



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

May 10, 2011

Mr. Peter Dietrich
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 3 STEAM
GENERATOR REPLACEMENT PROJECT INSPECTION REPORT
NO. 05000362/2010009

Dear Mr. Dietrich:

On March 30, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed a steam generator replacement inspection at your San Onofre Nuclear Generating Station, Unit 3 facility. The enclosed inspection report documents the inspection findings which were discussed on March 30, 2011, with Mr. Rich St. Onge, Director of Nuclear Regulatory Affairs and other members of your staff. This inspection report is applicable to Unit 3 only.

The inspectors 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 of significance were identified. However, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating this violation as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy because of the very low safety significance of the violation and because it is entered into your corrective action program. If you contest the violation or the significance of the noncited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the San Onofre Nuclear Generating Station facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure(s), and your response if you choose to provide one, will be made available

Southern California Edison

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electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

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

Docket No. 50-362
License No. NPF-15

Enclosure:
NRC Inspection Report 05000362/2010009
w/Attachment: Supplemental Information

Distribution via Listserv

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ADAMS: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		<input checked="" type="checkbox"/> SUNSI Review Complete	Reviewer Initials:
		<input checked="" type="checkbox"/> Publicly Available	<input checked="" type="checkbox"/> Non-Sensitive
		<input type="checkbox"/> Non-publicly Available	<input type="checkbox"/> Sensitive
RI:RPBD	SRI:RPBD	RI: R-II/DCP/CPB1	C:RPBD
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 50-362

License: NPF-15

Report: 05000362/2010009

Licensee: Southern California Edison Co. (SCE)

Facility: San Onofre Nuclear Generating Station, Unit 3

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

Dates: October 10, 2010 through March 11, 2011

Inspectors: S. Achen, Reactor Inspector
I. Anchondo, Reactor Inspector
S. Makor, Reactor Inspector
A. Masters, Senior Construction Inspector, Region II
J. Reynoso, Resident Inspector
G. Warnick, Senior Resident Inspector
M. Young, Resident Inspector

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

SUMMARY OF FINDINGS

IR 05000362/2010009; 10/10/2010 – 03/30/2011; San Onofre Nuclear Generating Station, Unit 3 Steam Generator Replacement Report; Steam Generator Replacement Activities.

The report covered a 4-month period of inspection by resident and regional inspectors. No findings of significance 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

No findings of significance were identified.

B. Licensee-Identified Violations

A violation of very low safety significance, identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective action tracking numbers are listed in Section 4OA7.

REPORT DETAILS

Summary of Plant Status

Unit 3 began the inspection period shutdown for a scheduled refueling outage (U3R16) and steam generator replacement. The Unit 3 refueling outage was completed on February 18, 2011, and the plant returned to full power on March 3, 2011.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R18 Permanent Modification

a. Inspection Scope

The inspectors observed and reviewed key affected parameters associated with cable splicing after Unit 3 containment restoration. The inspectors reviewed cable splicing procedures and observed cable splicing, cable tray installation and testing. Inspectors observed technicians performing a review of the procedure steps during the installation of the environmental qualification splices.

The inspectors verified that: modification preparation, staging, and implementation of the splicing activities did not impair emergency/abnormal operating procedure actions, key safety functions, or operator response to loss of key safety functions; post-modification testing will maintain the plant in a safe configuration during testing by verifying that unintended system interactions will not occur; systems, structures and components' performance characteristics still meet the design basis; the modification design assumptions were appropriate; the modification test acceptance criteria will be met; and licensee personnel identified and implemented appropriate corrective actions associated with permanent plant modifications.

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

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA5 Other Activities

.1 Design and Planning Inspections

a. Inspection Scope

This inspection report documents inspection activities related to the San Onofre Nuclear Generating Station, Unit 3, steam generator replacement project.

