



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

October 30, 2008

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 – NRC INTEGRATED
INSPECTION REPORT 05000361/2008004 AND 05000362/2008004

Dear Mr. Ridenoure:

On September 26, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your San Onofre Nuclear Generating Station, Units 2 and 3 facility. The enclosed integrated report documents the inspection findings, which were discussed on September 24, 2008, with you and other members of your staff.

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

Based on the results of this inspection, one self-revealing finding of very low safety significance (Green) was identified. The finding involved a violation of NRC requirements. If you contest this 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 DC 20555-0001; with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission Region IV, 612 East Lamar Blvd., Suite 400, Arlington, Texas 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001; and the NRC Resident Inspector at the San Onofre Nuclear Generating Station.

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 made 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), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Michael C. Hay, Chief
Project Branch D
Division of Reactor Projects

Docket Nos. 50-361
50-362

License Nos. NPF-10
NPF-15

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NRC Inspection Report 05000361/2008004 and 05000362/2008004
w/Attachment: Supplemental Information

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SUNSI Review Completed: MCH ADAMS: ☒ Yes ☐ No Initials: MCH
☒ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ☒ Non-Sensitive

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ML083040180

RIV:RI:DRP/D	SRI:DRP/D	SPE:DRP/D	C:DRS/PSB2	C:DRS/PSB
JPreynoso	GWarnick	DAllen	GWerner	MPShannon
/RA/MCH for	/RA/MCH for	/RA/	/RA/	/RA/
10/30/2008	10/30/2008	10/23/2008	10/24/2008	10/24/2008
C:DRS/OB	C:DRS/EB1	C:DRS/EB2	C:DRP/D	
RELantz	RLBywater	NO'Keefe	MCHay	
/RA/	/RA/KDC for	/RA/GEP for	/RA/	
10/23/2008	10/24/2008	10/24/2008	10/30/2008	

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

Dockets: 50-361, 50-362

Licenses: NPF-10, NPF-15

Report: 05000361/2008004 and 05000362/2008004

Licensee: Southern California Edison Co. (SCE)

Facility: San Onofre Nuclear Generating Station, Units 2 and 3

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

Dates: June 27 through September 26, 2008

Inspectors: M.T. Baquera, Reactor Inspector, Project Branch D, DRP
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Approved By: Michael C. Hay, Chief
Project Branch D
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000361/2008004, 05000362/2008004, 06/27/08 – 09/26/08; San Onofre Nuclear Generating Station, Units 2 and 3; Integrated Resident and Regional Report; Followup of Events and Notices of Enforcement Discretion.

This report covered a 3-month period of inspection by resident inspectors and regional inspectors. The inspection identified one finding. 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's 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 and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. Two examples of a self-revealing noncited violation of 10 CFR 50, Appendix B, Criterion V, were identified for the failure of engineering personnel to follow procedures for the movement of nuclear fuel in the spent fuel pool. Specifically, on July 3, 2008, and again on August 26, 2008, spent fuel assemblies were placed into storage locations that were different than the evaluated and approved locations specified on Procedure SO23-X-7.2, Attachment 4. This finding was entered into the licensee's corrective action program as Nuclear Notification 200116680.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected in that nuclear fuel could be inadvertently placed in an unanalyzed location. Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," was used since the Significance Determination Process methods and tools were not adequate to determine the significance of the finding. This finding affects the initiating events cornerstone and is determined to have very low safety significance by NRC management review because the incorrect fuel storage locations were determined to be acceptable storage locations for the fuel assemblies in question. This finding has a crosscutting aspect in the area of human performance associated with work practices because engineering personnel failed to use human error prevention techniques commensurate with the risk of the assigned task, such that work activities were performed safely [H.4.(a)] (Section 4OA3.2).

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period at essentially full power until September 22, 2008, when power was reduced to 65 percent to repair main feedwater Turbine K005 lube oil pipe flange leak. The unit was returned to full power on September 26 and remained there for the duration of the inspection period.

