

San Onofre 2

3Q/2006 Plant Inspection Findings

Initiating Events

Significance:  Mar 19, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadvertent Reactor Coolant System Drainage while in Mode 5

A self revealing, noncited violation of Technical Specification 5.5.1.1 was identified for the failure of operations personnel to operate reactor coolant pump system vent valves with the use of approved procedures. This failure resulted in the inadvertent drainage of approximately 200 gallons of Unit 2 reactor coolant system water to the containment sump. This issue has been entered into the licensee's corrective action program as Action Request 060301125.

The finding was determined to be more than minor because, if left uncorrected, the inadvertent loss of reactor coolant would become a more significant safety concern, as it could compromise core cooling capability. The finding affected the initiating events cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination Process," the finding is determined to have very low safety significance because the finding did not result in a major loss of reactor coolant system inventory. The finding had crosscutting aspects in the area of human performance because the failure of operations personnel to ensure that plant equipment was properly operated in accordance with approved procedures contributed to the cause of the finding.

Inspection Report# : [2006003\(pdf\)](#)

Significance:  Oct 26, 2005

Identified By: NRC

Item Type: FIN Finding

Failure to conduct simulator performance testing

A Green finding was identified for the licensee's failure to conduct simulator performance testing in accordance with ANSI/ANS 3.5,1998, "Nuclear Power Plant Simulators for Use in Operator Training and Examination." A review of the malfunction tests contained in the annual performance test book for the simulator revealed that several transient parameters did not include all necessary data. In addition, differences in transient parameters between the simulator data and the actual plant data were not documented or justified. This is considered to be a Green finding using the Operator Requalification Human Performance Significant Determination Process (SDP) because it is a requalification training issue related to simulator fidelity. The lack of data affects the ability of the simulator transient tests to detect simulator fidelity issues. It is more than minor because these issues (simulator fidelity) can contribute to human error, which can directly impact the Human Performance attribute for both the Initiating Events and Mitigating Systems Cornerstones. The objectives of these two cornerstones are 1) to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown, as well as power operations; and 2) to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, respectively. This is a finding of very low safety significance because the discrepancies have not impacted operator actions in the plant.

This is considered to be a performance deficiency because San Onofre Nuclear Generating Station has committed to conduct testing in accordance with ANSI/ANS 3.5, 1998, as endorsed by Regulatory Guide 1.149, "Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations," Revision 3, October 2001. Specifically, ANSI/ANS 3.5, 1998 specifies that certain key parameters be measured and analyzed. The ANSI standard also specifies that any differences between the simulator data and the actual plant data be analyzed and justified. The performance deficiency is more than minor because inadequate simulator transient tests affects the ability to detect fidelity issues with the simulator, which degrade the Human Performance attribute (human error) of the Initiating Events and Mitigating Systems cornerstones

Inspection Report# : [2005302\(pdf\)](#)

Mitigating Systems

Significance:  Mar 25, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Safety Injection Tank Manway Gaskets

A self-revealing, noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified for the failure to select an appropriate replacement gasket for the Units 2 and 3 safety injection tank manways. The inadequate gaskets buckled during installation and began to unravel. The Unit 2 safety injection Tank 2T008 discharge check Valve 2MU040 failed to fully close when an unraveled gasket wrapped itself around the valve internals. This issue has been entered into the licensee's corrective action program as Action Request 060301594.

The finding was determined to be more than minor because, if left uncorrected, it would become a more significant safety concern in that the inadequate gaskets would likely continue to unravel, possibly introducing foreign material into the safety injection tanks. The finding affected the mitigating systems cornerstone. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding is determined to have very low safety significance because the finding did not result in the actual loss of the safety function of either Units' emergency core cooling system.

Inspection Report# : [2006003\(pdf\)](#)

Significance:  Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement Design Controls for Component Cooling Water Heat Exchanger Tube Plugging

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to implement appropriate design controls when plugging component cooling water heat exchanger tubes. Specifically, plugging heat exchanger tubes constitutes a design change. Criterion III requires the licensee to implement design control measures commensurate with those applied to the original design. The licensee entered the issue into their corrective action program as Action Request 051201123.

The failure to implement appropriate design controls when plugging heat exchanger tubes was a performance deficiency. The issue was more than minor because, if left uncorrected, it could result in a more significant safety concern, in that the heat exchanger may not be able to meet licensing basis/design basis heat exchanger capabilities. The inspectors assessed the finding in accordance with the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet and determined the finding was of very low safety significance. Specifically, this design deficiency was confirmed not to result in loss of operability in accordance with "Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment."

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement Calibration Controls for Component Cooling Water Heat Exchanger Test

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XII, "Measuring and Test Equipment Controls," because the licensee failed to maintain test equipment (used during safety related heat exchanger thermal performance testing) controlled and calibrated within specified performance parameters. Consequently, an inaccurate temperature instrument caused some test results to over predict heat exchanger capability by 28 percent. The licensee entered the issue into their corrective action program as Action Request 051100747.

