

San Onofre 3

1Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Sep 11, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Corrective Actions for Reactivity Events

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," for the failure of operations management, operations training, and engineering to ensure that conditions adverse to quality are promptly identified and corrected. Specifically, multiple reactivity excursions occurred in the plant over the past two years, where corrective actions have been ineffective at addressing blended flow evolutions. The licensee has entered this into their corrective action program as Notifications NN 200062659 (addresses procedure change) and NN 200006366 (addresses common cause evaluation).

The finding is more than minor because it is associated with the initiating events cornerstone (human performance attribute) and affects the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge the critical safety functions during shutdown as well as power operations. If left uncorrected, the conditions would continue to contribute to additional operator errors or significantly impact the operator's ability to perform blended flow evolutions. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions will not be available. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because the licensee did not thoroughly evaluate problems such that resolutions address causes and extent of condition [P.1(c)] (Section 4OA2).

Inspection Report# : [2008010](#) (*pdf*)

Significance:  Aug 26, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedure to Move Fuel in the Spent Fuel Pool

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)].

Inspection Report# : [2008004](#) (*pdf*)

Significance:  Apr 03, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Pressurizer Pressure Transient due to Inadequate Maintenance Procedure.

A self-revealing noncited violation of Technical Specification 5.5.1.1 was identified for the failure of maintenance personnel to have adequate procedures in place to ensure troubleshooting associated with proportional heater Bank 3E123 would not adversely impact plant stability. Specifically, on April 3, 2008, lifting of an electrical lead during the troubleshooting process caused the proportional heater bank to be energized, which resulted in a pressurizer pressure transient. This finding was entered into the licensee's corrective action program as Action Request 080400170.

The finding is greater than minor because it affected the procedure quality attribute of the Initiating Events Cornerstone and affected the 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. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because it did not contribute to both the increased likelihood of a reactor trip and increased likelihood that mitigating systems will not be available. The finding has a crosscutting aspect in the area of human performance associated with work control because the licensee did not incorporate actions to address operational impact of work activities [H.3.(b)].

Inspection Report# : [2008003](#) (*pdf*)

Mitigating Systems

Significance:  Mar 17, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Inspect Scaffolding 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 maintenance personnel to properly install and inspect scaffolding in safety-related areas in accordance with written procedural requirements. Four instances were found where the minimum separation distance between a scaffold and safety-related components was less than the minimum allowed by procedure and an approved engineering evaluation to justify the deviation was not performed. The licensee evaluated the scaffolds and modified them as necessary. This finding was entered into the licensee's corrective action program as Nuclear Notification 200356209.

The finding is greater than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. The inspectors concluded this finding was associated with the Mitigation Systems Cornerstone. 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 affect both trains of any single mitigating system or represent an actual loss of a safety function. This finding has a crosscutting aspect in the area of human performance associated with work practices because the licensee did not utilize appropriate human performance techniques to ensure that scaffold construction was performed safely [H.4(a)] (Section 1R18).

Inspection Report# : [2009002](#) (*pdf*)

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Justify Longer Completion Schedule for Degraded Equipment

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the failure of work control personnel to resolve degraded or nonconforming conditions at the first available opportunity or appropriately justify a longer completion schedule, as required by procedure. Specifically,

work control personnel failed to follow their process to provide documented justification for equipment related degraded conditions not resolved within the current refueling cycle. After the conclusion of the Unit 3 refueling outage, the licensee completed the documentation to justify longer completion schedules for the degraded or nonconforming conditions. This finding was entered into the licensee's corrective action program as Nuclear Notification 200247395.

The finding is greater than minor because routinely failing to implement timely corrective action for degraded safety-related equipment would result in more significant consequences. The finding affected the mitigating systems cornerstone. 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, did not result in a loss of safety function, and did not screen as potentially risk significant due to external events. The finding has a crosscutting aspect in the area of problem identification and resolution associated with corrective action program because work control personnel failed to thoroughly evaluate problems, including classifying and prioritizing conditions adverse to quality [P.1(c)].