Unit 3 operated at essentially full power until August 14, 2008, when power was reduced to 65 percent to repair main feedwater Turbine K006 trip mechanism then returned to essentially full power on August 18. On September 1, the unit was shutdown to comply with Technical Specification 3.8.1 limiting condition for operation for an inoperable emergency diesel Generator (EDG) 3G003. Following repairs to EDG 3G003, the unit commenced a reactor startup on September 11 and reached essentially full power on September 13. On September 17, heater drain Pump 3P058 tripped and power was reduced to 98 percent. On September 20, power was reduced to 75 percent to alleviate an extraction steam line bellows leak and to accommodate condenser tube leak repairs. The unit remained at 75 percent for the duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

Readiness For Seasonal Extreme Weather Conditions

The inspectors completed a review of the licensee's readiness of seasonal susceptibilities involving extreme high temperatures and seasonal conditions. The inspectors: (1) reviewed plant procedures, the Updated Final Safety Analysis Report (UFSAR), and technical specifications (TS) to ensure that operator actions defined in adverse weather procedures maintained the readiness of essential systems; (2) walked down portions of the system listed below to ensure that adverse weather protection features (heat tracing, space heaters, weatherized enclosures, temporary chillers, etc...) were sufficient to support operability, including the ability to perform safe shutdown functions; (3) evaluated operator staffing levels to ensure the licensee could maintain the readiness of essential systems required by plant procedures; and (4) reviewed the corrective action program (CAP) to determine if the licensee identified and corrected problems related to adverse weather conditions.

- July 14, 2008, Units 2 and 3, the inspectors completed a review of the licensee's readiness of offsite and onsite ac power systems for the high grid loading season

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

External Flooding

The inspectors completed a review of the licensee's readiness for impending adverse weather that poses a risk of flooding. The inspectors: (1) reviewed the UFSAR and related flood analysis documents to identify those areas that can be affected by external flooding, seasonal susceptibilities such as floods caused by hurricanes, heavy rains and flash flood, and problem reports and corrective actions for past flooding events; (2) selected plant areas containing risk significant structures, systems, and components (SSCs) which are below flood levels or otherwise susceptible to flooding to walk down; (3) walked down the selected areas by observation/design review, including reviews of preventive maintenance activities; (4) inspected, where possible, underground bunkers/manholes subject to flooding that contain multiple train or multiple function risk-significant cables; (5) verified, for those areas where operator actions are credited, that the procedures for coping with flooding can reasonably be used to achieve the desired actions; (6) evaluated implementation of flood protection preparation procedures and compensatory measures during impending conditions of flooding or heavy rains; and (7) reviewed the CAP to determine if the licensee identified and corrected problems related to external flooding.

- August 21, 2008, Units 2 and 3, storage tank building and auxiliary feedwater (AFW) pump room

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial Walkdown

The inspectors: (1) walked down portions of the three below listed risk important systems and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; and (2) compared deficiencies identified during the walk down to the licensee's UFSAR and CAP to ensure problems were being identified and corrected.

- July 17, 2008, Unit 3, EDG 3G002
- July 31, 2008, Unit 2, EDG 2G002
- August 27, 2008, Unit 2, AFW Train B while AFW Train A was inoperable due to discharge valve maintenance

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

Quarterly Inspection

The inspectors walked down the four below listed plant areas to assess the material condition of active and passive fire protection features and their operational lineup and readiness. The inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional and that access to manual actuators was unobstructed; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were established for degraded or inoperable fire protection features and that the compensatory measures were commensurate with the significance of the deficiency; and (7) reviewed the CAP to determine if the licensee identified and corrected fire protection problems.

- August 7, 2008, Unit 3, penetration building Rooms 209, 210, and 213
- August 7, 2008, Unit 3, saltwater cooling water piping tunnel and pump room
- August 19, 2008, Unit 3, AFW pump room
- August 20, 2008, Unit 2, safety equipment building Rooms 6 through 14 and 16 through 26

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

Annual Inspection

On September 4, 2008, the inspectors observed a fire department drill to evaluate the readiness of licensee to prevent and fight fires, including the following aspects: (1) coordination with outside resources (e.g. Operations, Security Camp Pendleton fire department); (2) use of protective clothing; (3) use of breathing apparatuses; (4) use of fire procedures and declarations of emergency action levels; (5) command of the fire department; (6) implementation of pre-fire strategies and briefs; (7) access routes to the

fire and the timeliness of the fire department response; (8) establishment of communications, (9) effectiveness of radio communications; (10) placement and use of fire hoses; (11) entry into the fire area; (12) use of fire fighting equipment, (13) searches for fire victims and fire propagation, (14) smoke removal; (15) use of pre-fire plans; (16) adherence to the drill scenario; and (17) performance of the post-drill critique. The licensee simulated a fire at the Unit 2 turbine generator. Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11)

a. Inspection Scope

Quarterly Inspection

The inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique.

