

## San Onofre 2

# 4Q/2012 Plant Inspection Findings

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## Initiating Events

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## Mitigating Systems

**Significance:**  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Provide Complete and Accurate Information Regarding Auxiliary Feedwater Operation System Operability**

The inspectors identified a Severity Level IV noncited violation of 10 CFR 50.9, “Completeness and Accuracy of Information,” for the failure of the licensee to provide complete and accurate information in all material respects in operability and reportability review supporting documents. Specifically, on September 29, 2011, the licensee did not provide information that was complete and accurate in all material respects, in that Evaluation Report FAI/11-0655, “Evaluation of Potential Cooling of the SONGS Steam Line for the AFW Turbine,” used inaccurate information to inappropriately determine that the turbine-driven auxiliary feedwater pump was operable, the condition was not reportable per the requirements of 10 CFR 50.73, and the compensatory measures implemented on May 5, 2011, could be removed. The compensatory measures were improperly removed on October 27, 2011. This violation has been entered into the licensee’s corrective action program as Nuclear Notification NN 202280026.

The failure of the licensee to provide complete and accurate information related to the operability of the AFW system was a performance deficiency. The significance determination process is not suited to assess the significance of a violation of 10 CFR 50.9 because it affected the ability of the NRC to perform its regulatory oversight function and, as such, it was assessed using traditional enforcement. This violation was determined to be a Severity Level IV violation based on NRC Enforcement Policy examples provided in Section 6.9. No crosscutting aspect was assigned because the performance deficiency was assessed using traditional enforcement (Section 4OA3).

Inspection Report# : [2012005](#) (*pdf*)

**Significance:**  Jun 23, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Degraded Fire Barrier Separating Unit 2 Shutdown Cooling Heat Exchanger Rooms**

The inspectors identified a non-cited violation of License Condition 2.C.(14) and the Updated Fire Hazards Analysis for the failure of the licensee to maintain the 3-hour penetration fire seal that separated redundant post-fire safe shutdown equipment. Specifically, prior to May 25, 2012, the licensee failed to maintain the 3 hour fire barrier between fire areas 2-SE-(-15)-138 and 2-SE-(-15)-139. The issue was entered into the licensee’s corrective action program as Nuclear Notification NN 202003184.

The performance deficiency is more than minor, and therefore a finding, because it was associated with the external factors attribute (i.e. fire) of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to require additional evaluation under Inspection Manual Chapter 0609, Appendix F, “Fire Protection Significance Determination Process.” Using Inspection Manual Chapter 0609, Appendix F, Attachment 2, Table A2.2, the inspectors concluded the penetration fire seal represented a moderate A degradation of the fire confinement element of the fire protection program. Using the supplemental screening for fire confinement findings, the inspectors concluded that the finding was of very low safety significance (Green) because the degraded penetration fire seal provided a minimum of 20 minutes of fire protection and no fire ignition sources or combustible materials would have

caused direct flame impingement on the fire barrier. This finding has a cross-cutting aspect in the area of human performance associated with the resources component because the licensee failed to ensure that personnel were adequately trained to inspect this type of penetration [H.2(b)](Section 1R05).

Inspection Report# : [2012003](#) (*pdf*)

**Significance:**  Jun 23, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Maintain Foreign Material Exclusion Controls in Safety Related Components**

The inspectors reviewed a self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure of maintenance personnel to implement procedures associated with foreign material exclusion controls while performing maintenance activities on safety-related 120Vac inverter equipment. Specifically, between October 2009 and April 2012, maintenance personnel failed to follow Procedure SO123-FO-1, “Site Foreign Material Exclusion Control Program,” Revision 6, and Procedure SO123-I-1.18, “Foreign Material Exclusion (FME) Control,” Revision 18, to prevent the introduction of a metal air filter frame that was left inside an energized electrical cabinet. This issue was entered into the licensee’s corrective action program as Nuclear Notification NN 201958287.

The performance deficiency is more than minor, and therefore a finding, because it is associated with the Mitigating Systems Cornerstone attribute for human performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, maintenance personnel failed to prevent the introduction of foreign material into the energized electrical cabinet of inverter 2Y004.