The failure to maintain the accuracy of test instrumentation was a performance deficiency because the accuracy of the instrumentation exceeded the vendor's design specifications. The issue was more than minor because, if left uncorrected, it

could result in a more significant safety concern in that the licensee may not detect degraded heat exchanger performance. The inspectors assessed the finding in accordance with the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet and determined the finding was of very low safety significance in that this design deficiency was confirmed not to result in the loss of operability in accordance with "Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment." The issue had human performance crosscutting aspects because the plant engineers did not question suspect data.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Dec 16, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Implementation of Improper Procedure Renders Unit 2 Train A Emergency Diesel Generator Inoperable

Green. A self-revealing noncited violation of Technical Specification 5.5.1.1 was identified for the failure of electrical test technicians to develop adequate procedures during work to replace and calibrate an exciter field current transducer on the Unit 2 Train A emergency diesel Generator 2G002 on December 16, 2005. This failure resulted in the loss of the exciter field voltage circuit and rendered EDG 2G002 inoperable. This issue was entered into the licensee's corrective action program as Action Request 051200922.

The finding was determined to be more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and affects 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 worksheet, the finding is determined to have very low safety significance because the finding did not represent an actual loss of the Unit 2 Train A emergency diesel generator for greater than its Technical Specification allowed outage time of 14 days. The finding had crosscutting aspects in the area of human performance because the failure of the test technicians and their supervisor to communicate changes to maintenance activities directly contributed to the cause of the finding.

Inspection Report# : [2006002\(pdf\)](#)

Significance:  Dec 09, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Pressurizer Backup Heater Bank Inoperable for Greater than its Technical Specification Allowed Outage Time

Green. A self-revealing noncited violation of Technical Specification 3.4.9.B was identified for the failure of maintenance engineering personnel to take appropriate corrective actions in response to a failure of the Unit 2 pressurizer backup heater Breaker 2B0602. This failure resulted in pressurizer backup heater Bank 2E129 being inoperable for greater than the allowed Technical Specification outage time of 72 hours. This issue has been entered into the licensee's corrective action program as Action Request 051200151.

The finding is determined to be more than minor because it is associated with the mitigating systems attribute of equipment performance and affects the associated cornerstone objective to ensure the availability of the pressurizer backup heaters to respond to initiating events to prevent undesirable consequences. The Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," were used to conclude that a Phase 2 analysis was required because the finding represented an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time. Because of the very low safety significance of the pressurizer heaters, they are not listed in Table 3.7 of the site specific worksheets or the licensee's probabilistic risk assessment model. Therefore, a Phase 2 analysis could not be performed. Based on NRC management review, the finding was determined to be of very low safety significance. The finding had crosscutting aspects in the area of problem identification and resolution because the failure of maintenance engineering personnel to identify and correct the cause of the failure of pressurizer heater Breaker 0609 directly contributed to the cause of the finding.

Inspection Report# : [2006002\(pdf\)](#)

G**Significance:** Oct 12, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedures Results in Loss of Main Steam Isolation System Safety Function

A self-revealing noncited violation of Technical Specification 5.5.1.1 was identified for the failure of maintenance personnel to follow Procedure SO23-II-1.1.2, "Surveillance Requirement, Plant Protection System, Channel B," Revision 6, during surveillance testing of the Unit 2 Channel B plant protection system on October 12, 2005. This failure resulted in the loss of the main steam isolation system function and a portion of the reactor protection system function for approximately one hour. This issue was entered into the licensee's corrective action program as Action Request 051000550.

The finding is greater than minor because it was associated with the mitigating systems cornerstone attribute of human performance and affected the associated cornerstone objective to ensure the availability of the plant protection system to respond to initiating events to prevent undesirable consequences. Using the Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," the inspectors determined that a Phase 2 analysis was required because the finding represented a loss of safety function of portions of the plant protection system. The inspectors performed a Phase 2 analysis using Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," of Manual Chapter 0609, and the Phase 2 worksheets for the San Onofre Nuclear Generating Station. The inspectors assumed that the incorrect setpoints for plant protection system Channels C and D low steam generator pressure were in service for approximately one hour. Based on the results of the Phase 2 analysis, the finding is determined to have very low safety significance. The finding had crosscutting aspects in the area of human performance because the failure of instrumentation and control technicians to follow procedures and the failure of supervision to provide oversight during maintenance activities directly contributed to the cause of the finding.

Inspection Report# : [2005005\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

G**Significance:** Mar 12, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Evaluate Radiological Conditions

The inspectors reviewed a self-revealing, noncited violation of 10 CFR Part 20.1501(a), resulting from the licensee's failure to adequately evaluate radiological conditions in a work area. While assisting in decontaminating the reactor cavity on March 12, 2006, four workers were exposed to concentrations of airborne radioactivity higher than anticipated, resulting in unplanned dose. The licensee was alerted to the problem when the four workers attempted to leave the radiological controlled area and caused the personnel contamination monitors to alarm. The licensee's immediate corrective actions included a review of the occurrence and assessment of the committed effective dose equivalents for each of the four workers. The highest dose received by a worker was approximately 60 millirem more than planned. Additional corrective action associated with the work planning process was still being evaluated.

This finding is greater than minor because it is associated with the occupational radiation safety program attribute of exposure control and affected the cornerstone objective, in that the lack of knowledge of radiological conditions led to an unplanned personnel dose. Using the Occupational Radiation Safety Significance Determination Process, the inspector

determined that the finding was of very low safety significance because it did not involve: (1) an ALARA finding, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess doses. Additionally, this finding has a crosscutting aspect in the area of human performance associated with resources because the work plan did not fully identify the job site controls and action plans necessary to do the job.

Inspection Report# : [2006004\(pdf\)](#)

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : December 21, 2006