Inspection Report# : [2008005](#) (*pdf*)

Significance:  Dec 09, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedures when Performing Maintenance on the Auxiliary Feedwater System

A self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified for the failure of maintenance personnel to follow maintenance order instructions to fully remove fuses to establish conditions necessary to perform valve testing on the auxiliary feedwater system. Instead of removing the fuse entirely from the fuse holder, maintenance personnel only removed one side of the fuse and left the other side inserted. This inappropriate maintenance practice caused plastic deformation on the associated side of the fuse holder, which impacted the design configuration of the auxiliary feedwater control system, and its ability to perform its required design function under all design basis accident conditions. This finding was entered into the licensee's corrective action program as Nuclear Notification 200253911.

The finding is greater than minor because it is associated with the configuration control 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. The inspectors evaluated the issue using the Significance Determination Process (SDP) Phase 1 Screening Worksheet for the Initiating Events, Mitigating Systems, and Barriers Cornerstones provided in Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." The inspectors determined that this finding represented a loss of the system safety function for the ability to provide secondary heat removal during a station blackout. This required that a Phase 2 estimation be completed. Because the Phase 2 assumptions significantly overestimated the risk related to this finding, the senior reactor analyst conducted a Phase 3 evaluation to provide a best-estimate risk assessment. The analyst calculated that a total λ CDF of 4.4×10^{-7} , therefore this finding is of very low risk significance (Green). The finding has a crosscutting aspect in the area of human performance associated with work practices because maintenance personnel did not comply with expectations regarding procedural compliance to follow the procedure as written without deviating from its intent [H.4(b)] (Section 1R12).

Inspection Report# : [2009002](#) (*pdf*)

Significance:  Oct 22, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Implement Operability Determination Process

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the failure of operations personnel to follow procedures and adequately evaluate a degraded condition. Specifically, on August 5, 2007, operations personnel failed to properly evaluate a degraded relay that affected the operability of the Unit 3 Train A emergency diesel generator. This issue was entered into the licensee's corrective action program as Nuclear Notification 200146292. The licensee began performing a failure analysis on the relay and initiated an apparent cause evaluation for this relay failure.

The performance deficiency associated with the finding was the failure of operations personnel to adequately implement the operability determination process. The finding was more than minor because it is associated with the equipment performance 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 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have a very low safety significance because it did not result in an actual loss of system safety function, did not result in a loss of a single train of safety equipment for greater than its technical specification allowed outage time, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The finding had a cross-cutting aspect in the area of human performance associated with decision-making because the licensee failed to use conservative assumptions for operability decision-making when evaluating a degraded and nonconforming condition [H.1(b)].

Inspection Report# : [2008012](#) (*pdf*)

Significance:  Oct 22, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Auxiliary Feedwater Pump Room Heat Load Analysis

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure of engineering personnel to ensure the auxiliary feedwater pump room heat load calculation was adequate. Specifically, since initial plant construction, engineering personnel failed to consider the impact to the auxiliary feedwater pump room's heat load design basis calculation for the most limiting scenario, in which all auxiliary feedwater pumps in the room have started and are running with only one emergency room cooler available. This issue was entered into the licensee's corrective action program as Nuclear Notification 200149442. The licensee plans to perform a revised auxiliary feedwater pump room heat load analysis.

The performance deficiency associated with this finding was the failure of engineering personnel to include the proper heat load scenarios and use of realistic assumptions for a design basis calculation. The finding was more than minor because it affected the design control attribute of the mitigating systems cornerstone and affected the objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have a very low safety significance because it did not result in an actual loss of system safety function, did not result in a loss of a single train of safety equipment for greater than its technical specification allowed outage time, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. This finding was evaluated as not having a cross-cutting aspect because the performance deficiency was not indicative of current performance.

Inspection Report# : [2008012](#) (*pdf*)

Significance:  Sep 11, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedures for 480 VAC System Grounds

The team identified a noncited violation of Technical Specification 5.5.1.a for inadequate procedures for 480 Volts Alternating Current system grounds. Specifically, the procedures do not identify the deleterious effects of 480 Volts Alternating Current system grounds on connected equipment, or the proper sense of urgency in removing grounds. Due to inadequate procedures for alarm response and abnormal operations, the licensee was slow in responding to a ground alarm on Bus 3B04 in March of 2008. It took 19 hours to identify and remove the ground. This indicated a routine, rather than a prompt response and may have exposed connected equipment to overvoltage for an unnecessarily long period of time. The licensee has entered this into their corrective action program as Notifications NN 200057494 (addresses trending of ground faults) and NN 200057495 (addresses procedure change).