These steam generator replacement inspection activities are not part of the normal baseline inspection program, but are performed on an as-needed basis. Therefore, no sample size is specified. The inspectors completed the applicable portion of Inspection Procedure IP 50001, "Steam Generator Replacement Inspection," including the post installation verification and testing inspections.

Engineering and Technical Support

Inspections to review engineering and technical support activities were performed prior to, and during, the steam generator replacement outage by resident and regional inspectors. Inspectors reviewed key design aspects and modifications associated with steam generator replacement. The inspectors reviewed the root cause evaluation and the extent of condition of replacement steam generator divider plate-to-channel head weld joint cracking.

The inspectors also reviewed safety analysis changes, permanent plant modifications (engineering change packages) and documentation, including safety screens and evaluations, to verify that they were performed in accordance with regulatory requirements and plant procedures. The inspectors also reviewed manufacturer records of parts and tubes of the replacement steam generators and reviewed preservice baseline eddy current examination results of new tubes. Additional activities were also performed during this inspection and applicable inspections are documented in NRC Inspection Report 05000361/2010005, 05000362/2010005; Sections 1R08, 1R18 and 1R20.

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

Radiation Protection Program

An inspection to review radiation protection controls was performed during the steam generator replacement outage by regional inspectors. The results of the inspection are documented in NRC Inspection Report 05000361/2010005, 05000362/2010005; Sections 2RS01 and 2RS02.

Security Considerations and Adverse Impact to Other Unit

The inspectors made frequent observations of security practices to verify that the licensee provided appropriate support for affected vital and protected area barriers during outage activities. The inspectors also checked for potential adverse impacts to Unit 2 (the nonoutage unit) caused by outage activities, equipment configurations, etc.

The inspectors reviewed steam generator replacement activities associated with risk management to minimize any adverse impact on the operating unit and common systems. Additional activities were also performed during this inspection and applicable inspection results are documented in NRC Inspection Report 05000361/2010005, 05000362/2010005; Section 1R13.

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

b. Findings

No findings were identified.

2. Steam Generator Removal and Replacement Inspections

a. Inspection Scope

The inspectors used the guidance in Inspection Procedure 50001 to select and perform the following inspection activities, consistent with the safety significance and inspection resources and as part of normal baseline inspection efforts.

Welding and Nondestructive Examination Activities

Inspectors reviewed or observed the following welding and nondestructive examination activities during the steam generator replacement outage:

- Qualification certifications for the Non-Destructive Examinations (NDE) examiners
- NDE procedures and NDE technician qualification records to verify they meet ASME code requirements
- Containment restoration plan and the NDE records to verify ASME code requirements were satisfied
- Contractors and Southern California Edison processes to verify they meet ASME code requirements
- Radiography films for several large bore pipe welds to verify the welds meet quality requirements
- Cable tray restoration activities, including post maintenance testing
- Results of mechanical snubber functional testing and associated nonconformance reports and nuclear notifications for safety related snubbers
- Review of the NDE of replacement tubes pre-service inspection results and baseline eddy current examination of tubes

These activities are documented in this report and in NRC Inspection Report 05000361/2010005, 05000362/2010005; Section 1R08.

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

Containment Opening Restoration Activities

The inspectors reviewed licensee activities related to construction activities associated with material, design, fabrication, installation, examination and testing of the containment temporary opening and restoration.

The inspectors completed the following inspection activities:

- Observation of restoration activities and review of the modification packages related to equipment hatch supports, containment liner and containment reinforcement bars
- Verification of the ASME code versions and sections to ensure compliance and correct application to the code and other industry standards
- Review of key containment design aspects found in the updated final safety analysis report to confirm there are no deviations from the safety analysis and licensing basis, including review of 10 CFR 50.59 screenings and evaluations
- Review of the liner plate welds strength analysis to verify that the restored liner will be as strong as the original uncut liner
- Review of the containment concrete pour analysis to ensure there will be no adverse impact on the liner plate
- Review of the design requirements of liner plate stiffeners to ensure the design requirements were adequate to withstand the loads imposed during concrete placement operations
- Visual inspections of liner plate stiffeners to confirm proper structural design requirements were implemented
- Confirming the use of dedicated new anchor heads during tendon restoration or if reused anchor heads were placed in service that material integrity was verified by inspection
- Confirmed that new tendon strands were used and adequate to support containment structural requirements
- Review of the tendon duct or sheathing restoration process to ensure the tendon activities were adequate, including grease fill and retensioning, to ensure containment structural integrity was not impacted, including visual inspections of the installed vertical and horizontal replacement tendon sheathing to confirm leak tightness
- Review of the engineering evaluations associated with containment opening repairs to re-enforcement bars including CadWeld joint design and weld splices

