UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4005

December 18, 2002

Harold B. Ray, Executive Vice President
San Onofre, Units 2 and 3
Southern California Edison Co.
P.O. Box 128, Mail Stop D-3-F
San Clemente, California 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION - NRC INSPECTION REPORT 50-361/02-10; 50-362/02-10

Dear Mr. Ray:

On November 22, 2002, the NRC completed an inspection at your San Onofre Nuclear Generating Station, Units 2 and 3. The enclosed report documents the inspection findings, which were discussed on November 22, 2002, with Mr. R. Waldo and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

On the basis of the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/
Charles S. Marschall, Chief
Engineering and Maintenance Branch
Division of Reactor Safety

Dockets: 50-361; 50-362
Licenses: NPF-10; NPF-15

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Dockets:	50-361; 50-362
Licenses:	NPF-10; NPF-15
Report No:	50-361/02-10; 50-362/02-10
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:	October 28 through November 22, 2002
Team Leader:	M. F. Runyan, Senior Reactor Inspector, Engineering Maintenance Branch
Inspectors:	R. P. Mullikin, Senior Reactor Inspector, Engineering Maintenance Branch
	W. M. McNeill, Senior Reactor Inspector, Engineering Maintenance Branch
	R. L. Nease, Senior Reactor Inspector, Engineering Maintenance Branch
	G. Miller, Reactor Inspector, Engineering Maintenance Branch
	R. Azua, Project Engineer, Projects Branch C
Approved By:	Charles S. Marschall, Chief Engineering Maintenance Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000361-02-10, IR 05000362-02-10, 10/28-11/22/02 Southern California Edison Co.; San Onofre Nuclear Generating Station, Units 2 and 3, safety system design and performance capabilities and permanent plant modifications.

The inspection was conducted by six regional inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

No findings of significance were identified.

Report Details

1 REACTOR SAFETY

Introduction

A team inspection was performed to verify that facility safety system design and performance capability were adequate and that the initial design and subsequent modifications have preserved the current design basis of the systems selected for review. The scope of the review also included any necessary nonsafety-related structures, systems, and components that provided functions to support safety functions. The inspection effort also reviewed the licensee's programs and methods for monitoring the capability of the selected systems to perform the current design basis functions. This inspection verified aspects of the initiating events, mitigating systems, and barrier cornerstones.

The probabilistic risk assessment model for the San Onofre Nuclear Generating Station is based on the capability of the as-built safety systems to perform their intended safety functions successfully. The area and scope of the inspection were determined by reviewing the licensee's probabilistic risk analysis models to identify the most risk significant systems, structures, and components according to their ranking and potential contribution to dominant accident sequences and/or initiators. Deterministic effort was also applied in the selection process by considering recent inspection history, recent problem area history, and all modifications developed and implemented.

The team reviewed in detail the high pressure safety injection system, the containment spray system, and the 120 volt dc electrical system. The primary review prompted parallel review and examination of support systems, such as, electrical power, instrumentation, room cooling systems, and related structures and components.

The objective of this inspection was to assess the adequacy of calculations, analyses, engineering processes, and engineering and operating practices that were used to support the performance of the safety systems selected for review and the necessary support systems during normal, abnormal, and accident conditions. Acceptance criteria utilized by the NRC inspection team included NRC regulations, the technical specifications, applicable sections of the final safety analysis report, applicable industry codes and standards, as well as, industry initiatives implemented by the licensee's programs.

1R17 Permanent Plant Modifications (71111.17B)

a. Inspection Scope

The team reviewed nine permanent plant modification packages and associated documentation to verify that they were performed in accordance with regulatory requirements and plant procedures. The team also reviewed procedures governing plant modifications to evaluate the licensee's effectiveness for implementing modifications to risk-significant systems, structures, and components, such that these changes did not adversely affect the design and licensing basis of the facility. This review included verification that post-modification testing maintained the plant in a safe configuration during testing.

Through a review of selected action requests, the team evaluated the effectiveness of the licensee's corrective action process to identify and correct problems associated with the performance of permanent plant modifications.

b. Findings

No findings of significance were identified.