The inspectors evaluated the training of operations staff on August 26, 2008, which involved a loss of 125 Vdc Bus D2, a reactor coolant pump seal failure, and excessive steam demand. The scenario involved a loss of vital bus situation requiring functional recovery actions. Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the two below listed maintenance activities to: (1) verify the appropriate handling of SSC performance or condition problems; (2) verify the appropriate handling of degraded SSC functional performance; (3) evaluate the role of work practices and common cause problems; and (4) evaluate the handling of SSC issues reviewed under the requirements of the Maintenance Rule, 10 CFR Part 50, Appendix B, and the TSs.

- July 23, 2008, Units 2 and 3, control room isolation Damper 2/3HV-9779 replacement
- August 4, 2008, Unit 2, saltwater cooling Pump 2P113 replacement activities

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

Risk Assessment and Management of Risk

The inspectors reviewed the two below listed assessment activities to verify: (1) performance of risk assessments when required by 10 CFR 50.65 (a)(4) and licensee procedures prior to changes in plant configuration for maintenance activities and plant operations; (2) the accuracy, adequacy, and completeness of the information considered in the risk assessment; (3) that the licensee recognizes, and/or enters as applicable, the appropriate licensee-established risk category according to the risk assessment results and licensee procedures; and (4) the licensee identified and corrected problems related to maintenance risk assessments.

- July 15, 2008, Unit 2, Class 1E Battery B00X connection to Train B 125 Vdc Bus 2D2
- August 19, 2008, Units 2 and 3, 125 Vdc Class 1E Battery B00X service test

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

Emergent Work Control

The inspectors: (1) verified that the licensee performed actions to minimize the probability of initiating events and maintained the functional capability of mitigating systems and barrier integrity systems; (2) verified that emergent work-related activities such as troubleshooting, work planning/scheduling, establishing plant conditions, aligning equipment, tagging, temporary modifications, and equipment restoration did not place the plant in an unacceptable configuration; and (3) reviewed the CAP to determine if the licensee identified and corrected risk assessment and emergent work control problems.

- July 30, 2008, Units 2 and 3, risk management actions following earthquake and potential increased risk associated with aftershocks
- August 20, 2008, Unit 3, EDG 3G003 outage due to rotor damper winding fracture

- September 15, 2008, Unit 3, moisture found in electrical junction box for high pressure safety injection Pump 0019, requiring voluntary entry into TS 3.0.3 to remove from service

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and night orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the UFSAR and design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any TSs; (5) used the Significance Determination Process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components.

- July 21, 2008, Unit 2, fire detection Panel 3L414 feeder breaker opened due to degraded relay
- August 19, 2008, Units 2 and 3, 125 Vdc Class 1E Battery B00X service test
- August 18, 2008, Unit 3, operability impact of steam leak on main steam line to AFW pump Valve S31301MU222
- August 20, 2008, Unit 2, operability impact of oil leak from motor for component cooling water Pump 2P025 discharge to Train A block Valve 2HV6226A
- August 21, 2008, Unit 3, EDG 3G002 operability run following discovery of EDG 3G003 shunt winding failure
- September 10, 2008, Unit 3, instrument air header leak

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

Temporary Modifications

The inspectors reviewed the UFSAR, plant drawings, procedure requirements, operator logs, and TSs to ensure that the below listed temporary modification was properly implemented. The inspectors verified that: (1) the modifications did not have an effect on system operability/availability; (2) the installation was consistent with modification documents; (3) the post-installation test results were satisfactory and that the impact of the temporary modifications on permanently installed SSCs were supported by the test; (4) the modifications were identified on control room drawings and that appropriate identification tags were placed on the affected drawings; (5) the licensee evaluated the combined effects of temporary modifications; and (6) there were no temporary modifications installed that have not been evaluated. The inspectors verified that the licensee identified and implemented any needed corrective actions associated with temporary modifications.

- September 8, 2008, Unit 3, soft patch installed on instrument air line to reduce amount of flange leakage

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the four below listed post-maintenance test activities of risk significant systems or components. For each item, the inspectors: (1) reviewed the applicable licensing basis and/or design-basis documents to determine the safety functions; (2) evaluated the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that acceptance criteria were met, plant impacts were evaluated, test equipment was calibrated, procedures were followed, jumpers were properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly re-aligned, and deficiencies during testing were documented. The inspectors also verified that the licensee identified and corrected problems related to post-maintenance testing.

- August 7, 2008, Unit 2, post-maintenance test following corrective maintenance to primary makeup water isolation Valve MU699

- August 7, 2008, Unit 2, charging Pump 2MP191 test following preventative maintenance
- August 21, 2008, Unit 2, EDG 3G002 post-maintenance test following rotor damper winding inspection
- September 3, 2008, Unit 3, EDG 3G003 post-maintenance test following generator replacement

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the following risk significant outage activities to verify defense in depth commensurate with the outage risk control plan and compliance with the TSs: (1) the risk control plan; (2) reactor coolant system instrumentation; (3) electrical power; (4) decay heat removal; (5) reactivity control; (6) heatup and cooldown activities; (7) restart activities; and (8) licensee identification and implementation of appropriate corrective actions associated with outage activities.

