

San Onofre 3

2Q/2012 Plant Inspection Findings

Initiating Events

Significance:  Mar 24, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Control Work Activities and Prevent RCS Perturbations

The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.5.1.1 for the failure of operations personnel to follow Procedure SO23-3-1.8, "Draining the Reactor Coolant System to a Reduced Inventory Condition," Revision 32, Attachment 13, "Reduced Inventory Condition RCS Perturbation Control." Specifically, on February 8, 2012, operations personnel failed to document potential reactor coolant system perturbations and the measures, controls, and enhanced monitoring used to prevent perturbations. Consequently, work activities performed by health physics personnel were not appropriately documented and controlled which resulted in a reactor coolant system perturbation while in reduced inventory conditions. The issue was entered into licensee's corrective action program as Nuclear Notification NN 201848706.

The performance deficiency is more than minor, and therefore a finding, because it was associated with the Initiating Events Cornerstone attribute of configuration control and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Additionally, the failure to appropriately control work activities that could impact reactor coolant system inventory while in reduced inventory conditions, if left uncorrected, would have the potential to lead to a more significant safety concern. Using the Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Phase 1 guidance, a Phase 2 analysis is required because the finding increased the likelihood of a loss of reactor coolant system inventory during reduced inventory conditions as a result of inadequate controls implemented to avoid operations that could lead to perturbations in reactor coolant system level control. The finding was evaluated using the Phase 2 guidance in IMC 0609, Appendix G, as applied to Worksheet 2. Using the applicable tables and accounting for the availability of mitigating equipment, two sequences of value 8 and 9, respectively, were identified. This resulted in a determination of very low significance (Green). This finding has a cross-cutting aspect in the area of human performance associated with the work control component because health physics personnel failed to appropriately communicate and coordinate work activities with operations personnel to ensure there would be no impact to plant operations [H.3(b)](Section 1R20).

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

Mitigating Systems

Significance:  Dec 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Implement Required Compensatory Measures Resulted in Inoperable Condensate Storage Tank

A self-revealing non-cited violation of Technical Specification 5.5.1.1, "Procedures," was identified for the failure of operations personnel to adequately implement the appropriate compensatory measures per alarm response procedure to ensure equipment was maintained as required by technical specifications. Specifically, on September 13, 2011, operations personnel failed to implement the compensatory measures required by alarm response Procedure SO23-15-53.B, to maintain the safety-related condensate storage tank water level within limits required by technical specifications. The issue was entered into the licensee's corrective action program as Nuclear Notification NN 201644782.

The performance deficiency is more than minor, and therefore a finding, because it was associated with Mitigating Systems Cornerstone attribute of human performance and affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. 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 has a cross-cutting aspect in the area of human performance associated with the decision-making component because operations personnel failed to use a systematic process to effectively communicate and formally establish required compensatory measures to ensure that condensate storage tank water inventory remained within technical specification limits [H.1(a)](Section 4OA3.1) Inspection Report# : [2011005](#) (pdf)

G

Significance: Dec 31, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Correct Degraded Plant Equipment Results in Ammonia Spill

A self-revealing finding was identified for the failure to take adequate corrective actions for degraded equipment associated with the Unit 3 full flow condensate polishing demineralizer system. Specifically, on October 27, 2011, operations personnel failed to take adequate corrective actions for an unexpected rise in ammonia day tank level and annunciation of an ammonia day tank high level, which eventually resulted in an ammonia leak from the ammonia day tank on November 1, 2011, that caused areas of the turbine building to become inaccessible requiring an emergency declaration at the ALERT level. The issue was entered into the licensee's corrective action program as Nuclear Notification NN 201713841.