1R21 Safety System Design and Performance Capability (71111.21)

.1 System Requirements

a. Inspection Scope

The team reviewed the following attributes of the selected systems: (1) process medium (water, steam, and air), (2) energy sources, (3) control systems, and (4) equipment protection. The team verified that procedural instructions to operators were consistent with operator actions required to meet, prevent, and/or mitigate design basis accidents. The review also considered requirements and commitments identified in the final safety analysis report, technical specifications, design basis documents, and plant drawings.

b. Findings

No findings of significance were identified.

.2 System Condition and Capability

a. Inspection Scope

The team reviewed the periodic testing procedures for the selected systems to verify that the design requirements were adequately demonstrated. The team reviewed the environmental qualification of a sample of system components to verify the capability to operate under design environmental conditions and the assumed operating parameters including: voltage, speed, power, flow, temperature, and pressure.

The team also reviewed the systems' operations by conducting system walkdowns; reviewing normal, abnormal, and emergency operating procedures; and reviewing the final safety analysis report, technical specifications, design calculations, drawings, and procedures.

b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed a sample of problems identified by the licensee in the corrective action program to evaluate the effectiveness of corrective actions related to design issues. The sample included open and closed condition reports for the past 3 years that identified issues affecting the selected systems.

b. Findings

No findings of significance were identified.

.4 System Walkdowns

a. Inspection Scope

The team performed walkdowns of the accessible portions of the selected systems. The walkdowns focused on the installation and configuration of power supplies, piping, components, and instruments. During the walkdowns, the team assessed:

- The placement of protective barriers and systems,
- The susceptibility to flooding, fire, or environmental conditions,
- The physical separation of trains and the provisions for seismic concerns,
- Accessibility and lighting for any required local operator action,
- The materiel condition and preservation of systems and equipment, and
- The conformance of the currently-installed system configurations to the design and licensing bases.

b. Findings

No findings of significance were identified.

.5 Design Review

a. Inspection Scope

The team reviewed the current as-built instrumention and control, electrical, and mechanical design of the selected systems. These reviews included a review of design assumptions, calculations, required system thermal-hydraulic performance, electrical power system performance, protective relaying, and instrument setpoints and uncertainties. The team also performed a single-failure review of individual components to determine the effects of such failures on the capability of the systems to perform their design safety functions.

The team reviewed calculations, drawings, specifications, vendor documents, final safety analysis report, technical specifications, emergency operating procedures, and temporary and permanent modifications.

b. Findings

No findings of significance were identified.

.6 Safety System Inspection and Testing

a. Inspection Scope

The team reviewed the program and procedures for testing and inspecting components in the selected systems. The review included the results of surveillance tests required by the technical specifications.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (ZA)

4OA6 Management Meetings

Exit Meeting Summary

The team leader presented the inspection results to Mr. R. Waldo, Station Manager, and other members of licensee management at the conclusion of the onsite inspection on November 22, 2002.

At the conclusion of this meeting, the team leader asked the licensee's management whether any materials examined during the inspection should be considered proprietary. Some proprietary information was identified, but it was returned to the licensee.

ATTACHMENT

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M. A. Sitek, Resident Inspector

Documents Reviewed:

ACTION REQUESTS

990102252	000201823	000601463	010201470	010800271	020502031
990701332	000300404	001000280	010201704	010801580	020700542
991000277	000300526	001001307	010300436	011200027	021000229
991000874	000401086	001001799	010301385	011200624	021000346
991000890	000401089	001002245	010500600	020200270	021100600
000200243	000401454	001100981	010500897	020201003	021100602
000200706	000601021	001200129	010700101	020401526	021100603
000201282					

CALCULATIONS

E4C-017, “125 Volt Battery D.C. System Sizing,” Revision 15

E4C-017, “Interim Calculation Change Notice (ICCN)/Calculation Change Notice (CCN) C-58 for Calculation No. E4C-017,” Revision 5