- September 1 - 11, 2008, Unit 3, forced outage due to inoperable EDG 3G003

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the UFSAR, procedure requirements, and TSs to ensure that the five below listed surveillance activities demonstrated that the SSCs tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumper/lifted lead controls; (7) test data; (8) testing frequency and method to demonstrate TS operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of American Society of Mechanical Engineers Code requirements; (12) updating of performance

indicator data; (13) engineering evaluations, root causes, and bases for returning tested SSCs not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with the surveillance testing.

- July 14, 2008, Unit 2, EDG 2G003 monthly surveillance testing
- July 15, 2008, Unit 2, follow up of the 125 Vdc Class 2E Breaker 2D201 inspection and Battery 2B008 decay test
- July 16, 2008, Unit 3, reactor coolant system leakage detection
- August 8, 2008, Unit 2, charging Pump 2MP191 inservice testing
- August 19, 2008, Units 2 and 3, 125Vdc Class 1E Battery B00X service test

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

Training Observation

For the below listed simulator-based training evolution contributing to Drill/Exercise Performance and Emergency Response Organization Performance Indicators, the inspectors: (1) observed the training evolution to identify any weaknesses and deficiencies in classification, notification, and Protective Action Recommendation development activities; (2) compared the identified weaknesses and deficiencies against licensee identified findings to determine whether the licensee is properly identifying failures; and (3) determined whether licensee performance is in accordance with the guidance of the Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," acceptance criteria.

- August 27, 2008, Units 2 and 3 simulator, control room, technical support center, operations support center, and emergency operations facility, Unit 2 steam generator tube leak and subsequent tube rupture with potential unfiltered radioactive release pathway through steam driven AFW Pump 2P140 turbine exhaust

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Cornerstone: Mitigating Systems

a. Inspection Scope

The inspectors sampled licensee data for the Mitigating System(s) Performance Index (MSPIs) listed below for the period from July 1, 2007, to June 30, 2008, for Units 2 and 3. The definitions and guidance of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used to verify the licensee's basis for reporting unavailability and unreliability in order to verify the accuracy of performance indicator data. The inspectors reviewed operating logs, Limiting Condition for Operation logs, corrective action documents, and the Maintenance Rule database to verify that the licensee properly accounted for planned and unplanned unavailability as part of the assessment. The inspectors sampled data to verify that the licensee: (1) accurately documented the actual unavailability hours for the MSPI systems; and (2) accurately documented the actual unreliability information for each MSPI monitored component. In addition, the inspectors interviewed licensee individuals associated with performance indicator data collection and evaluation. Licensee performance indicator data was also reviewed against the requirements of Procedures SO23-NI-1, "NRC Performance Indicator (PI) Program," Revision 6 and SO23-XV-24, "Quarterly NRC Performance Indicator (PI) Process," Revision 5.

- Emergency AC Power System
- Auxiliary Feedwater System

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

a. Inspection Scope

Routine Review of Identification and Resolution of Problems

The inspectors performed a daily screening of items entered into the licensee's CAP. This assessment was accomplished by reviewing daily summary reports for action requests, nuclear notifications, and work orders, and attending corrective action review and work control meetings. The inspectors: (1) verified that equipment, human

performance, and program issues were being identified by the licensee at an appropriate threshold and that the issues were entered into the CAP; (2) verified that corrective actions were commensurate with the significance of the issue; and (3) identified conditions that might warrant additional follow-up through other baseline inspection procedures.

b. Findings

No findings of significance were identified.

4OA3 Follow Up of Events and Notices of Enforcement Discretion (71153)

a. Inspection Scope

Event Follow Up

The inspectors reviewed the three below listed events and degraded conditions for plant status and mitigating actions to: (1) provide input in determining the appropriate agency response in accordance with Management Directive 8.3, "NRC Incident Investigation Program"; (2) evaluate performance of mitigating systems and licensee actions; and (3) confirm that the licensee properly classified the event in accordance with emergency action level procedures and made timely notifications to NRC and state/governments, as required.