The resident inspectors performed the initial significance determination for the inverter finding. The inspectors used the NRC Inspection Manual 0609, Attachment 0609.04, “Phase 1 – Initial Screening and Characterization of Findings.” The finding screened to a Phase 2 significance determination because it involved a potential loss of safety function. A Region IV senior reactor analyst performed a Phase 2 significance determination and attempted to use the pre-solved worksheet from the “Risk Informed Inspection Notebook for the San Onofre Nuclear Generating Station,” Revision 2.01a. However, the pre-solved worksheet did not include this inverter. Therefore, the analyst performed a bounding Phase 3 significance determination. The bounding change to the core damage frequency was 1.1E-8/yr, and therefore, determined to be of very low safety significance. The small population of affected equipment (included in the probabilistic risk assessment model) helped to minimize the safety significance. The contributing core damage sequences involved a seismic event and a consequential failure of auxiliary feedwater flow control and bypass valves to one steam generator. This finding has a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action program component because maintenance personnel failed to have an appropriate threshold for identifying issues associated with a degraded air filter and its impact to foreign material exclusion controls to ensure there would be no adverse impact to system operability [P.1(a)](Section 1R12.1).

Inspection Report# : [2012003](#) (*pdf*)

**Significance:**  Jun 23, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Maintain Foreign Material Exclusion Controls During Maintenance**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure of maintenance personnel to implement procedures associated with foreign material exclusion controls while performing maintenance activities on safety-related 120Vac inverter equipment. Specifically, on June 8, 2012, maintenance personnel failed to follow Procedure SO123-FO-1, “Site Foreign Material Exclusion Control Program,” Revision 6, and Procedure SO123-I-1.18, “Foreign Material Exclusion (FME) Control,” Revision 18, when maintenance personnel failed to implement adequate foreign material exclusions controls during inverter 2Y004 troubleshooting activities. This issue was entered into the licensee’s corrective action program as Nuclear Notification NN 202016714.

The performance deficiency is more than minor, and therefore a finding, because it is associated with the Mitigating Systems Cornerstone attribute for human performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, maintenance personnel failed to implement adequate controls, as required, to prevent the

introduction of foreign materials during troubleshooting and repair activities associated with electrical cabinet of inverter 2Y004. Using Checklist 4 from the Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Phase 1 guidance, the finding is determined to have very low safety significance because all safety function guidelines were met, and thus, the finding did not require a quantitative assessment. This finding has a cross-cutting aspect in the area of human performance associated with the work practices component because the expectations regarding procedural compliance, and that personnel follow procedures were not effectively communicated to maintenance personnel regarding foreign material exclusion controls for unattended and opened electrical components [H.4(b)](Section 1R12.2).

Inspection Report# : [2012003](#) (*pdf*)

**Significance:**  Jun 23, 2012

Identified By: NRC

Item Type: FIN Finding

### **Failure to Follow Battery Testing Procedure for Battery Exceeding 85% Service Life**

The inspectors identified a finding for the failure to follow the battery testing procedure for non-class 1E batteries. Specifically, licensee personnel failed to implement the non-class 1E battery testing procedure, SO23-I-9.96, "Non-1E Battery Bank Performance Test," Revision 5, for Unit 2 battery 2B011 during refuel R2C17 when the battery is greater than 85% of its expected service life. The licensee submitted and approved an outage scope change request to test the battery during the current outage, and generated Nuclear Notification NN 201997619, to determine when battery 2B011 testing can be performed during the outage. The issue was entered into the licensee's corrective action program as Nuclear Notification NN 201994131.

The performance deficiency is more than minor, and therefore a finding, because it was associated with the human performance attribute of the Mitigating Systems Cornerstone, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was determined to have very low safety significance (Green) since it did not meet any of the greater than green criteria in Table 4A of Manual Chapter 0609, Attachment 04. The finding had a cross-cutting aspect in the human performance area, associated with the decision-making component because the licensee did not use conservative assumptions to demonstrate that the battery would maintain minimum capacity until the next refueling outage [H.1(b)](Section 4OA2).

Inspection Report# : [2012003](#) (*pdf*)

**Significance:**  Mar 24, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Maintain Seismic Controls in Safety-Related Areas**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of operations personnel to follow Procedure SO123-XV-1.20, "Seismic Controls," Revision 4. Specifically, between March 2 and March 6, 2012, operations personnel failed to follow Procedure SO123-XV-1.20, and allowed tools and equipment in the vicinity of safety-related shutdown cooling components in the room for shutdown cooling heat exchanger train B that could have become an operability hazard during a seismic event. The issue was entered into licensee's corrective action program as Nuclear Notifications NNs 201884141 and 201910392.