- Confirmed use of weld splices in place of CadWelds satisfied code requirements to ensure all aspects of the original containment structural design were met
- Review of the CadWeld purchasing, installation and testing specifications
- Observations of CadWeld sister splices in the field including verification of sister splices made by each welder for the CadWeld splices (under the same conditions and location) and subsequent tensile-testing to ensure adequate tensile strength of the joint was achieved
- Concrete batch plant operations including material storage and handling of concrete components
- Material test results (cement, fine and coarse aggregate, water, and admixtures)
- Concrete mix and proportion data, including batching results
- Concrete transportation and placement

Relative to installation of concrete, the inspectors witnessed placement of concrete in the containment wall to restore the temporary construction opening. The inspectors examined the reinforcing steel to ensure it was installed in accordance with design requirements, was properly cleaned, and observed the concrete forms to ensure tightness and cleanliness. The inspectors reviewed placement activities to ensure that activities pertaining to concrete delivery time, free fall, flow distance, layer thickness and concrete consolidation conformed to industry standards established by the American Concrete Institute (ACI). Concrete batch tickets were examined to ensure that the specified concrete was being delivered to the site. The inspectors also observed testing of the plastic concrete for slump and temperature, including test preparation and molding of the concrete cylinders. Reviews were performed to ensure concrete testing was performed and the cylinders were molded in accordance with applicable American Society Testing and Materials (ASTM) requirements. In addition, the inspectors reviewed activities to ensure that concrete testing was performed by qualified personnel and that concrete placement activities were continuously monitored by licensee and contractor quality control and quality assurance personnel.

The inspectors examined the concrete batch plant to verify proper storage and separation of materials and temperature controls. The inspectors reviewed results of quality control acceptance testing performed on materials (cement, fine and coarse aggregate, and admixtures) used for batching. The inspectors also reviewed records documenting inspection of the concrete batch plant and the concrete truck mixers. Activities were reviewed to determine if the contractor's inspection of the trucks and batch plant were performed in accordance with the guidance of the National Ready Mix Concrete Association, if the batch plant scales were calibrated in accordance with National Ready Mix Concrete Association recommendations, and if mixer efficiency tests were performed on the truck mixers in accordance with ASTM C-94. The inspectors reviewed the concrete mix data to ensure that mix proportions for delivered concrete were selected based on trial concrete mix results, that quality control acceptance criteria

for the plastic concrete were based on the trial mixes, and that the trial mix met concrete strength requirements.

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

Lifting, Rigging and Steam Generator Movement and Reconnection Activities

The inspectors observed and reviewed activities throughout the refueling outage associated with heavy lifting and rigging. The inspectors observed the implementation and reviewed documentation related to several structural modifications associated with the heavy lifting activities.

The inspectors also observed and reviewed engineering evaluations concerning the removal and reinstallation of the following structural modifications:

- Construction of the outside lift system and runway
- Lifting and rigging preparations associated with old steam generators removal
- Interference removal and replacement of new steam generators
- Temporary handling equipment construction and removal
- Structural supports to facilitate steam generator replacement

The results of these inspections are documented in NRC Inspection Report 05000361/2010005, 05000362/2010005; Section 1R18.

