)
- Lubricate and change oil and filter on Emergency Diesel Generator (EDG) 3G003 20-cylinder engine (Unit 3)
- Replace diesel fire Pump MP220 water pump (Units 2 and 3)
- Inspect and sample oil on auxiliary feedwater Pump 2P141 to steam generator Bypass Valve 2HV4763 (Unit 2)
- Clean and inspect component cooling water/saltwater cooling Heat Exchanger 3ME001 (Unit 3)

- Motor-operated valve testing of Train A refueling water storage tank outlet Valve 3HV9300 (Unit 3)

- Evaluate and correct cause of locked-in containment air ejector radiation high alarm (Unit 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:

- Verify control element assembly position (Unit 2)
- Calibrate the seismic time history accelerograph (Units 2 and 3)

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.

M1.3 Replace Discharge Valve 2HV6201 - Unit 2

a. Inspection Scope (62707)

The inspectors reviewed the results of postmaintenance testing conducted on March 9, 2000, after Unit 2 saltwater cooling Pump 2P113 discharge Valve 2HV6201 was replaced. The inspectors reviewed Action Request (AR) 000300537, which contained the postmaintenance test results and portions of the ASME Code, OMa-1988, Part 10, "Inservice Testing of Valves in Light-Water Reactor Power Plants."

b. Observations and Findings

Because of excessive seat leakage, Discharge Valve 2HV6201 was replaced during a Train B saltwater cooling/component cooling water system scheduled maintenance outage. This valve is a 30-inch, air-operated, butterfly valve. Postmaintenance testing

included air-operated diagnostic testing. Operations acceptance testing was a timed valve stroke, performed in accordance with the inservice testing program and procedures. Operators performed the time stroke test and reported in AR 000300537 that the valve had not met acceptance criteria for the timed stroke test. The valve had stroked "too fast." However, the valve had been declared operable in accordance with the inservice testing program, which provided that a valve that failed an inservice test may be declared operable for 96 hours, while Engineering reviewed the test results and identified any needed corrective actions. After Valve 2HV6201 was declared operable, Train B saltwater cooling was declared operable and relevant 72-hour Technical Specification allowed outage times were exited.

On March 9, 2000, the inspectors questioned the inservice test program coordinator as to whether the 96-hour period discussed above could be used to declare Valve 2HV6201 operable and, consequently, the Train B saltwater cooling system operable. OMa-1988, Part 10, did provide for 96 hours that could be used to evaluate corrective actions, if a valve failed an inservice test, before the valve was declared inoperable. However, normally when a component has inservice test results that render a component inoperable, the Technical Specifications allowed outage time is the overriding limit. In addition, since Valve 2HV6201 had been replaced, the inspectors questioned whether new reference values for stroke time had been established and, if they were, whether it was the intent of OMa-1988, Part 10, to allow the use of this 96 hours after test failure following valve replacement. The inspectors also questioned whether operability in terms of Technical Specifications would be met given these circumstances.

The inspectors and the program coordinator determined that a new reference stroke time value for Valve 2HV6201 had been established during postmaintenance air-operated valve testing; however, this new reference value had not been entered in the computer data base. Consequently, when the operators performed acceptance testing they used the old, incorrect acceptance criteria for the valve stroke time. When the new reference time was applied to the stroke time results, the results were acceptable and the valve stroke time met acceptance criteria. Using incorrect acceptance criteria was a violation of 10 CFR 50.55a, which states, in part, that components must meet the requirements of the ASME Code. OMa-1988, Part 10, is a part of the ASME Code. This failure constitutes a violation of minor significance and is not subject to formal enforcement action. The incorrect acceptance criteria was actually more conservative than the correct acceptance criteria. The licensee generated AR 000300537 to provide more controls on promptly entering valve stroke reference times in the data base.

c. Conclusions

Work Control personnel demonstrated nonconservatism by declaring a train of saltwater cooling operable when a required valve apparently failed postmaintenance acceptance testing. A 96-hour grace period provided for in the ASME Code for inservice testing was inappropriately used. Upon further review, the system was shown operable because

incorrect but conservative acceptance criteria had been used for the timed valve stroke test. When the correct acceptance criteria were applied, the stroke time for the valve was satisfactory.

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. The inspectors discussed the findings with licensee personnel.

b. Observations and Findings

On December 28, 1999, the inspectors identified that the Unit 3 feedwater secondary calorimetric was diverging from the steam secondary calorimetric. The licensee had initiated AR 991201385 to evaluate the drift. The licensee normally used the steam calorimetric at full power and concluded that the diverging values were in the conservative direction. On March 22, 2000, modifications were made to the steam calorimetric, and the instrument subsequently failed. The licensee initiated AR 000301386 to evaluate the instrument failure. Plant operation continued using the feedwater calorimetric.

