



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

December 22, 2010

EA-08-296

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 - NRC INSPECTION  
PROCEDURE 95001 SUPPLEMENTAL INSPECTION REPORT 05000361/2010011; AND  
INTERIM ASSESSMENT LETTER

Dear Mr. Dietrich:

On November 15 through November 19, 2010, the U.S. Nuclear Regulatory Commission staff performed the on-site portion of a supplemental inspection pursuant to Inspection Procedure 95001, "Inspection for One or Two White Inputs in a Strategic Performance Area," at your San Onofre Nuclear Generating Station, Unit 2 facility. This inspection was performed following notification to the NRC on August 23, 2010, of your staff's readiness for this inspection. The enclosed inspection report documents the inspection results. Preliminary inspection results were discussed with Mr. J. Sheppard, Senior Vice President and Chief Nuclear Officer, and other members of your staff on November 19, 2010. Final inspection results were discussed with you and your staff at an exit meeting conducted on December 21, 2010.

As required by the NRC Reactor Oversight Process Action Matrix, this supplemental inspection was performed because a finding of low to moderate safety significance (White) under the Mitigating Systems cornerstone was identified in the 4th quarter of 2008. The White finding was associated with the failure to establish appropriate instructions and performance oversight for replacement of the Unit 2 safety-related battery 2B008 output breaker which resulted in the battery being inoperable due to loose breaker bolts from May 2004 to March 2008. This issue was documented previously in NRC Inspection Report 05000361; 362/2008013. A supplemental inspection was completed on December 4, 2009, and documented in NRC Inspection Report 0500361; 362/2009008. The supplemental inspection concluded that objective numbers 1 and 2 of NRC Inspection Procedure 95001 were met, but that objective number 3 was not met in that the NRC lacked assurance that your corrective actions were fully developed and that their implementation would be effective.

The objective of this supplemental inspection was to provide assurance that objective number 3; "Corrective actions were or will be sufficient to address and preclude repetition of the root and contributing causes," of NRC Inspection Procedure 95001 was met. The inspection consisted of examination of activities conducted under your license as they related to safety, compliance with the Commission's rules and regulations, and the conditions of your license.

Based on the results of this inspection, no findings of significance were identified. The NRC determined that the corrective actions implemented to address the deficiencies leading to the White finding and to prevent recurrence were adequate to address the technical as well as organizational performance issues. Therefore, the White finding (05000361/2008013-05), "Failure to Establish Appropriate Instructions" is closed. This finding will continue to be considered for evaluation of NRC Action Matrix column status until December 31, 2010, in accordance with NRC Manual Chapter 0305, "Operating Reactor Assessment Program." As a result, the NRC determined the performance at San Onofre Nuclear Generating Station, Unit 2, to be in the Licensee Response Column (Column 1) of the Reactor Oversight Process Action Matrix as of the date of this letter. San Onofre Nuclear Generating Station, Unit 3 remains in the Licensee Response Column.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) 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, Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Website 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: Inspection Report 05000361/2010011  
w/ Attachment: Supplemental Information  
cc w/Enclosure:

Southern California Edison Company

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Inspection Reports/MidCycle and EOC Letters to the following:  
ROPreports

Only inspection reports to the following:  
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ADAMS: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input type="checkbox"/> SUNSI Review Complete	Reviewer Initials:RL	
	<input checked="" type="checkbox"/> Publicly Available	<input checked="" type="checkbox"/> Non-Sensitive	
	<input type="checkbox"/> Non-publicly Available	<input type="checkbox"/> Sensitive	
SRI:DRS/Ops	OE:DRS/Ops	C:DRP/D	
SGraves	NHernandez	RLantz	
/RA/	/RA/	/RA/	
12/21/2010	12/21/2010	12/21/2010	

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**U.S. NUCLEAR REGULATORY COMMISSION (NRC)**

**REGION IV**

Docket: 50-361

Licenses: NPF-10

Report No.: 05000361/2010011

Licensee: Southern California Edison Company (SCE)

Facility: San Onofre Nuclear Generating Station, Unit 2

Location: 5000 South Pacific Coast Highway  
San Clemente, California

Dates: November 15, 2010 through December 21, 2010

Inspectors: N. Hernandez, Reactor Inspector  
S. Graves, Senior Reactor Inspector

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

## SUMMARY OF FINDINGS

Inspection Report 05000361/2010011; 11/15/2010 – 12/21/2010; San Onofre Nuclear Generating Station, Unit 2, Supplemental Inspection - Inspection Procedure (IP) 95001.