The following activities were also reviewed:

- Reactor cavity decking construction and removal
- Movement and reconnection of replacement steam generators
- Steam generator hold down / skirt bolts material condition
- Transfer of old steam generators to temporary storage

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

Outage Operating Conditions

The inspectors used Inspection Procedure 71111.20 to verify proper outage conditions such as defueling, reactor coolant drain down, system isolation and equipment tagging. The results of these inspections are documented in NRC Inspection Report 05000361/2010005, 05000362/2010005; Section 1R20.

Post-Installation Verification and Testing

Selective inspections and reviews were conducted by the inspectors on steam generator post-installation verification and testing including:

- Reactor coolant system leakage testing and water inventory balance
- Steam Generator secondary side leakage testing
- Hot gap measurement for replacement steam generator snubbers and restraints
- Distributed control system functional testing main turbine and feedwater controls

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

Containment Testing

The inspectors performed system walk downs, valve alignment checks, and observed the initiation, and conclusion of the Unit 3 containment integrated leakage rate test. The inspectors reviewed the test procedure and verified that the potential leakage from containment at the design basis accident pressure remained within the limits stated in technical specifications. The results of these inspections are documented in NRC Inspection Report 05000361/2011002, 05000362/2011002; Sections 1R04 and 1R19.

Steam Generator Secondary Side Leakage

The inspectors reviewed the secondary side leakage test results, and conducted a visual inspection of the steam generator's secondary side after the steam generators were filled to check for leakage.

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

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 05000361/2011002, 05000362/2011002; Section 1R20
- Calibration and testing of steam generator E089, wide range water level transmitters following steam generator replacement. These inspections are documented in NRC Inspection Report 05000361/2011002, 05000362/2011002; Section 1R19
- Setpoints and calibration changes to replacement steam generator level instruments. These inspections are documented in NRC Inspection Report 05000361/2011002, 05000362/2011002; Section 1R19

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

Foreign Materials Control

The inspectors performed frequent observations of the steam generator replacement activities to verify the licensee was implementing proper foreign materials controls. In particular, the inspectors observed controls related to reactor coolant system and secondary side openings.

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

Temporary Services

The inspectors reviewed the work package and drawings, and then observed the installation, use, and removal of temporary services in the containment building during the outage. Instructions for the use and controls for construction power, acetylene, oxygen, and argon were reviewed, and the actual installation of each system was compared to the approved system sketches.

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

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 results of these inspections are documented in NRC Inspection Report 05000361/2011002, 05000362/2011002; Section 1R20.

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

b. Findings

1. Adequacy of Model Inputs Used in Restoration of Nuclear Concrete Containment Structures

Introduction. The inspectors identified an unresolved item regarding the licensee's engineering modeling inputs related to restoration of Unit 2 and 3 containment buildings. During the inspection, insufficient information was available to determine if newer industry standards are appropriate to apply in the licensee finite element modeling of concrete stresses. The inspectors also questioned if the alternate modeling was allowed by NRC approved codes. The licensee considered using the inputs from the newer industry standards as an analytical refinement and not a methodology change. The inspectors could not determine if the licensee properly applied the Title 10 CFR 50.59 process to conclude the new analysis did not involve a departure from approved methods of evaluation. To address the concern, a Technical Interface Agreement (TIA 2011-008) was initiated with the NRC Office of Nuclear Reactor Regulation.

Discussion. During performance of the inspection, the inspectors reviewed three related engineering calculations and the screening required by 10 CFR 50.59 associated with the SONGS Unit 3 containment restoration. The licensee performed calculations and