On February 29, 2000, the inspectors observed that cooling water expansion Tank 3MT162 for EDG 3G002 was filled to between 1/4 and 1/2 full. Correct level for this tank, as specified by procedures, was between 1/2 and 3/4 full. In response, the licensee generated AR 000201880 and raised the level in the tank to within specifications. The licensee determined that the low level did not render the EDG inoperable.

On March 15, the inspectors observed a boric acid leak on the isolation valve for High Pressure Safety Injection Pump P017 Inlet Pressure Indicator 3PI9075. The inspectors informed a Health Physics technician in the room about the leak. The technician surveyed the acid and noted slight levels of contamination. The licensee initiated AR 000300952 to address the issue. An operator tightened the fitting 1/2 turn to stop the leak.

On March 15, the inspectors observed that the Unit 3 spent fuel pool room was dark with most of the lights burned out. The inspectors informed a nuclear plant equipment operator who was also in the space about the observation. The operator checked the Unit 2 spent fuel pool room and observed that the lighting was acceptable. The operator informed refueling personnel about the lighting deficiency and AR 000301028 was generated to address the issue.

On March 17, the inspectors observed a buildup of white crystals on a pipe support (a boxed structure) for the Unit 2 Train A saltwater cooling system. The inspectors

informed the control room supervisor of the observation. The shift technical advisor evaluated the issue and initiated AR 000301139. Chemistry evaluated the crystals and concluded that they were not from a saltwater source. The licensee planned to evaluate draining the support and further evaluate the potential source of the water/crystals.

On March 20, the inspectors observed corroded piping and missing insulation near Valve 2HV8201, "SG 2E088 to AFWP Turbine 2K007 Isolation Valve." The inspectors informed the cognizant engineer about the observation. The engineer examined the section of piping and determined the exterior corrosion was acceptable and initiated AR 000301241 to repair the insulation. In addition, the engineer identified additional sections of piping that had missing insulation. The engineer determined that the missing insulation did not affect pump operability.

On March 30, the inspectors observed deteriorated protective wrapping on a fiber optic conductor inside Train A Qualified Safety Parameter Display System Cabinet 3L491A. The conductor had been protected by a section of shrink-wrap and it passed tightly over a sharp-edged plate. The shrink-wrap had split and pulled away from the contact area and was no longer providing protection. However, the normal insulation around the conductor was undamaged. The technicians working in the cabinet acknowledged the condition, initiated AR 000301872, and promptly corrected the condition.

c. Conclusions

The material condition of the facility was generally adequate with several minor exceptions observed.

M8 Miscellaneous Maintenance Issues (92700)

M8.1 (Closed) Licensee Event Report 361/1999-002-00: both Unit 2 pressurizer safety valves failed their as-found setpoint tests high.

During the Cycle 10 refueling outage, the licensee removed the pressurizer safety valves for testing and determined that the as-found lift settings were not within ±1 percent of 2500 psia. The licensee determined that the valves had therefore been inoperable during all or part of Cycle 9 operation in Modes 1, 2, and 3 and that the actions required by Technical Specification 3.4.10 had not been performed within 15 minutes as required. The licensee initiated ARs 990200717 and 990200721.

The licensee attributed the pressurizer safety valve test failures to setpoint drift. After the valves failed their tests, they were rebuilt and retested. In addition, the licensee submitted a license amendment to the NRC on September 4, 1998, requesting that the setpoint tolerance be changed from ±1 percent to +3/-2 percent. No additional corrective actions were planned. The amendment request was subsequently approved on August 19, 1999.

The inspectors reviewed test data for the pressurizer safety valves. There are two valves per unit, plus two spares, for a total of six valves. The inspectors noted that, out

of 37 tests for the 6 valves, there were 20 times that valves lifted above the +1 percent tolerance and 6 times that valves lifted below the -1 percent setpoint tolerance. The licensee stated that some of the valves lifted high right after being rebuilt, which would indicate that there was not a seat bonding problem. The seat bonding problem occurs when the valve is tested after a period of time. The inspectors noted that, if the +3/-2 percent tolerance were used to evaluate the valves, 6 tests out of the 37 failed above the +3 percent tolerance and 2 tests failed below the -2 percent tolerance. However, the licensee determined that the safety valve failures had no safety consequence since all of the as-found setpoints were bounded by existing analysis.

The inspectors determined that the licensee implemented corrective actions such as increasing the setpoint tolerance and disassembling, inspecting, and rebuilding valves that failed tests, but was not proactive in seeking the root cause of the valve failures.