The performance deficiency is more than minor because the performance deficiency was a precursor to a significant event (Emergency Declaration), and is therefore a finding. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because the finding did not result in a loss of safety function for greater than the technical specification allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the area of human performance associated with resources because the licensee failed to provide adequate procedural guidance to operations personnel for responding to full flow condensate polishing demineralizer system degrading conditions [H.2(c)](Section 4OA3.2)

Inspection Report# : [2011005](#) (pdf)

G

Significance: Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Adequate Flood Protection for the Auxiliary Feedwater Steam Supply Piping

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for failure to translate applicable regulatory requirements and the design basis into specifications, drawings, procedures, and instructions. The Updated Final Safety Analysis Report, states, in part that, "In the extreme event that the thunderstorm PMP occurs, no safety-related equipment will be impacted by flooding," since, "Drainage water in the structures which entered from other areas (e.g. from roofs, open areas) will not reach safety-related equipment." Specifically, from original construction until adequate compensatory measure were implemented on May 5, 2011, the steam supply piping to the auxiliary feedwater pump turbine was not adequately protected from all postulated flood levels and conditions, such that, in the extreme event that the thunderstorm probable maximum precipitation occurs, water could have reached the steam supply pipe resulting in steam condensation inside the pipe which could impact auxiliary feedwater pump operability. The compensatory measures will remain in place until the design nonconformance is resolved. This issue was entered into the licensee's corrective action program as Nuclear Notification NN 201448584. The performance deficiency is more than minor and therefore a finding because it is associated with the protection against external events attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events

to prevent undesirable consequences. Using NRC Inspection Manual 0609, Attachment 4, “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 Phase 2 was not appropriate for this external event. The Senior Reactor Analyst determined that the finding had very low significance. This was based on information received from the licensee indicating that the precipitation intensity required to render the turbine-driven auxiliary feedwater pump non-functional had a return frequency well below 1.0E-6/yr. In the case of clogged drains, less intense rain could affect the function of the pump, but would likely not cause a transient. A bounding risk estimate indicated that the delta core damage frequency of this scenario was less than 1.0E-7/yr. No crosscutting aspect was identified because this issue is not reflective of current performance, since this condition has existed since construction (Section 1R15).

Inspection Report# : [2011004](#) (pdf)

G

Significance: Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Incorporate Calculation Results into Plant Procedures

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure of engineering personnel to ensure that procedures for preventing unacceptable gas accumulation included appropriate qualitative or quantitative acceptance criteria to ensure that this important activity had been satisfactorily accomplished. Specifically, from July 2008 through August 2011, after performing Calculation M-0013-005, “Safety Injection Tank Fluid Nitrogen Evolution,” which determined the maximum permissible back-leakage from the safety injection tanks into the emergency core cooling systems pump discharge headers to preclude unacceptable gas accumulation, engineering personnel failed to incorporate the results of this calculation into plant procedures. This issue was entered into the licensee’s corrective action program as Nuclear Notification NN 201606472. The performance deficiency is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems Cornerstone objective and to ensure the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Inspection Manual Chapter 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” the inspectors determined the finding to be of very low safety significance because it did not represent the loss of safety function of any system or train and was not potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of human performance associated with the decision making component because, when confronted with conservatively calculated information, engineering personnel failed to incorporate these conservative assumptions into plant procedures to ensure accumulating gas was identified before reaching an unacceptable volume, instead deciding to use informal trending mechanisms to track safety injection tank leakage [H.1(b)](Section 4OA5).

Inspection Report# : [2011004](#) (pdf)

G

Significance: Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Plant Modification in Accordance with Applicable Specifications

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the failure of licensee personnel to perform a modification to the Unit 3 high pressure safety injection system in accordance with the seismic requirements of the applicable construction specification. Specifically, in March 2010 (Unit 2) and February 2011 (Unit 3), licensee personnel failed to ensure that modifications per Engineering Change Packages NECP 800194395 (Unit 2) and NECP 800229823 (Unit 3) were either accomplished in accordance with Construction Specification CS-P206, “Design Guide for Supporting Small Piping (2 Inch and Under),” Revision 14, as required by the design change packages, or that deviations from the construction specification were controlled. This issue was entered into the licensee’s corrective action program as Nuclear Notification NN 201608558. The performance deficiency is more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern, and is therefore a finding. Using Inspection Manual Chapter 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” the inspectors determined the finding to be of very low safety significance because it did not represent the loss of safety function of any system or train, and because during a seismic event, the absence of seismic supports on the subject pipe would not cause a plant trip or other initiating event, would not degrade two or more trains of a multi-train safety system or function, and would not degrade one or

more trains of a system that supports a safety system or function. This finding has a crosscutting aspect in the area of human performance associated with the work practices component because licensee personnel failed to define and effectively communicate expectations regarding procedural compliance and to ensure that personnel followed procedures [H.4(b)](Section 4OA5).