E4C-109, “Class 1E 125V DC System Protection Calculations,” Revision 0

E4C-109, “Interim Calculation Change Notice (ICCN)/Calculation Change Notice (CCN) C-1 for Calculation No. E4C-109,” Revision 0

M-DSC-370, “LPSI/HPSI Nitrogen Pocket Transient Analysis,” Revision 0

P-450-1.144, “Pipe Support C/S Calculation,” Revision 10

M-1204-038-5A, “1204-038 Low Pressure Safety Injection S.E.B. to Aux Penetration Area,” Revision 2

M-1201-017-AA, “LN 0116 3HV9337 to LN 032 Valve 015 (1204) Shutdown Cooling System,” Revision 8

M-1204-020-AA, “High Pressure Safety Injection,” Revision 4

M-1204-020-4A, “HP Safety Injection Pump P017 to HPSI No. 1,” Revision 3

M-1204-163-AA, “HPSI Part 3 Stress Summary,” Revision 6

J-BHA-051, “High Pressure Safety Injection (HPSI) Miniflow Line,” Revision 0

J-BHA-012, “Containment Emergency Sump High Level Setpoint,” Revision 1

ENGINEERING CHANGE PACKAGES

990102252-12, “Addition of an upstream isolation gate valve for the safety injection tank vent valves”

000601021-09, “Upgrade the suppression circuitry of the DG overspeed solenoid”

010400875-08, “Replace the existing boric acid check valves with conical seated, center-post supported, wafer-type in-line check valves”

010800190-53, “Replace existing Rosemount RTD with an equivalent Weed RTD”

010800888-11, “Install a oil sample port on the emergency chiller”

010801554-09, “Fabricate adapters to permit connection of a fire hose to the AFW pump”

011200027-03, “Reconnect tubing on the emergency chiller and secure with clamps”

011200624-04, “Cut, disassembly and reconnecting of tubing on the emergency chiller and secure with clamps”

020600077-01, “Relocate vibration and loose parts monitor accelerometers on the reactor vessel head”

DRAWINGS

30172, “One Line Diagram Class 1E 125V DC and 120VAC Power System,” Revision 7
30173, “One Line Diagram 125 VDC Distribution Switchboard 2D1,” Revision 17
30174, “One Line Diagram 125 VDC Distribution Switchboard 2D2,” Revision 17
30175, “One Line Diagram 125 VDC Distribution Switchboard 2D3,” Revision 13
30176, “One Line Diagram 125 VDC Distribution Switchboard 2D4,” Revision 14
32172, “One Line Diagram Class 1E 125V DC and 120VAC Power System,” Revision 4
32174, “One Line Diagram 125 VDC Distribution Switchboard 3D2,” Revision 17
32175, “One Line Diagram 125 VDC Distribution Switchboard 3D3,” Revision 14
32176, “One Line Diagram 125 VDC Distribution Switchboard 3D4,” Revision 13
PID-40112A, “Safety Injection System,” Revision 28
PID-40112C, “Safety Injection System,” Revision 18
40114B, "P&ID Containment Spray system No 1206," Revision 17
40114A, "P&ID Containment Spray system No 1206," Revision 12
PID-40114D, “Containment Spray System,” Revision 18
40114D, "P&ID Containment Spray system No 1206," Revision 19
41063 Sh. 3, "Containment Spray Pump Tag No. 2P012 IST Curves," Revision 0
41063 Sh. 2, "Containment Spray Pump Tag No. 3P013 IST Curves," Revision 0
41063 Sh. 1, "Containment Spray Pump Tag No. 2P012 IST Curves," Revision 0
41063 Sh. 4, "Containment Spray Pump Tag No. 3P013 IST Curves," Revision 0

