



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

June 30, 2010

Mr. Ross T. Ridenoure
Senior Vice President and
Chief Nuclear Officer
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION – UNIT 2 STEAM
GENERATOR REPLACEMENT PROJECT INSPECTION REPORT
05000361/2010008

Dear Mr. Ridenoure:

On May 17, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed a steam generator replacement inspection at your San Onofre Nuclear Generating Station, Unit 2 facility. The enclosed inspection report documents the inspection findings, which were discussed on May 27, 2010, with Mr. Wharton and other members of your staff.

The inspections 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, no findings were identified. In accordance with 10 CFR 2.390 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 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/

Ryan E. Lantz, Chief
Project Branch D
Division of Reactor Projects

Docket No. 50-361
License No. NPF-10

Enclosure:
NRC Inspection Report 05000361/2010008 w/Attachment: Supplemental Information

cc w/Enclosure:

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SUNSI Rev Compl.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	DBA
Publicly Avail	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	DBA
RI:RPBD	SRI: RPBD	SPE: RPBD	C: RPBD		
JReynoso	GWarnick	DAllen	RLantz		
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6/30/10	6/30/10	6/28/10	6/29/10		

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**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Docket: 50-361

License: NPF-10

Report: 05000361/2010008

Licensee: Southern California Edison Co. (SCE)

Facility: San Onofre Nuclear Generating Station, Unit 2

Location: 5000 S. Pacific Coast Hwy
San Clemente, California

Dates: January 1, 2010 through May 17, 2010

Inspectors: D. Allen, Senior Project Engineer
G. Warnick, Senior Resident Inspector
J. Josey, Resident Inspector
J. Reynoso, Resident Inspector

Approved By: Ryan E. Lantz
Chief, Project Branch D
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000361/2010008; 01/01/2010 – 05/17/2010; San Onofre Nuclear Generating Station, Unit 2 Steam Generator Replacement Report; Steam Generator Replacement Activities.

The report covered a 5-month period of inspection by resident and regional inspectors. No findings were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

None

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period shutdown for a scheduled refueling outage (U2C16) and steam generator replacement. The Unit 2 refueling outage was completed on April 11, 2010 and the plant returned to full power on May 17, 2010.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors used the guidance in Inspection Procedure 50001 to select and perform the following post-installation verification and testing inspection activities as part of the normal baseline inspection. Accordingly, inspection hours were charged to baseline inspection under NRC Inspection Report 05000361; 05000362/2010003. The inspectors witnessed or reviewed the results of postmaintenance testing for the following maintenance activities:

- March 26, 2010, Unit 2, post-inspection and verification of hot gap measurements for replacement steam generator activities
- April 16, 2010, Unit 2, primary to secondary leakage testing post steam generator replacement
- April 20, 2010, Unit 2, post-installation digital feedwater testing and level control stability
- May 25, 2010, Unit 2, pressurizer monitoring post steam generator replacement
- May 26, 2010, Unit 2, post steam generator replacement reactor coolant system flow acceptance test results

In each case, the test procedures were reviewed to determine if the test adequately verified proper performance of the components affected by steam generator replacement and outage maintenance activities. The Updated Final Safety Analysis Report, Technical Specifications, and design-basis documents were also reviewed as applicable to determine the adequacy of the acceptance criteria listed in the test procedures.

Specific documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

40A5 Other Activities (50001)

a. Inspection Scope

The inspectors used the guidance in Inspection Procedure 50001 to select and perform the following post-installation verification and testing inspection activities, consistent with the safety significance and inspection resources and as part of normal baseline inspection efforts. Accordingly, some inspection hours were charged to baseline inspection under NRC Inspection Report 05000361; 05000362/2010003.

Containment Testing

The inspectors performed system walk downs, observed the start, and conclusion of the Unit 2 containment integrated leakage rate test. The test procedure was reviewed and the inspectors verified that the potential leakage from containment at the design basis accident pressure remained within the limits stated in technical specifications. These inspections are documented in NRC Inspection Report 05000361; 05000362/2010002, Sections 1R04 and 1R19.