The performance deficiency is more than minor, and therefore a finding, because it was associated with the Mitigating Systems Cornerstone attribute for protection against external events and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," was used since Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," does not specifically address the particular condition in cold shutdown, in which time to boil is greater than 2 hours. The management review was performed using the Manual Chapter 0609, Appendix G, Attachment 1, Phase 1 guidance, to establish a bounding analysis. Using the bounding analysis, the finding is determined to have very low safety significance because the finding did not represent a potential loss of both trains of the shutdown cooling system. This finding has a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action program component because operations and Project Management Organization personnel failed to have an

appropriate threshold to identify that tools and equipment in the vicinity of safety-related shutdown cooling components needed to be addressed to ensure there would be no adverse impact to system operability [P.1(a)](Section 1R04).

Inspection Report# : [2012002](#) (*pdf*)

**Significance:**  Mar 24, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Implement Timely Corrective Actions on a Safety-Related Pumps**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” for the failure of maintenance and engineering personnel to promptly correct a degraded condition associated with safety-related equipment. Specifically, since December 1988, the licensee failed to address long-term pump bearing oil leaks on safety-related component cooling water pumps, and deferred effective corrective actions with temporary gasket sealant. The licensee has issued work orders to install larger size O-rings and remove the sealant material from the outside of the bearing housing. The issue was entered into licensee’s corrective action program as Nuclear Notification NN 201840078.

The performance deficiency is more than minor, and therefore a finding, because it is associated with the design control attribute of the Mitigating Systems Cornerstone and affects the associated cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, engineering personnel determined it was acceptable to use applications of gasket sealant to temporarily repair oil leaks, and delay permanent repairs on CCW pump bearing housings. Using the Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheets, the finding is determined to have very low safety significance because it was not a design or qualification deficiency confirmed not to result in loss of operability or functionality; did not result in a loss of system safety function; did not represent an actual loss of safety function of a single train for greater than its technical specification allowed outage time; was not an actual loss of safety function of one or more non-technical specification trains of equipment designated as risk significant per 10 CFR 50.65 for greater than 24 hours; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding was determined not to have a cross-cutting aspect because it is not reflective of current performance (Section 1R15).

Inspection Report# : [2012002](#) (*pdf*)

**Significance:**  Aug 16, 2010

Identified By: NRC

Item Type: VIO Violation

**Failure to Ensure At Least One Train of Equipment Necessary to Achieve Hot Shutdown Conditions Is Free of Fire Damage**

The team identified a cited violation of License Condition 2.C(14), “Fire Protection,” for failure to correct a noncompliance. Specifically, Inspection Report 05000361;362/2007008 documented a noncompliance involving the failure to ensure that at least one train of safe shutdown equipment would remain free from fire damage in each fire area. The NRC exercised discretion not to cite this violation at that time because the licensee met the criteria described in Enforcement Guidance Memorandum 98-002, Revision 2, and Supplement 2 to that revision. Enforcement Guidance Memorandum 07-004 superseded Enforcement Guidance Memorandum 98-002 and required licensees to complete corrective actions for noncompliances related to post-fire operator manual actions by March 6, 2009. This violation is being cited due to the failure to complete corrective actions and restore compliance within the required time. This finding was entered into the licensee’s corrective action program as Notification NN 200940265.

The failure to promptly restore adequate fire protection and/or separation of required safe shutdown systems was a performance deficiency. This performance deficiency was more than minor because it was associated with the protection against external factors (fire) attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events in order to prevent undesirable consequences. Because the violation involved multiple fire areas, the team could not evaluate this issue using Phase 2 of Inspection Manual Chapter 0609, Appendix F, and a Phase 3 significance

determination process risk assessment was performed by a senior reactor analyst. The finding was determined to have very low risk significance (Green), with a delta-CDF of 3.2E-8/yr, because of a combination of the availability of long recovery times for feasible operator manual actions and low-probability fire damage scenarios in the nine fire areas with fire sources which could potentially damage cables of required safe shutdown components. This finding involved a cross-cutting aspect in the decision-making component in the human performance area because the licensee failed to make a risk-significant decision using a systematic process when considering the scheduling of corrective actions. Inspection Report# : [2010007](#) (*pdf*)

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## Barrier Integrity

**Significance:**  Jun 23, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### Failure to Follow Design Control Procedures

The inspectors identified a non-cited violation 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of engineering personnel to follow Procedure SO123-XXIV-10.1, "Engineering Design Change Process – NECPs," Revision 28, to change the design, through physical plant modifications, of a facility used to handle radioactive material. Specifically, on February 2, 2012, engineering personnel issued as-built engineering change package NECP 800841701 which physically modified the design of the fuel reconstitution gantry crane with no turnover when an issued for construction engineering change package with turnover was required. This issue was entered into the licensee's corrective action program as Nuclear Notification NN 202026584.