- July 1 - 18, 2008, Units 2 and 3, loose electrical connections identified on safety related equipment
- July 29, 2008, Units 2 and 3, licensee response to ground motion event felt by operators from a Magnitude 5.4
- August 20 - 21, 2008, Unit 3, EDG 3G003 rotor shunt winding degradation

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

Personnel Performance

The inspectors: (1) reviewed operator logs, plant computer data, and/or strip charts for the below listed evolutions to evaluate operator performance in coping with non-routine events and transients; (2) verified that operator actions were in accordance with the response required by plant procedures and training; and (3) verified that the licensee has identified and implemented appropriate corrective actions associated with personnel performance problems that occurred during the non-routine evolutions sampled.

- August 27, 2008, Units 2 and 3, spent fuel pre-dry cask storage misplaced fuel assemblies

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

.1 Deficient Electrical Connections on Safety Related Equipment

A special inspection commenced on August 4, 2008, and findings associated with the inspection will be documented in NRC Special Inspection Report 05000361; 05000362/2008013.

.2 Misplaced Fuel Assemblies

Introduction. Two examples of a Green self-revealing noncited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, were identified for the failure of engineering personnel to follow procedures for the movement of nuclear fuel in the spent fuel pool (SFP).

Description. On August 27, 2008, fuel assembly (FA) inspections were taking place in the Unit 2 SFP for pre-dry cask storage. Engineering personnel were in the process of executing a FA movement per Procedure SO23-X-7.2, "Nuclear Fuel Movement - Spent Fuel Pool," Revision 14, Attachment 4. While lowering FA S2K404 into SFP storage Location L-11, as directed by Attachment 4, an obstacle was encountered as indicated by the activation of the spent fuel handling machine under-load interlock. The interlock was activated when hoist load decreased by approximately 200 pounds. Engineering personnel visually observed Location L-11 and identified that the obstacle was another FA that was already in the storage location. Following the FA impact, which resulted in the discovery of the unexpected condition, engineering personnel returned FA S2K404 to its original location, Location PP-18, and ungrappled the FA. The refueling engineer, who supervises the FA movements at the SFP per Procedure SO23-X-7.2, directed movement of the mislocated FA in Location L-11 to the inspection area for observation. The refueling engineer identified the mislocated FA as FA S2M308, and determined that there was no damage to the top of the control element and FAs. Further investigation determined that FA S2M308 had been placed in the wrong location the previous day during pre-dry cask storage fuel inspections. Fuel Assembly S2M308 should have been located in Location P-11. The refueling engineer contacted the Nuclear Fuels Services office engineer and obtained agreement that both FAs S2M308 and S2K404 should be moved to pre-approved Locations P-11 and L-11, respectively. Following the movement of the FAs to the correct, pre-approved locations, a stop-work order within the Units 2 and 3 SPFs was initiated as a result of the apparent human performance errors. Nuclear Notification 200116680 was initiated to evaluate the event.

The licensee completed an extent of condition review on September 8, 2008, and found two discrepancies. The extent of condition review involved a complete SFP inventory of Units 2 and 3 to compare the documented map locations with the presence or absence of fuel. While performing the Unit 3 verification, the licensee identified that FA S3M515 was in Location ZF-29 when the documented location was M-2, and FA S3D114 was in Location M-2 when the documented location was ZE-29. The licensee's evaluation of the Unit 3 discrepancies determined that Procedure SO23-X-7.2, Attachment 4, was not followed on July 3, 2008, when engineering personnel were attempting to move FA S3M515 from Location ZF-29 to Location M-2. On July 3, engineering personnel incorrectly moved FA S3D114 from Location ZE-29 to Location M-2.

Engineering's evaluation of the incorrectly placed FAs in Unit 2 and 3 SFPs determined that they were in acceptable locations for fuel with the combined enrichment, burnup, and cooling time of each assembly.

Analysis. The performance deficiency associated with this finding involved the failure of engineering personnel to follow procedures during the movement of nuclear fuel in the SFP to ensure that appropriate fuel configuration was maintained. The finding is greater than minor because it would become a more significant safety concern if left uncorrected in that nuclear fuel could be inadvertently placed in an unanalyzed location. Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," was used since the Significance Determination Process methods and tools were not adequate to determine the significance of the finding. This finding affects the initiating events cornerstone and is determined to have very low safety significance by NRC management review because the incorrect fuel storage locations were determined to be acceptable storage locations for the FAs in question. This finding has a crosscutting aspect in the area of human performance associated with work practices because engineering personnel failed to use human error prevention techniques commensurate with the risk of the assigned task, such that work activities were performed safely [H.4.(a)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," require that activities affecting Quality shall be prescribed by documented procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these procedures. Procedure SO23-X-7.2, "Nuclear Fuel Movement - Spent Fuel Pool," Revision 14, Attachment 4, contained the requirements for movement/sequence execution for nuclear fuel in the SFP. Contrary to the above, on July 3, 2008, and again on August 26, 2008, engineering personnel failed to execute the movement of nuclear fuel in accordance with Procedure SO23-X-7.2, Attachment 4. Specifically, on two separate occasions, a spent fuel assembly was placed into a storage location that was different than the evaluated and approved location specified on Procedure SO23-X-7.2, Attachment 4. Because the finding is of very low safety significance and has been entered into the licensee's CAP as Nuclear Notification 200116680, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000361; 05000362/2008004-01, "Failure to Follow Procedure to Move Nuclear Fuel in the Spent Fuel Pool."