Steam Generator Secondary Side Leakage

The inspectors reviewed the secondary side leakage test results and completed an inspection of the steam generators secondary side after the steam generators were filled to check for leakage.

Calibration and Testing of Instrumentation

The inspectors observed and evaluated the calibration and testing of instrumentation for both the primary and secondary side systems impacted by the steam generator replacement in the following areas:

- Functional testing of spliced resistance temperature detector to reactor coolant system hot leg loops. These inspections are documented in NRC Inspection Report 05000361; 05000362/2010002, Section 1R19.
- Calibration and testing of steam generator E089, wide range water level transmitters following steam generator replacement

Startup and Power Ascension

The inspectors reviewed the startup and power ascension procedures to determine if the procedure adequately verified proper performance of the components affected by steam generator replacement and outage maintenance activities. The following inspection activities hours were charged to baseline inspection under NRC Inspection Report 05000361; 05000362/2010003, Section 1R20:

- April 7-8, 2010, Unit 2, reactor startup and criticality following refueling

- April 10, 2010, Unit 2, main generator startup and rollup prior to unexpected trip on high volts to hertz prior to closing breaker

Specific documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

40A6 Meetings

Exit Meeting Summary

On May 27, 2010, the inspectors presented the inspection results to Mr. M. Wharton, Manager, Steam Generator Replacement Project, and other members of the licensee's staff. The licensee acknowledged the inspection results and observations presented. Some proprietary information was reviewed during this inspection but no proprietary information was included in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

- D. Axline, Technical Specialist, Nuclear Regulatory Affairs
- D. Bauder, Plant Manager
- G. Cook, Manager, Nuclear Regulatory Affairs
- C. Harberts, Manager, Steam Generator Replacement Project
- L. Hay, QA Manager, Bechtel
- A. Hochevar, Station Manager, Plant Operations
- E. Hubley, Director, Maintenance & Construction Services
- L. Kelly, Engineer, Nuclear Regulatory Affairs
- J. Madigan, Manager, Health Physics
- A. Matheny, System Engineer
- A. Meichler, Mechanical/System Engineering Supervisor
- M. Mihalik, Areva Project Manager, Steam Generator Replacement Project
- R. Nielsen, Supervisor, Nuclear Oversight
- B. Power, Operations Manager, Catalina Pacific
- C. Ryan, Manager, Maintenance & Construction Services
- D. Schaffer, Civil Engineer
- M. Wharton, Manager, Steam Generator Replacement Project

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

None

LIST OF DOCUMENTS REVIEWED

Section 1R19: Postmaintenance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SO2-XXVI-9.8001.27277.1	Unit 2 Digital Feedwater Test	1
SO2-XXVI-9.8000.71702.5	Pressurizer Monitoring Post Steam Generator Replacement	0

A-1

Attachment

SO123-XXVI-2.5	Preparation, Review, and Approval of Preoperational, Acceptance, and Special Test Procedures	4
25221-002-M0P-7452-00002-001	SONGS Unit 2 Steam Generator Replacement Thermal Expansion Monitoring Program	April 5, 2010
SO23-3-3.25.1	Once a Shift Surveillance	34
SO23-617-01	Steam Generator Replacement Conformed Specification	4
SO123-I-1.3	Work Activity Guidelines	26
SO2-XXVI-9.8000.71702.3	Replacement Steam Generators Reactor Coolant Flow Acceptance Test	0

NUCLEAR NOTIFICATIONS

<u>NUMBER</u>				
200861083	200870136	200729012	200848431	200867229
200735074	200359897	200773569		

ENGINEERING DOCUMENTS

<u>NUMBER</u>				
800030264	NECP 800175663	NECP 800071702	800355978	800229428
NECP 800071702	800187271	800072649	800229428	200773569

Section 1R20: Refueling and Other Outage Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SO23-3-1.1	Reactor Startup	32
SO23-XXXVII-13	Reactor Engineering Procedure on Physics Data Controls	7
SO23-XXXVII-1	Low Power Physics Testing	1