The performance deficiency is more than minor, and therefore a finding, because it would become a more significant safety concern if left uncorrected since handling fuel with improperly modified equipment could result in fuel barrier damage. This finding cannot be evaluated by the significance determination process because Manual Chapter 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and Appendix G, "Shutdown Operations Significance Determination Process," do not apply to the spent fuel pool. This finding affects the Barrier Integrity Cornerstone and is determined to be of very low safety significance by NRC management review because it was a deficiency that did not result in the actual degradation of spent fuel. This finding has a cross-cutting aspect in the area of human performance associated with the work practices component because the expectations regarding procedural compliance, and that personnel follow procedures were not effectively communicated to Design Engineering, Nuclear Fuels Management, and Project Management Organization personnel [H.4(b)](Section 1R18).

Inspection Report# : [2012003](#) (*pdf*)

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## Emergency Preparedness

**Significance:**  Sep 23, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### Failure to Correct Drill Performance Weaknesses

The inspectors identified a non-cited violation of 10 CFR 50.47(b)(14) for failure to correct weakness or deficiencies that are identified in formal critiques of drills or exercises. The licensee did not take corrective actions for fourteen weaknesses in site assembly and evacuation, tracking of non-licensed operators, and provision of radiation protection to non-licensed operators, identified in critiques between September 2010 and June 2012. The failure to correct weaknesses identified in drills and exercises was a performance deficiency within the licensee's control. This failure has been entered into the licensee's corrective action program as Nuclear Notifications NNs 201974817, 201811829, and 201645589

This finding is more than minor because it affected the emergency response organization cornerstone attribute. The finding was evaluated using the Emergency Preparedness Significance Determination Process and determined to be of

very low safety significance because it was a failure to comply and was not a loss of planning standard function. The finding was not a loss of planning standard function because the weaknesses that were not corrected were not associated with risk significant planning standards. This finding was assigned a corrective action cross-cutting aspect because San Onofre did not take corrective actions for numerous drill weaknesses in a timely manner commensurate with their safety significance [P.1(d)] (Section 1EP5).

Inspection Report# : [2012004](#) (*pdf*)

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## Occupational Radiation Safety

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### Public Radiation Safety

**Significance:**  Sep 23, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Update the Final Safety Analysis Report for Solid Radioactive Waste**

The inspectors identified a Severity Level IV, non-cited violation of 10 CFR 50.71, “Maintenance of Records, Making of Reports,” paragraph (e) which states, in part, “Each person licensed to operate a nuclear power reactor shall update periodically, the final safety analysis report originally submitted as part of the application for the license, to assure that the information included in the report contains the latest information developed.” Contrary to the above, from 1985 to June 2012, the licensee failed to update the Final Safety Analysis Report to assure that the information included in the report contains the latest information developed. Specifically, since its construction in 1985, the licensee stored a significant source of radioactivity in the Multi-Purpose Handling Facility (South Yard Storage Facility), but failed to describe the source, volume, and storage of radioactive equipment in the Final Safety Analysis Report. The licensee has entered this violation into their corrective action program as Nuclear Notification NN 202076593.

The inspectors determined that the failure to update the Final Safety Analysis Report as required by 10 CFR 50.71(e), “Maintenance of Records, Making of Reports” is a performance deficiency. This performance deficiency was dispositioned using traditional enforcement because failing to update a Final Safety Analysis Report had the potential to adversely impact the NRC’s ability to perform its regulatory function. The performance deficiency is characterized as a Severity Level IV violation in accordance with the NRC Enforcement Policy, Section 6.1.d.3. Since this issue was dispositioned using traditional enforcement, there is no cross-cutting aspect (Section 2RS08).

Inspection Report# : [2012004](#) (*pdf*)

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

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