The inspection was performed by a senior reactor inspector and a reactor inspector from the NRC Region IV office.

The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. 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**

#### **Cornerstone: Mitigating Systems**

The NRC staff performed this follow up supplemental inspection (Inspection Procedure 95001, "Inspection for One or Two White Inputs in a Strategic Performance Area,") to assess the licensee's effectiveness and progress in the broad corrective actions that were developed as a result of the White finding associated with the failure to establish appropriate instructions and performance oversight for replacement of the Unit 2 safety-related battery 2B008 output breaker in March 2004. The inspectors determined that the corrective actions were adequate to address the root and contributing causes of the White finding, and to prevent recurrence. Therefore, the White finding (05000361/2008013-05), "Failure to Establish Appropriate Instructions" is closed.

#### **Findings**

No findings were identified.

### **B. Licensee-Identified Violations**

None

## REPORT DETAILS

### 4. OTHER ACTIVITIES

#### 4OA4 Supplemental Inspection (95001)

##### a. Inspection Scope

The NRC staff performed this supplemental inspection in accordance with portions of Inspection Procedure (IP) 95001 to assess the licensee's corrective actions for a low to moderate safety significant (White) inspection finding, which affected the mitigating systems cornerstone in the reactor safety strategic performance area. The inspection objective was to provide assurance that the licensee's corrective actions for risk-significant performance issues were sufficient to address the root and contributing causes and to preclude recurrence. This objective was accomplished by direct inspection, using section 02.03, "Corrective Actions," of Inspection Procedure 95001.

The licensee entered the Regulatory Response Column of the NRC's Action Matrix in the 4th quarter of 2008 as a result of an inspection finding of low to moderate safety significance (White). The White finding was associated with a violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," involving the failure to establish appropriate instructions for performing maintenance activities on safety-related 125 Vdc station battery breaker 2D201, which resulted in a degraded condition that existed for approximately 4 years. The White finding was found as part of a special inspection tasked with examining station activities associated with deficient electrical connections having the potential to adversely affect the safety function of multiple safety systems used for accident mitigation. The final significance determination, performed by the regional senior reactor analyst and approved by the NRC significance and enforcement review panel, determined the finding was of low to moderate safety significance, and was discussed in NRC inspection report 05000361;362/2008013.

In response to this white finding the NRC conducted a supplemental inspection from November 30, 2009 to February 24, 2010. This supplemental inspection concluded that objective numbers 1 and 2 of Inspection Procedure 95001 were met; however, for objective number 3, corrective actions needed more time to be fully developed and implemented. Therefore a follow up supplemental inspection would be conducted in calendar year 2010. Your staff informed the NRC on August 23, 2010 of their readiness for this supplemental inspection.

In preparation for the inspection, the licensee performed trending analysis to determine the effectiveness of the corrective actions and to identify weaknesses that existed in their organizational culture and processes that should be further addressed. The inspectors reviewed numerous corrective actions that were taken to address the identified root and contributing causes. The inspectors also held discussions with licensee personnel to assess whether the root and contributing causes were understood and corrective actions taken were appropriate to address the causes and preclude repetition.



.1 Evaluation of the Inspection Requirements

Corrective Actions

- A. IP 95001 requires that the inspection staff determine if the licensee specified appropriate corrective actions for each root and/or contributing cause.

The licensee's root cause evaluations developed over 100 corrective actions to be implemented for the white finding, including the technical issue of the loose battery breaker bolts, and the associated human performance deficiencies. The root cause evaluations and corrective actions associated with the loose bolts were determined to be appropriate based on the supplemental inspection performed from November 30, 2009 – February 24, 2010 and documented in NRC inspection report 05000361;362/2008013. For the human performance deficiencies, one root cause and five contributing causes were identified.