Inspection Report# : [2011004](#) (pdf)

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Significance: Sep 13, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate the Effects of Fuse Resistance and High Energy Line Break Conditions on Control Circuit Voltage

The team identified a Green noncited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," which states in part: "Measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions." Specifically, as of July 22, 2011, the licensee failed to incorporate the fuse resistance, fuse clips resistance, and cable temperature and resistance effects (for Auxiliary Feedwater High Energy Line Breaks only), into Calculations E4C-084 and E4C-085, for degraded voltage conditions. This finding was entered into the licensee's corrective action program as Nuclear Notification NN-201546570 and NN-201550186.

The team determined that the failure to fully evaluate the circuit load in determining design limits in electrical calculations for degraded voltage conditions was a performance deficiency. The finding was more than minor because it was associated with the mitigating systems cornerstone attribute of design control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," the team determined that the finding was of very low safety significance (Green) because it did not represent a design issue resulting in the loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification allowed outage time, and did not affect external event mitigation. Specifically, the licensee performed subsequent preliminary analyses which demonstrated that the control circuits, where marginal voltage was available, would function as required to mitigate an accident. This finding did not have a crosscutting aspect because the most significant contributor did not reflect current licensee performance (Section 1R21.2.15).

Inspection Report# : [2011010](#) (pdf)

G

Significance: Sep 13, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Control Document Changes

The team identified a Green non-cited violation, with multiple examples, of 10 CFR 50, Appendix B, Criterion VI, "Document Control," which states in part: "Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality. These measures shall assure that documents, including changes, are reviewed for adequacy and approved for release." Specifically, on June 23, 2011, the team identified numerous drawing inconsistencies where changes to certain components were not changed on all affected drawings and procedural errors where changes were not made to all affected documents. The licensee has entered the errors into their corrective action program under numerous Nuclear Notifications listed in section 4AO2.

The team identified that collectively, from a program perspective, the failure to properly incorporate design changes of components in the plant to all affected drawings, procedures, or instructions, was a performance deficiency. The finding was more than minor because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. In accordance with Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," the team determined that the finding was of very low safety significance (Green) because it did not represent a design issue resulting in the loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification allowed outage time, and did not affect external event mitigation. Specifically, none of the documents with the identified errors had been used in response to

any events or plant perturbations. This finding did not have a crosscutting aspect because the most significant contributor did not reflect current licensee performance (Section 40A2).

Inspection Report# : [2011010](#) (*pdf*)

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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*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

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Significance: Dec 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Control Work in a High Radiation Area

The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.8.1 for the failure to control work in a high radiation area. On August 25, 2011, diving was performed in a high radiation area using stay time calculations instead of the radiation protection coverage described in the Technical Specifications. The licensee suspended further diving operations until interim corrective actions were put in place. The licensee placed this issue

into their corrective action program as Nuclear Notification NN 201620253.

The failure to adequately control work in a high radiation area was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it negatively impacted the Occupational Radiation Safety cornerstone attribute of program and process and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that a worker received unplanned, unintended radiation dose. Using NRC Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance because: (1) it was not associated with ALARA planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. This finding has a cross-cutting aspect in the area of human performance related to resources. Specifically, the licensee did not have a diving procedure to control this evolution [H.2.(c)] (Section 2RS01)

Inspection Report# : [2011005](#) (*pdf*)

Public Radiation Safety

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.

Miscellaneous

Last modified : September 12, 2012