The inspectors agreed with the licensee's conclusion that the pressurizer safety valves had likely been inoperable during periods of required operability; however, it was not clear exactly when the valves became inoperable. Since the licensee had already replaced the inoperable safety valves with operable valves at the time of discovery, the Technical Specification-required actions were satisfied and, therefore, no violation of Technical Specification 3.4.10 occurred.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Review of Radiological Practices During a Plant Tour - Units 2 and 3

a. Inspection Scope (71750)

On March 1, 2000, the inspectors walked down portions of the Units 2 and 3 radiologically controlled area. The inspectors reviewed portions of Procedures SO123-VII-20.14.6.2, "Nuclear Enterprises SAM-9 Small Articles Monitor and WAM-4 Bag Monitor," Revision 0; SO123-VII-8.6.6, "Control and Processing of Radiological Protective Clothing," Temporary Change Notice 6-3; and SO123-VII-20.9.2, "Material Release Surveys," Revision 2. The inspectors also interviewed Health Physics technicians and discussed issues with Health Physics supervisory personnel.

b. Observations and Findings

Procedure SO123-VII-20.9.2 designated the use of a material release log to document items that had been released from a radiologically controlled area, radioactive materials area, or certain items released from a restricted area. This procedure stated that the technicians should indicate in the log whether items free released were completely physically surveyed or evaluated for the free release. The inspectors noted that a material release log form taped to a bag monitor in the radiologically controlled area indicated that an "FF Filter" had been free released on March 1, 2000. The inspectors later interviewed the Health Physics technician who performed the release surveys for

the above filter. From this interview, the inspectors determined that the filter had not been free released as specified in Procedure SO123-VII-20.9.2 but had been surveyed prior to movement from one part of the radiologically controlled area to another. Also, the material release log was not being correctly competed to indicate whether other items shown as free released were released by an evaluation or by physical survey. The inspectors considered that logging items as free released when they were not was confusing and that the materials release log should not be used to document surveys other than those done to free release items. The licensee generated AR 000300976 to document erroneously logging an item in the material release log.

The inspectors also observed two barrels labeled as radioactive and hazardous material in the radiologically controlled area but outside of an enclosed structure and exposed to the environment. The inspectors noted that both barrel lids were partially off which allowed rainwater to collect inside the barrels and pool on the lids. The inspectors concluded that this was a poor practice because it allowed rainwater to enter the barrels, which could unnecessarily generate liquid radioactive waste. The licensee acknowledged the inspectors' concerns, and generated AR 00300977 to document this observation, and replaced the barrels with containers with hinged and latched lids.

c. Conclusions

Some radiological practices observed during plant walkdowns were poor. A radioactive waste material release log was not being used in accordance with management's expectation. Some labeled radioactive material barrels were not properly sealed to prevent rainwater intrusion.

S8 Miscellaneous Security and Safeguards Issues (92904)

S8.1 (Closed) Unresolved Item 361; 362/1999005-01: contaminated cell phone case removed from protected area.

This issue was discussed in NRC Inspection Report 50-361; 362/2000-02 and is closed.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the exit meeting on April 4, 2000. 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

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

INSPECTION PROCEDURES USED

IP 37551:	Onsite Engineering
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observations
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities
IP 92700:	On Site LER Review
IP 92904:	Followup - Plant Support

ITEMS CLOSED

Closed

361/2000-002-00	LER	both Unit 2 pressurizer safety valves failed their as-found setpoints high (Section M8.1)
361; 362/1999005-01	URI	contaminated cell phone case removed from protected area (Section S8.1)

LIST OF ACRONYMS USED

AR	action request
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
EDG	emergency diesel generator
NRC	Nuclear Regulatory Commission

LIST OF DOCUMENTS REVIEWED

Action Requests:

000300197
000301244

Maintenance Orders:

99120790001	Valve 3HV9300
00030349000	Qualified Safety Parameter Display System Train A, Cabinet 3L491A

Procedures:

SO123-VII-20, “Health Physics Program,” TCN 5-4
SO123-VII-20.11, “Access Control Program”, TCN 4-3
SO123-VII-20.9, “Radiological Surveys,” TCN 4-3
SO123-VII-20.9.2, “Material Release Surveys,” Editorial Correction 2-1
SO123-VII-8, “Control of Radioactive Material,” Revision 8
SO123-VII-8.16, “Radioactive Equipment Material and Storage,” TCN 4-1
SO123-VII-8.2, “Shipment of Radioactive Material,” Revision 16
SO123-VII-8.3.1, “Multipurpose Handling Facility Operations,” TCN 4-1
SO123-VII-8.6.6, “Control and Processing of Radiological Protective Clothing,” TCN 6-4
SO23-3-3.10, “Containment Integrity Verification,” Revision 14