4OA5 Other Activities

a. Inspection Scope

Quarterly Resident Inspector Observations of Security Personnel and Activities

During the inspection period the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

The inspectors presented the inspection results to Mr. Ross T. Ridenoure, Senior Vice President and Chief Nuclear Officer, and other members of the licensee's management staff at the conclusion of the inspection on September 24, 2008. The licensee acknowledged the findings presented.

The inspectors noted that while proprietary information was reviewed, none would be included in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

V. Arora, Engineer, Nuclear Oversight
B. Ashbrook, Manager, Emergency Preparedness
D. Axline, Technical Specialist, Nuclear Regulatory Affairs
D. Breig, Manager, Engineering Standards and Excellence
B. Corbett, Manager, Health Physics
B. Culverhouse, Manager, Site Support Services/Offsite of Emergency Preparedness
J. Dahl, Operations Manager
D. Deglopper, Technical Specialist, Health Physics Planning
D. Dick, Supervisor, Chemistry
G. Fausett, Supervisor, Shielding Program, Health Physics
J. F. Fee, Manager, Emergency Preparedness
K. Gallion, Supervisor, ALARA, Health Physics
S. Gardner, Engineer, Nuclear Regulatory Affairs
J. Hirsch, Manager, Maintenance
A. Hochevar, Manager, Plant Operations
K. Johnson, Manager, Design Engineering
M. Johnson, Manager, Support Services
L. Kelly, Engineer, Nuclear Regulatory Affairs
M. Kelly, Engineer, Nuclear Regulatory Affairs
R. Nielsen, Supervisor, Nuclear Oversight
A. Martinez, Manager, Health Physics Operational Support
C. McAndrews, Manager, Nuclear Oversight and Assessment
L. Pepple, Technical Specialist, Health Physics Planning, Health Physics
N. Quigley, Manager, Mechanical/Nuclear Maintenance Engineering
J. Reilly, Vice-President, Engineering and Technical Services
R. Richter, Engineering Supervisor, Fire Protection
T. Remick, Fuels Engineer
R. Ridenoure, Senior Vice President and Chief Nuclear Officer
M. Russel, Technical Specialist, Regulatory Projects, Health Physics
A. Scherer, Manager, Nuclear Regulatory Affairs
S. Sewell, Technical Specialist, DWP Program, Health Physics
A. R. Shean, Manager, Nuclear Oversight
R. St. Onge, Manager, Maintenance and Systems Engineering
K. K. Strand, Manager, Site Emergency Preparedness
T. Vogt, Manager, Special Projects
C. Williams, Manager, Compliance
T. Yackle, Manager, Operations

Nuclear Regulatory Commission

D. Loveless, Senior Reactor Analyst
M. Runyan, Senior Reactor Analyst

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000361; 05000362/2008004-01	NCV	Failure to Follow Procedure to Move Nuclear Fuel in the Spent Fuel Pool (Section 4OA3.2)
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LIST OF DOCUMENTS REVIEWED

In addition to the documents called out in the inspection report, the following documents were selected and reviewed by the inspectors to accomplish the objectives and scope of the inspection and to support any findings:

Section 1R01: Adverse Weather Protection

Procedures

Number	Title	Revision
	SONGS Switchyard Oversight Committee Charter	
SOB 85	Reports to the Generation Operation Center	March 18, 2008
SOB 12	Reports to the Grid Control Center	July 14, 2008
SO23-13-4	Operation During Major System Disturbances	11
OP 13	GCC Operating Procedure: SONGS Voltage	December 31, 2007
SO23-13-8	Severe Weather Procedure	

Drawings

Number	Title	Revision
23700	Underground Galleries and Access Building	21

Calculations

Number	Title	Revision
M.120.15	Plant Flooding Analysis Review	6

Miscellaneous

3.4.1.1	SONGS Final Safety Analysis Report (FSAR) - Flood Protection for External Flooding	May 2007
Barrier-50.59-10545	Interim 50.59 Barrier Evaluation	Revision 1
08060060	Fire Impairment	Revision 0