This finding was more than minor because the procedure deficiency affected the mitigating system cornerstone

objective (procedure quality attribute) of ensuring availability, reliability, and capability of systems needed to respond to initiating events to prevent undesired consequences. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance (Green) because the finding was not a design or qualification deficiency, did not result in a loss of safety function, and did not screen as potentially risk significant due to external events. This finding was reviewed for cross-cutting aspects and none were identified (Section 1R21.2.16.1).

Inspection Report# : [2008010](#) (*pdf*)

Significance:  Sep 03, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Design Control for Design Basis of Component Cooling Water Heat Exchangers

The team identified a noncited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," for failure to ensure that plant conditions were consistent with design calculation inputs and assumptions (rate of established component cooling water heat exchanger tube plugging). Specifically, there were no procedures to verify that the periodic heat treatments of the intake tunnel and intake structure were effective and that the population of shells available for plugging the component cooling water heat exchangers was consistent with the historical data used to develop the engineering calculation and operating instruction curves. As a result, the design basis calculation and operating instructions did not ensure the capability of the heat exchangers to perform their design function during anomalous conditions. The licensee has entered this into their corrective action program as Notification NN 200006369.

This finding is more than minor in that the performance of the component cooling water heat exchangers is essential in protecting the mitigating systems cornerstone objective (design control and equipment performance attributes) of ensuring the availability, reliability, and capability of systems needed to mitigate the consequences of an accident. Specifically, the existing design analyses did not adequately demonstrate that the component cooling water heat exchangers would perform adequately in the event of anomalous tube plugging events and plant procedures did not ensure that these anomalous events would be detected and mitigated prior to the heat exchangers being plugged. These deficiencies represented reasonable doubt regarding the operability of the component cooling water heat exchangers. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance (Green) because the deficiency did not result in a loss of safety function of component cooling water Train A for greater than the Technical Specification allowed outage time. Train B was not adversely affected by this event. This finding was reviewed for cross-cutting aspects and none were identified since the performance deficiency is long standing and is not indicative of current licensee performance (Section 1R21.2.11)

Inspection Report# : [2008010](#) (*pdf*)

Significance:  Sep 03, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Design Control for 125VDC Control Circuits

The team identified a noncited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," for failure to properly analyze voltage drop in 125 Volts Direct Current control circuits. Specifically, the licensee failed to consider and analyze the voltage drop that occurs in control circuit elements such as cables, relay contacts, and fuses that could result in considerably lower voltage at the devices than is available at the corresponding distribution panels. The licensee has entered this into their corrective action program as Notifications NN 200051692 and NN 200059581.

This finding is more than minor because it is associated with the mitigating systems cornerstone objective (design control attribute) of ensuring the availability and reliability of safety systems, and closely parallels Inspection Manual Chapter 0612, Appendix E, Example 3.j, in that there was reasonable doubt regarding the capability of the 125 Volts Direct Current system to perform its intended function pending reanalysis. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety

significance (Green) because the 125 Volts Direct Current system was determined to have sufficient voltage margin to accommodate the additional voltage drop in the circuit elements that had not been considered. This finding was reviewed for cross-cutting aspects and none were identified (Section 1R21.2.14.1)

Inspection Report# : [2008010](#) (*pdf*)

Significance:  Jun 18, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Air Supply Equalizing Valve Not Secured Closed Due To Failure To Follow Procedure

The inspectors identified a noncited violation of Technical Specification 5.5.1.1 for the failure of operations personnel to follow Procedure SO23-2-8.1, "Saltwater Cooling System Alignments," Revision 7. Specifically, on June 17, 2008, inspectors identified air equalizing supply Valve HV6200 not secured closed, contrary to procedural requirements.

These valves were required to be secured closed as a corrective action to Apparent Cause Evaluation 060100377. This finding was entered into the licensee's corrective action program as Nuclear Notification 200038227.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected, in that air equalizing supply valves could be inadvertently opened rendering their associated air-operated valves unable to perform their safety function. The finding affected the Mitigating Systems Cornerstone. Using Manual Chapter 0609 "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because it did not result in the actual loss of system safety function. The finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program, because the licensee did not thoroughly evaluate problems such that resolutions address causes and extent of condition [P.1(c)].