MAINTENANCE ORDERS

99081664000, Unit 2, Battery Service Test, 10/27/00
99081665000, Unit 2, Battery Service Test, 10/27/00
99081663000, Unit 2, Battery Service Test, 10/27/00
99081666000, Unit 2, Battery Service Test, 10/27/00
01040982000, Unit 2, Physical Inspection of Battery, 09/24/01
01090282000, Unit 2, Charger Performance Test, 5/17/02
01090643000, Unit 2, Charger Performance Test, 4/4/02
01090644000, Unit 2, Charger Performance Test, 3/29/02
01090645000, Unit 2, Charger Performance Test, 4/11/02
01102026000, Unit 2, Physical Inspection of Battery, 8/13/02
01102107000, Unit 2, Physical Inspection of Battery, 8/5/02
01111508000, Unit 2, 5 Year Battery Performance Test, 6/3/02
01111509000, Unit 2, 5 Year Battery Performance Test, 6/15/02
01111510000, Unit 2, 5 Year Battery Performance Test, 5/27/02
01111511000, Unit 2, 5 Year Battery Performance Test, 5/27/02
02030745000, Unit 2, Physical Inspection of Battery, 9/20/02
02050944000, Unit 2, Quarterly Battery Inspection. 7/22/02
02051119000, Unit 2, Quarterly Battery Inspection, 8/16/02
02051405000, Unit 2, Quarterly Battery Inspection, 8/13/02
02070866000, Unit 2, Quarterly Battery Inspection, 9/24/02
02100025000, Unit 2, Weekly 1E Battery Inspection, 10/8/02

PROCEDURES

SO23-6-15, “Operation of 125 VDC Systems,” Revision 16

SO23-3-3.8, “Safety Injection Monthly Tests;” Revision 16

SO23-3-3.30.1, “ECCS Online Valve Test,” Revision 5

SO23-3-3.60.1, “High Pressure Safety Injection Pump and Valve Testing,” Revision 3

SO23-12-3, “Loss of Coolant,” Revision 17

SO123-XXIV-10.1, “Preparation, Review, Approval, issuance, Implementation, and Closure of Engineering Change Packages (ECPs) and Engineering Change Notices (ECNs),” Revision 2 with TCN 2-1

SO123-XV-50, “Corrective Action Process,” Revision 4

SO123-XX-1, “Action Request/Maintenance Order Initiation and Processing,” Revision 14

Attachment 2 to S023-3-3.60.7, "Surveillance Operating Instruction," Revision 6

SO123-XX-ISS2, " Work Process Procedure," Revision 13

SO23-III-1-14.23, Trisodium Phosphate Rack Inspection, Sample Collection, and Testing,” Revision 5

MISCELLANEOUS

System Description SD-SO23-140, “125 and 250 VDC Systems”

SONGS System Health Report for the 1E & Non-1E 125 VDC and 250 VDC Systems prepared on 10/28/02

Non-Licensed Operator Training Program Lesson Plan Number 2XE111, “125 VDC/250 VDC and Non-1E UPS,” Revision 2

MA 20868, “Design Report for Enertech 1 inch-ANSI Class 1500 Type KRV Nozzle Check Valve,” Revision B

MA 20870, “Installation and Dismantling Instructions Enertech Nozzle Check Valve 1"-Class 1500 KRZ,” Revision A

MD 20858, “Nozzle Check Valve 1" - Class 1500 KRV Drawing,” Revision B

SEE 92-0076, “Substitution Equivalency Evaluation Rosemount Resistance Temperature Detector for a Weed,” Revision 0

SO23-408-29, “ASME Section III AFW System Boric Acid Check Valves,” Revision 1

NUREG-0712, "Safety Evaluation Report related to the operation of San Onofre Nuclear Generating Station, Units 2 and 3," February 1981

DBD-SO23-TR-PL, "Southern California Edison Nuclear Organization Design Bases Document," Revision 4

Technical Specification 3.5.5, "Trisodium Phosphate (TSP)," Amendment No. 127

Technical Specification B 3.5.5, "Trisodium Phosphate (TSP) Bases," Amendment No. 127

Inservice Pump Test Record for Containment Spray Pump S21206MP012, dated 07/22/1998

Inservice Pump Test Record for Containment Spray Pump S21206MP012, dated 01/02/1999

Inservice Pump Test Record for Containment Spray Pump S21206MP013, dated 10/07/2002

San Onofre Nuclear Generating Station Final Safety Analysis Report, Units 2 and 3