evaluations of the structural integrity of the restored containment building. The calculations reviewed in conjunction with the inspection referenced models and equations from two contemporary reports; ACI 209R-92, "Prediction of Creep, Shrinkage, and Temperature Effects in Concrete Structures," and ACI 224.2R-92, "Cracking of Concrete Members in Direct Tension." These two ACI reports were not referenced in the licensee's concrete construction code of record, which is ACI 318-71, "Building Code Requirements for Reinforced Concrete," and BC-TOP-5, "Prestressed Concrete Nuclear Reactor Containment Structures." These reports were also not referenced in the licensee's final safety analysis report. The NRC determined the licensee's 10 CFR 50.59 evaluation did not address the referenced models and equation inputs from ACI 209R-92 and ACI 224.2R-92. Upon further questioning by the NRC about the appropriate use of the inputs, engineering personnel concluded that inputs from these reports did not represent a change in methodology to the original approved evaluation, in part, because the inputs were needed to address cracking, as required per the original analysis and was considered a calculation refinement. Pending review of documentation to determine if inputs from these reports do represent a change in methodology as described in the 10 CFR 50.59 evaluation, this issue will remain an Unresolved Item (URI) and tracked as URI 05000362/2010009-01; "Adequacy of Model Inputs Used in Restoration of Concrete Containment Structures."

40A6 Meetings

Exit Meeting Summary

On January 20, 2011, the inspectors presented a brief of the team inspection results to Mr. Mike Wharton, Manager, Steam Generator Replacement Project, and other members of the licensee's staff.

On March 11, 2011, the inspectors presented inspection results to Mr. Craig Harberts, Manager, Steam Generator Replacement Project, and other members of the licensee's staff.

On March 30, 2011, the inspectors presented the final inspection results to Mr. Rich St. Onge, Director, Nuclear Regulatory Affairs.

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.

40A7 Licensee-Identified Violations

The following finding of very low safety significance was identified by the licensee and is a violation of NRC requirements which met the criteria of Section 2.0 of the NRC Enforcement Policy, for being dispositioned as a noncited violation.

Contrary to 10 CFR, Part 50, Appendix B, Criterion III, "Design Control", the licensee failed to assure that design bases were correctly translated into

instructions for adjusting steam generator snubbers to their cold settings. On December 28, 2010, after entry into Mode 6, engineering discovered three of the four steam generator snubbers outside the design cold settings. The snubbers had been adjusted without consideration of the reactor coolant temperature. A subsequent change in reactor coolant temperature caused the snubbers to contract beyond the cold set allowance. The snubbers were reworked and adjusted to acceptable cold settings. The finding was determined to be of very low safety significance because it did not increase the likelihood of a loss of reactor coolant system inventory or degrade the licensee's ability to add reactor coolant inventory when needed. The issue was entered into the licensee's corrective action program as Nuclear Notifications NNs 201260722 and 201262831.

ATTACHMENT: Supplemental Information

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

D. Axline, Technical Specialist, Nuclear Regulatory Affairs
D. Bauder, Vice President and Station Manager
D. Calhoun, Senior Nuclear Engineer
E. Curley, QC Inspector, Bechtel
D. Czapski, Civil Inspector Level III
C. Harberts, Manager, Steam Generator Replacement Project
L. Hay, QA Manager, Bechtel
S. Hetherington, Civil Superintendent, Bechtel
E. Hubley, Director, Maintenance & Construction Services
L. Kelly, Engineer, Nuclear Regulatory Affairs
B. Kotteakos, Manager, Vendor Oversight
M. Lewis, Manager, Health Physics
A. Matheny, System Engineer
T. McCool, Plant Manager
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
R. St. Onge, Director, Nuclear Regulatory Affairs
D. Schaffer, Senior Nuclear Engineer
D. Todd, Manager, Site Projects Oversight
M. Wharton, Manager, Steam Generator Replacement Project

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000362/2010009-01 URI Adequacy of Model Inputs Used in Restoration of Nuclear
Concrete Containment Structures

Opened and Closed

None

LIST OF DOCUMENTS REVIEWED

Section 1R18: Permanent Modification

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
25221-000-GPP- GCPE-00003	General Construction Procedure "Cable Splicing, Terminations, and Supports"	3
25221-003-E0P- 7351-09006	Cable Splicing Inspection Record, 3XB09110a	0
25221-003-EOP- 7351-08803	SONGS Unit 3 SGRP – Work Package	0