Inspection Report# : [2008003](#) (*pdf*)

Significance:  Jun 03, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Component Cooling Water heat exchanger not operable due to Inadequate Maintenance Procedure.

The inspectors identified a noncited violation of Technical Specification 5.5.1.1 for the failure of maintenance personnel to have adequate procedures in place to ensure maintenance associated with a saltwater cooling isolation butterfly valve would not adversely impact the availability or operability of the component cooling water heat exchanger. Specifically, on January 8, 2008, inadequate procedures resulted in the failure to properly install butterfly Valve 2HCV6510. Additionally, the postmaintenance testing procedure was not adequate to verify the proper function of the valve prior to its return to service. This finding was entered into the licensee's corrective action program as Action Request 0806000104.

The finding is greater than minor because the degraded saltwater cooling valve is associated with the equipment performance 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 Worksheets, the finding is determined to have very low safety significance because the finding did not result in a loss of safety function of component cooling water Train A for greater than the Technical Specification allowed outage time. This finding has a crosscutting aspect in the area of human performance associated with resources because the licensee did not have complete, accurate, and up-to-date procedures [H.2(c)].

Inspection Report# : [2008003](#) (*pdf*)

Significance:  Apr 01, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Identify and Correct Condition Adverse to Quality

The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions,"

for the licensee's failure to establish measures to assure that deficient electrical connections were promptly identified and corrected. The licensee's measures were not adequate to assure that a long standing degraded electrical connection was identified for correction during three inspection opportunities associated with safety-related Breaker 3BD21, "Diesel Radiator Fan 3E550 Feeder Breaker," that occurred between June 2005 and April 2008. This issue was entered into the licensee's corrective action program as Nuclear Notification 200047962.

The finding is greater than minor because it is associated with the equipment performance 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 Worksheets, the finding is determined to have very low safety significance because the condition did not represent an actual loss of safety function of a single train for greater than its technical specification allowed outage time, and did not represent an actual loss of one or more risk-significant non-technical specification trains of equipment for greater than 24 hours. This finding has a crosscutting aspect in the area of problem identification and resolution associated with corrective action program because the licensee failed to thoroughly evaluate problems such that the resolutions address causes and extent of conditions. This includes properly classifying, prioritizing, and evaluating for operability and reportability conditions adverse to quality. This also includes, for significant problems, conducting effectiveness reviews of corrective actions to ensure that the problems are resolved [P.1(c)] (Section 3.7).

Inspection Report# : [2008013](#) (*pdf*)

Barrier Integrity

Significance:  Dec 31, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Procedure Implementation for Corrective Action on Degraded Source Handling Tool

A self-revealing Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified because Nuclear Fuel Services personnel did not properly implement procedural controls to adequately evaluate or repair a degraded source handling tool used in the spent fuel pool. An approved work plan was not used to modify the tool and the tool was returned to service in a degraded condition. Subsequently, on November 7, 2008, while moving a source element to its designated storage location, the neutron source slipped out of the tool and fell such that the bottom of the source element contacted the top of a spent fuel assembly. This finding was entered into the licensee's corrective action program as Nuclear Notification 200204667.

The finding is more than minor because if left uncorrected the performance of repairs without proper procedures or evaluations has the potential to lead to a more significant safety concern when critical tools are returned to service in a degraded condition. Degraded tools used in the spent fuel pool have the potential to adversely impact reactor safety barrier integrity because of potential damage to spent fuel assemblies or radioactive neutron source elements. Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," is used since the Significance Determination Process Appendix G methods and tools are not adequate to determine the significance of fuel handling findings. This finding affects the barrier integrity cornerstone and was determined to have very low safety significance by NRC management review because the deficiency did not cause actual degradation of fuel. The finding has a crosscutting aspect in the area of problem identification and resolution associated with corrective action program because Nuclear Fuel Services personnel did not thoroughly evaluate problems such that the resolution address causes and extent of condition associated with a degraded source handling tool [P.1(c)].

Inspection Report# : [2008005](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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