Examples of corrective actions for the root cause included:

- Change maintenance procedures to add requirements to immediately notify the control room and back out of tasks pending further guidance when surveillances fail
- Conduct stand-down meetings with all leaders for the purpose of reviewing policies governing procedure use and procedure adherence. This meeting emphasizes that procedure compliance is necessary to ensure continued operation of the station
- The human performance program has been strengthened by redesigning procedures to incorporate the results of industry benchmarking
- Add conservative decision making in initial and annual refresher training
- Management to communicate and reinforce to employees the expectation that work instructions and procedures will be followed verbatim, or work stopped until the procedure issue is resolved
- Trend procedure non-compliance issues

Similarly, examples of the corrective actions taken or planned for the contributing causes included:

- Communicate revised expectations for technical specification surveillance implementation and communication within operations, maintenance, and work control
- Develop and institutionalize an integrated risk management program to include identification of risk significant activities and evolutions, risk assessment guidance for emergent activities and operations awareness of all risk sensitive activities

- Develop and implement metrics for written instruction use and adherence and quality, and create a quality measurement process procedure to be used by procedure writers for consistent review of procedure quality Revise the Human Performance procedure to define a list of potential error traps for written instructions and expectations for use and adherence
- Develop guidance for Shift Managers to communicate the need for absolute clarity when approving work flow methodology during emergent work that impacts the safe and reliable operation of the plant
- Communicate to employees that SONGS personnel must act to prevent non-conservative decision making at all levels by emphasizing:
  - Proper procedure use and adherence
  - Notify the control room whenever something “goes wrong” or is amiss in the field
  - A questioning attitude
  - Need to move away from the “presumption of operable” mindset
  - Significance of NRC Enforcement Actions

The inspectors determined that the corrective actions for the root and contributing causes were appropriate and addressed each root and contributing cause.

- B. IP 95001 requires that the inspection staff determine if the licensee prioritized corrective actions with consideration of risk significance and regulatory compliance.

The licensee’s corrective actions to address the root and contributing causes for the human performance deficiencies reflected the licensee’s understanding that significant corrective actions were required to address the cultural issues. The senior management team has adequately changed the station’s behaviors to reflect best industry practices, and placed appropriate emphasis on returning the station to excellence. The inspectors reviewed the corrective actions and found that they were appropriately prioritized with respect to risk-significance and regulatory compliance.

- C. IP 95001 requires that the inspection staff determine if the licensee established a schedule for implementing and completing the corrective actions.

The licensee’s root cause evaluation provided cross reference between the root and contributing causes to the corrective action items associated with each. The licensee developed tables indicating the priority, assigned owner, required completion date and a description of each action item. The licensee established due dates and assignments for the corrective actions in accordance with their corrective action procedure SO123-XV-50, "Corrective Action Program."

- D. IP 95001 requires that the inspection staff determine if the licensee developed quantitative and/or qualitative measures of success for determining the effectiveness of the corrective actions to preclude repetition.

As documented in the associated RCEs, the licensee established measures for determining the effectiveness of the corrective actions. These measures included the following:

- Monitoring the number of work plans that are issued with missed critical steps and without defense-in-depth steps
- An assessment of the adequacy of supervisory oversight of the maintenance personnel. The review includes field observation of pre-job briefs, critical step identification, critical step verification by supervisors and use of procedures in the field, emphasizing procedure adherence
- Performance of an effectiveness review of the corrective actions to confirm the safety culture aspects identified in this RCE have been addressed
- Review of critical step verification for proper torquing of bolts and fasteners required in work orders through sampling of work orders generated in the last 2 years
- An assessment to identify potentially loose electrical connections and determine, based on risk to the plant, if follow-up activities are necessary to verify connection integrity

The licensee staff entered these issues into their corrective action program to ensure that effectiveness reviews and enhanced monitoring were performed. The inspectors determined that quantitative and qualitative measures of success had been developed for determining the effectiveness of the corrective actions to preclude repetition.

b. Findings

No findings were identified.