NUCLEAR NOTIFICATIONS

<u>NUMBER</u>		
200871982	200872603	200872717

Section 40A5: Other Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SO2-V-3.12	Containment Integrated Leakage Rate Test	8
SO23-XXIV-3.8.1	Containment Concrete Visual Examination Summary Sheet	1
SO23-XXIV-3.8.3	In Process Visual Examination of the Temporary Containment Opening	Draft
SO23-XXIV-3.8.3	In Process Visual Examination of the Temporary Containment Opening	0
SO123-XXIV-20.2	Maintenance Rule for Structures	3
SO23-XXIV-3.8.1	Visual Examination of Containment Concrete Surfaces	1
SO2-XXVI-9.8000.71702.3	Replacement Steam Generators Reactor Coolant Flow Acceptance Test	0

NUCLEAR NOTIFICATIONS

<u>NUMBER</u>	<u>NUMBER</u>	<u>NUMBER</u>	<u>NUMBER</u>	<u>NUMBER</u>
200820640	200748893	200882926	200722132	200635121
200444694	200755001	200634427	200703527	200722454
200715236	200692237	200796158	200667749	200670820
200683811	200556690	200452049	200452036	200453360
200679894	200680999	200505719	200709732	200722454
200715236	200848431	200872597	200583991	

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
23027	Containment Structure Reinforced Concrete Wall Section & Details	0
23056	Containment Structure Wall Liner & insert Section & Details	0
CO-9000-00001	Containment Structure Scaffold Location at S.I. Tanks & Cable Trays Near Const. Opening	3

ENGINEERING DOCUMENTS

<u>NUMBER</u>	<u>NUMBER</u>
800444646	8000726649

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
C-501-01.03	Maintenance Rule - Containment Unit 2 Inspection Report	
S-02-C-001	Maintenance Rule Concrete Crack Inspection and Evaluation	
Bechtel 25221-000-C0C-3000-00004	Evaluation of Containment Opening with 2000 psi Concrete Strength for Tornado Missiles	
C-257-04.02.05	Containment Liner Plate Damage Acceptance Criteria	0

MAINTENANCE ORDERS

<u>NUMBER</u>				
800232914	800356395	800259587	800072665	800072643
WC 70001270	AR 070401220	AR 061200409		

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
CS-E03	Construction Specification Cable Splicing, Termination, and Supports	22
CS-E02	Construction Specification For Installation of Electrical Cables in Cable Trays	11
Bechtel 25221-000-GPP-GCPE-00003	General Construction Procedure Cable Splicing, Terminations and Supports	
Bechtel	SONGS SGRP Unit 2 Task Readiness Review	
Bechtel 25221-PP-05	Steam Generator Replacement Project Detailed Containment Opening Plan	2
Bechtel	Tendon Removal And Replacement Project Concrete Curing Requirements to Start Tendon Tensioning	

Bechtel NCR 25221-002-G61- GCX-00128	Nonconformance Report	
Bechtel 25221- QSVS-09-009	Quality Surveillance Report	
	Chemistry Management Plan Contingency Defenses for Start Up of Unit 2 Replacement Steam Generators	
Bechtel 25221- 002-M0P-7452- 00002-001	Work Package and Inspection Records for Thermal Expansion Monitoring Program	
SGRP-TP-001	Steam Generator Return to Service Testing Plan	0
	SCE Letter to US NRC Generic Letter 2004-02	
	SCE Tendon Demonstration Presentation to NRC	
Schwager Davis Inc.	Calibration Procedures	1
Bechtel 25221- 000-4MP-T040- S0127	Nondestructive Examination Standard Radiographic Examination RT-Liner Plate NE	0
Bechtel 25221- 000-NWX-YQ- 00001	Welding, Heat Treatment and Nondestructive Examination	2
Bechtel 25221- 002-G61-GCX- 00028	Nonconformance Report	
Bechtel 25221- 000-V04-SY00- 00058-002	Tendon and Grease Removal Procedure	1
Bechtel 25221- 000-V04-SY00- 00012-000	CPTS Tendon Stressing Procedure	4
Bechtel 25221- 000-V04-SY00- 00013-006	CPTS Tendon Greasing Procedure	5

Bechtel 25221- 000-V04-SY000- 00011-004	CPTS Tendon Installation Procedure	3
Bechtel 25221- 000-V04-SY00- 00010-005	CPTS Duct Inspection Procedure	4