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SO23-617-3- M173	San Onofre Nuclear Generating Station Unit 3 Bechtel Number 25221-003-EOK-2000-00029-002 Electrical Materials List Order # 800072644 (061200409-21)	2

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M-85121	EQ Document Package- Nuclear Grade Cable Accessories – New Formulation	5

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
NMO 800467844	SGR 3C16 WPIR 8803 3A034 work instructions	0
NECP 800072644	Remove Interferences Inside Unit 3 Containment for SGRP (ECP 061200409-21)	0

Section 40A5: Other Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SO123-XV-5	Nonconforming Material, Parts, or Components	20
SO123-XV-50	Corrective Action Program	19

SO123-XV-50.CAP-1	Writing Nuclear Notifications for Problem Identification and Resolution	5
SO123-XXIV-3.8.1	Visual Examination of Containment Concrete Surfaces	2
SO1223-XXIV-3.8.3	In Process Visual Examination of the Temporary Containment Opening	0
EOP-M-0002	Material Test and Receipt Equipment Operation Guideline, SATEC MII 400 HVL-1067	1
San Onofre 2&3 FSAR Section 3.8.1	Concrete Containment	
SO23-2-1.1	Main Feedwater Diverse Trip Tests	16

NUCLEAR NOTIFICATIONS

<u>NUMBER</u>				
201262794	201262795	200703527	200715236	201246811
201248624	201251137	201260722	201262831	

WORK ORDERS

<u>NUMBER</u>				
800601025	800476248	800511293	800467844	800072644
800072650	800508764	8000314616		

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SO23-916-18	Steam Generator Sliding Base Installation	4
ECN D00442876	Steam Generator Sliding Base Installation	4
23027	SH 2, Containment Structure Reinforced Concrete Wall Section & Details, SHT. 5	0
20000	General Notes	14

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SO23-409-2-10-M32	RCP/Steam Generator Hydraulic Snubbers	0
C-257-04.02.01 ECN D0035216	Finite Element Analysis for Stiffener Plates for Containment Liner Replacement	September 10, 2010
CS-C2	Concrete Placement and Grouting	20

CS-C4	Reinforcement Steel Placement	9
CS-C5	Structural Steel Erection	14
20123-201-09	Specification for Ready-Mixed Concrete for SONGS 1, 2 and 3	4
S023-617-10	Specification for the Purchase of Containment Opening Concrete	2
S023-617-11	Specification for the Purchase of Reinforcing Steel	0
S023-617-12	Specification for the Purchase of Cadweld Splices	0
S023-617-13	Specification for the Installation and Testing of Cadweld Splices	1
Engineering Change Package (ECP) No. 800072669 (ASC No. D0042675)	Unit 3 Containment Opening	0
C-257-01.04.05	Evaluation of Restored Containment - Concrete Modulus Ratio and Tendon Retensioning Forces	0
C-257-01.04.06	Evaluation of Restored Containment: End-of-Life Analysis	0
Engineering Change Notice (ECN) No. D0020134, Calc. No. C-257-01.04.06		September 22, 2009
SO23-617-1-C1030	SONGS Unit2/3-Evaluation of the Impact of RSGs on the COLSS Functional Design and CPC/CEAC Functional Design Specifications	0
25221-003-G61-GCX-00124	E-089 Feedwater RT Indication	1
25221-000-C0C-7100-00011	OLS and Runway Erection and Collapse Load Drop Effects	0
25221-000-MoC-1000-00002	SONGS Steam Generator Drop Dose Analysis	0
<u>WP&IR CHANGE NOTICES</u>		
	<u>NUMBER</u>	<u>DATE</u>
	25221-003-C0N-3053-00126	November 29, 2010
	25221-003-C0N-3053-00126	December 01, 2010