## **4OA6 Meetings**

### Exit Meeting Summary

On November 19, 2010, the inspectors presented the preliminary inspection results to Mr. J. Shepherd, Chief Nuclear Officer, and other members of his staff. Mr. Shepherd acknowledged the information, and that regional management would review the information to make a final decision on status of the White finding. On December 21, 2010, the final inspection results were presented in a teleconference with Mr. P. Dietrich, and members of his staff. The inspectors asked the licensee if any proprietary material had been examined during the inspection. The licensee did not identify any proprietary information.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee**

P. Dietrich	Senior Vice President and Chief Nuclear Officer
J. Shepherd	Senior Vice President and Chief Nuclear Officer (Temp)
D. Bauder	Site Vice President and Station Manager
R. St. Onge	Director, Nuclear Regulatory Affairs
R. Corbett	Director, Performance Improvement
G. Kline	Senior Director, Engineering and Support Services
T. McCool	Plant Manager
B. Wallace	Director, Nuclear Training
E. Hubley	Director, Maintenance and Construction
K. Johnson	Manager, Design Engineering
C. Williams	Manager, Inspections
M. McBrearty	Engineer, Nuclear Regulatory Affairs
S. Ryba	Project Manager, Performance Improvement
S. Chun	Manager, Mechanical Engineering
C. Mell	Manager, Maintenance
T. O'Meara	Manager, Nuclear Safety Culture

#### **Nuclear Regulatory Commission**

G. Warnick	Senior Resident Inspector
M. Young	Resident Inspector
J. Reynoso	Resident Inspector

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

#### **Opened**

None

#### **Closed**

05000361/2008013-05	VIO	Failure to Establish Appropriate Instructions
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#### **Discussed**

None

## LIST OF DOCUMENTS REVIEWED

### Work Orders

800524695	800527605	800369795
800141400	800049974	

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
SO123-XV-50.CAP-5	Corrective Action Effectiveness	2
SO23-XX-8	Integrated Risk Management	5
SO123-I-1.7	Work Order Preparation and Processing	35
SO123-XV-109	Processing Procedures and Instructions	3
SO123-XV-50	Corrective Action Program	12
SO123-0-A1	Conduct Of Operations	26
SO123-XV-HU-1	Human Performance Program	4
SO123-XV-HU-2	Human Performance Tools	2
SO123-XV-HU-3	Written Instruction Use and Adherence	0
SO123-XX-5	Work Clearance Application/Work Clearance Document/Work Authorization Record	26

### Nuclear Notifications

200985973	200894349	201069890
200690358	201064038	200843822
201070344	200689412	200891013
200887861	200955673	201058126
200923195	200895095	200972596
201206988*	200770421	200797395
201092078	201205438*	200841223
200738704	200845084	201209242*
201208715*	201209015*	201208951*
201209013*	201209113*	201207455*
201206988*	201205438*	

\*Issued as a result of inspection activities.

## Miscellaneous Documents

Number	Title	Rev/Date
800232925-0010	Root Cause Evaluation (RCE) – Previous evaluations and assessment were inadequate in identifying all the underlying issues and causes	2
	Summary Table of Corrective Actions for Root Cause	11/15/2010
800389758-0010	Effectiveness Review Condition Report for Cause Evaluations	11/10/2010
800389754-0010	Effectiveness Review Condition Report for Cause Evaluations	11/08/2010
	Prompt Investigation for NN 200891013 & 200891074	4/29/2010
	Snapshot Assessment- Effectiveness Review for Battery Breaker Loose Connection Event	9/30/2010
	95001 Mock Inspection Exit Paper	9/24/2010
200845084	Apparent Cause Evaluation for U2R16 Vacuum	3/05/2010
	Circuit Breaker Design Change	
	SONGS Human Performance Tools Handbook for All Workers	0
	SONGS Excellence Guidebook	
	Management Review Metrics	October 2010