Section 1R04: Equipment Alignment

Procedures

Number	Title	Revision
SO23-3-3-23.1	Diesel Generator G003 Refueling Interval Test	27
SO23-2-13.1	Diesel Generator Alignments	3
40110ES03	Unit 3, Diesel Generator System (Train A) Air Start	5
40116AS03	Unit 3, Diesel Generator System (Train A) Fuel Oil	11
SO23-13.1	Diesel Generator Alignments	3
SO23-2-4	Auxiliary Feedwater System Operation	23

Drawings

Number	Title	Revision
50110	Diesel Fuel Oil System	0
40160A	Auxiliary Feedwater System	43

Section 1R05: Fire Protection

Procedures

Number	Title	Revision
2008-09	San Onofre Fire Department Notebook	September 04, 2008
SO23-13-21	Fire-OFTA Checklist	16
SO123-VIII-1	Recognition and Classification of Emergencies	27

Nuclear Notifications

200149031 200090735

Drawings

Title		Revision
3-035	Pre-Fire Plans	5
2/3-019	Pre-Fire Plan	6
2-006	Safety Equipment Bldg; Unit 2 El. -15' -6" and 8'-0"; Fire Protection Features	6
3-043	Auxiliary Feedwater Pump Room; Unit 3 El. -2'-6" to 30'-6"; Fire Protection Features	5

83037	Turbine building Unit 3 El. 7'-0 Fire Area Boundary	2
2-018	Pre-fire plans	6

Miscellaneous

Pre-Fire Plan Strategies Revision 11

2008-0 SOFD Drill Summary September 04, 2008

Section 1R11: Licensed Operator Regualification Program

Procedures

Number	Title	Revision
SO-2RS762	Lesson plan	9.1
SO23-12-1	Standard Post Trip Actions	21
SO23-12-11 ISS2	EOI Supporting Attachment 2	6
SO2323-13-22	Loss of Control Room Annunciator	24
SO123-O-A.8	Trip/Transient and Event Review	5

Section 1R12: Maintenance Effectiveness

Procedures

Number	Title	Revision
SO123-II-15.3	Temporary System Alteration & Restoration Form	11
SO123-XX-10	Work Process Procedure	4
SO123-XV-5.3	Maintenance Rule Program	11
SO123-XX-10	Work Process Procedure	4

Work Orders

200096962 200093535 200093460 200101191 07041108000

Drawings

Number	Title	Revision
SO23-410-6-F91	Panel 2L-157 Control Circuits	6
3804-4D-9	Panel 2L-154 Interior Layout	1

Miscellaneous

071001107-21	Engineering Change Package	Revision 21
020700918-5	Engineering Change Package	Revision 5

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

Number	Title	Revision
SO123-XX-10	Maintenance Rule Risk Management Program Implementation	4
SO123-XV-51	Site Program Impact Assessment	11
PRACP-08-0013	PRA Change Package	0
SO123-XX-10	Maintenance Rule Risk Management Program Implementation	3
SO123-I-2.5	Battery Service Test	12
SO123-0-A5	Technical Specification LCOAR/EDMRS	4
SO23-3-2.7	Safety Injection System Operation	22

Nuclear Notifications

200141429 200077364

Work Orders

800136726 800136725 800117989

Miscellaneous

Safety Monitor 3.5.01	SONGS Unit 2	August 19, 2008
UFSAR 2/3	Section 8.3, Onsite Power Systems	Revision 13
Safety Monitor 3.5.01	SONGS Unit 3	August 20 - 21, 2008

Section 1R15: Operability Evaluations

Procedures

Number	Title	Revision
SO123-I-2.5	Battery Service Test and Rapid Recharge	11
SO23-XVII-3.3.5	Class 3 System Leakage Test of Main Steam to the Auxiliary Feedwater Pump Turbine	2
SO23-3-3.23	AC Sources Verification (Modes 1-4), Attachment 7	33

SO23-XIII-4.100	Units 2 and 3 Fire Monitoring System Computer Use and Impairment Scope Identification	15
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Nuclear Notifications

200106607	200062294	200006604	200132597
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Work Orders

800122598	800156254	800158093
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Drawings

Number	Title	Revision
40127C	Component Cooling Water	44
40160B	Auxiliary Feedwater Steam Supply System	22
3L414	Fire Actuation and Detection Control Distribution Panel	12