NONDESTRUCTIVE EXAMINATION REPORTS

NUMBER

MT-U3-027	MT-U3-028	MT-U3-029	MT-U3-030	MT-U3-031
MT-U3-032	MT-U3-033	MT-U3-034	MT-U3-035	MT-U3-036
MT-U3-037	MT-U3-038	MT-U3-045	MT-U3-046	MT-U3-047
MT-U3-050	MT-U3-052	MT-U3-069	MT-U3-070	MT-U3-071
MT-U3-073	MT-U3-074	MT-U3-075	MT-U3-076	MT-U3-077
MT-U3-078	MT-U3-079	LT(VB)-001	RT-U3-286	RT-U3-287
RT-U3-288	RT-U3-291	RT-U3-292	RT-U3-293	

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
P1-A-Lh	Welding Procedure Specification (Manual shielded metal arc welding of carbon steel materials.)	0
NWR-YQ-1310	Welding Procedure Qualification Record	June 28, 2001
25221-003-C0P-3053-00126	CTMT Opening-Liner Plate	0
3-C0P-3053-00126	Repair/Replacement Plan (RRP) CTMT Opening-Liner Plate	0
25221-003-C0P-3053-00126-000	SONGS Unit 2 Steam Generator Replacement Project Work Package and Inspection Records	June 23, 2010
25221-003-C0P-3053-00126-002	SONGS Unit 2 Steam Generator Replacement Project Work Package and Inspection Records	October 28, 2010
	Inspection Report for Steam Generator Sliding Base Nuts Inspection Lot 10000031206	January 10, 2011
131606	Certification of Steam Generator Sliding Base Nuts	January 9, 2011
SO23-617-1-M1414	SONGS Unit 2/3 RSG Divider Plate Weld Joint Separation Root Cause Evaluation Report	0
1370-PE-503	Project Specification for Steam Generator Sliding Base for Southern California Edison San Onofre 2 & 3	3
NECP 800072650	Small Bore Piping for the SGR Project Unit 3 (ECP 061200409-27)	0

NECP 800072650 (ASC D0036716)	Small Bore Secondary Piping for the SGR Project Unit 3 (ECP 061200409-27) Applicable Section Change	0
NMO 800508764	Support SGR: Re-range 3LT1106(NECP)	0
J-ABA-010	Steam Generator Wide Range Level Transmitter Scaling	September 2, 2010
J-ABA-002	Steam Generator Narrow Range Level Transmitter Scaling	September 2, 2010
J-ABB-059	Scaling Calculation For Main Steam Flow Transmitter	June 1, 2009
Change Notice No. 2008-33	Steam Generator Replacement	November 19, 2008
UFSAR 2/3-15.10 CAN D0031803	RCPSS & IOSGADV (w/ & w/o SF) AST dose analysis	April 26, 2010
Change Notice No. D0030223	UFSAR Updated for U2C16 Reload Analysis	March 19, 2010
WCAP-16811-P	SONGS Units 2 and 3 Replacement Steam Generator Project NSSS Licensing Topical Report	October 2007
S023-617-10-M9	Catalina Pacific – Mix Design	0
Twining Laboratories	Laboratory Testing of Coarse and Fine Aggregate	October 1, 2009
CTL Group	Petrographic Examination of Coarse and Fine Aggregate Samples	September 28, 2009
Vendor Calibration Report for Satec HVL 400	Asset Number PE-0138, performed by Instron Calibration Laboratory	January 26, 2010
Personnel Qualification Standard for SATEC 400K Tensile/Compression Machine (TX0202)		1
Personnel Qualification Records Examination Report	Visual Examination of the Containment Construction Opening Concrete Surface prior to ILRT	January 19, 2011

Examination Report	Visual Examination of the Containment Construction Opening Concrete Surface at ILRT Test Pressure	February 2, 2011
Examination Report	Visual Examination of the Containment Construction Opening Concrete Surface After the ILRT	February 22, 2011
Nonconformance Report (NCR) No. 25221-003-G61-GCX- 00126		
HPCR 25221-003- G61-GCX-00101	Outside Lift System Strand Jack Binding	1