Miscellaneous

Draft Trip Report: Inspection of SONGS 3G002 Emergency Diesel Generator	July 8, 2008
Unit 3 control room logs	August 19, 2008
Impairments 08070025-00, 90010131-01, and 08070027-00	
Fire Department Log	
DBD-SO23-540 Instrument Air/Dedicated Backup Nitrogen Systems	Revision 6

Section 1R18: Plant Modifications

Procedures

Number	Title	Revision
SO123-XV-5.1	Temporary Modification Control	8

Nuclear Notifications

200132597

Work Orders

800156254

Section 1R19: Post-Maintenance Testing

Procedures

Number	Title	Revision
SO123-O-A3	Procedure Use	6
OP(123)-29	Abnormal Evolution	0
SO23-3-2.5	Boric acid make-up tank batching and makeup	14
SO23-3-3.60.5	Surveillance Testing of Charging Pumps	6
SO123-0-A4	Diesel Generator Starts – Units 2 and 3	10
SO23-3-3.23.1	Diesel Generator Refueling Interval Tests	27

Action Requests

800128208 800129848

Work Orders

2-0800272

Miscellaneous

UFSAR 2/3	Section 8.3, Onsite Power Systems	Revision 13
EDG 2G002	Run Data Traces	August 21, 2008
Calculation E4C-082	System Dynamic Voltages During DBA	Revision 3
Calculation E4C-086	SONGS 2 & 3 Data Development and Documentation	Revision 6
G-IDEAL-9510490N-1	Dedication Report for Safety Related Commercial Grade Item	Revision 1
EDG 3G003	Run Data Traces	August 27, 2008
EDG 3G003	Run Data Traces	August 30, 2008
M&TE M3-6646	Data Collector Calibration	Due April 8, 2009

Section 1R22: Surveillance Testing

Procedures

Number	Title	Revision
SO123-I-1.9	Repetitive Maintenance Order Program	13
SO23-3-3	Operations Surveillance Program Requirements	14
SO123-I-2.2	125VDC Pilot Cell Battery Inspection	9

SO23-3-3.27.2	Weekly Electrical Bus Surveillance	14
SO23-3-3	Operations Surveillance Program Requirements	13
SO23-3-3.60.5	Surveillance Testing of Charging Pumps	6
SO123-I-2.5	Battery Service Test	12

Nuclear Notifications

200105776

Work Orders

800136726 800136725 800119234

Miscellaneous

Charging Pump IST Record 2P190-08-08	August 7, 2008
M&TE M3-6646D Vibration Transducer	April 8, 2009
UFSAR 2/3 Section 8.3, Onsite Power Systems	Revision 13
Battery B00X Discharge Test Results	August 19, 2008
E4C-017 125 V Battery and DC System Sizing	Revision 19
CCN-D0003055 125V Battery and DC System Sizing	Revision 19

Section 1EP6: Drill Evaluation

Miscellaneous

Emergency Plan Drill 0804

Section 4OA1: Performance Indicator Verification

Procedures

Number	Title	Revision
SO123-XV-3.3	NRC Reporting Requirements	13

Action Requests

070901295 070900431

Miscellaneous

CDE 3.0	MSPI Derivation Report, Heat Removal System and Emergency AC Power System	March 2008
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Section 4OA2: Identification and Resolution of Problems

Nuclear Notifications

200055295 200055294

Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Procedures

Number	Title	Revision
SO123-XV-52	Functionality Assessments and Operability Determinations	8
SO23-13-3	Earthquake Abnormal Operating Instruction	10
SO23-2-13	Diesel generator operation, Attachment 2	34
SO23-X-7.2	Nuclear Fuel Movement - Spent Fuel Pool	14
SO23-I-3.19	Spent Fuel Handling Machine Operation	8

Nuclear Notifications

200116680 800148434

Miscellaneous

LER 2005-001	Emergency Diesel Generator 3G003 Declared Inoperable Due to Loose Wiring Connection on Emergency Supply Fan	
IN 85-68	Diesel Generator Failure at Calvert Cliffs Nuclear Station Unit 1	August 14, 1985
SWO-001-08	Spent Fuel Pool Stop Work Order	Revision 1

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
AFW	auxiliary feedwater
CAP	corrective action program
CFR	<i>Code of Federal Regulations</i>
EDG	emergency diesel generator
FA	fuel assembly
MSPI	Mitigating Systems Performance Index
NCV	noncited violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records
PI	Performance Indicator
SFP	spent fuel pool
SSC	systems, structures, and components
TS	technical specification
UFSAR	Updated Final Safety Analysis Report