

San Onofre 2

3Q/2005 Plant Inspection Findings

Initiating Events

G**Significance:** Jun 26, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO IDENTIFY HYDRAULIC LEAK ON MAIN FEEDWATER BLOCK VALVE 3HV4051

The inspectors identified a Green finding for the failure to develop an adequate monitoring plan to timely identify a hydraulic leak on Main Feedwater Block Valve 3HV4051 on April 20, 2005. Specifically, Operations personnel were unaware that the leak existed until notified by the inspectors. This issue involved human performance crosscutting aspects associated with operators failing to identify the leak on shift rounds. This issue was entered into the licensee's corrective action program as Action Requests 050401214 and 050401222.

The finding is determined to be greater than minor because it was associated with the human performance attribute of the initiating events cornerstone and affects the cornerstone objective of limiting the likelihood of those events that upset plant stability. Furthermore, if left uncorrected, the finding would become a more significant safety concern in that it would continue to challenge the licensee to promptly identify a hydraulic leak on Valve 3HV4051 in order to prevent a plant transient. 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 contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions were not available.

Inspection Report# : [2005003\(pdf\)](#)**G****Significance:** Feb 24, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate SDC purification procedure

A self-revealing, non-cited violation of Technical Specification 5.5.1.1 was identified involving implementation of an inadequate procedure resulting in the inadvertent overpressurization of the Unit 2 chemical and volume control system and the subsequent loss of approximately 370 gallons from the reactor coolant system on February 24, 2005.

The finding was determined to be more than minor because it was associated with the procedure quality attribute of the initiating events cornerstone. It also affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown operations. The significance of the finding was evaluated with Manual Chapter 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination Process." Based on the results of the Phase 1 evaluation the finding was determined not to require quantitative assessment because adequate mitigation capability was maintained and the loss of RCS inventory was less than two feet (6.4 percent of pressurizer level). As a result, the finding was determined to have very low safety significance. The finding had crosscutting aspects in the area of human performance because the inadequate procedure directly contributed to the cause of the finding.

Inspection Report# : [2005002\(pdf\)](#)**G****Significance:** Feb 14, 2005

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate pressurizer spray valve corrective action

A self-revealing finding was identified for the licensee's failure to determine the extent of condition and prevent recurrence of a Unit 2 pressurizer spray valve degraded condition preventing the pressurizer spray valve from fully closing. This deficiency resulted in a manual scram in 2002 and use of operator compensatory actions in 2005 to compensate for reactor coolant system pressure control complications. The licensee performed corrective maintenance on the valve actuator in 2004, but did not inspect the valve, which would have revealed an additional problem.

The finding was considered to be more than minor because if left uncorrected, it would become a more significant safety concern in that an inadvertent depressurization of the RCS could occur, thus increasing the likelihood of an initiating event. Based on the results of the Significance Determination Process, Phase 1 evaluation, the finding was determined to have very low safety significance. Although the deficiency increased the likelihood of a reactor trip, it did not increase the likelihood that mitigating equipment or functions would not be available. This finding also had crosscutting aspects associated with problem identification and resolution, because the condition was not properly corrected when previously identified.

Inspection Report# : [2005002\(pdf\)](#)

Significance: N/A Dec 03, 2004

Identified By: Self-Revealing

Item Type: FIN Finding

Unplanned Scrams with Loss of Normal Heat Removal

The U.S. Nuclear Regulatory Commission performed this supplemental inspection to assess the licensee's evaluations associated with two unplanned reactor trips with loss of normal heat removal of Unit 2 during calendar year 2002 and one unplanned reactor trip with loss of normal heat removal of Unit 2 during calendar year 2004. The cumulative effect of these trips was that the Performance Indicator for unplanned scrams with loss of normal heat removal crossed the threshold from Green (very low risk significance) to White (low to moderate risk significance) for the second quarter of calendar year 2004. The licensee performed individual root cause evaluations for the three trips. In addition to the individual trip evaluations, the licensee performed a self-assessment evaluation to identify any performance and process issues that led to the White performance indicator. During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that the licensee performed a comprehensive and thorough evaluation in which specific problems were identified, an adequate root cause evaluation was performed, and corrective actions were taken or planned to prevent recurrence.

Inspection Report# : [2004017\(pdf\)](#)

Mitigating Systems

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Significance: Aug 17, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Improper Acceptance Limits for Surveillance Testing

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the failure to provide procedures that incorporated requirements and acceptance limits for inservice testing. The licensee's use of an inappropriate computer software program resulted in an incorrect determination of acceptability for 14 of 28 surveillance tests. For example, on August 15, 2005, an alert limit was exceeded on charging Pump 3P191 and the issue was not identified until 8 hours after completing the surveillance test. The finding had crosscutting aspects in the area of human performance because the use of the faulty software program by maintenance engineering personnel directly contributed to the cause of the finding. Additionally, this issue had problem identification and resolution crosscutting aspects in that maintenance engineering personnel did not implement timely corrective actions to resolve the software issues.

The finding was determined to be more than minor because it was associated with the human performance attribute of the mitigating systems cornerstone. It also affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, this issue could have resulted in equipment being considered operable even though testing may have demonstrated the equipment was inoperable. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding was determined to have very low safety significance because the finding did not represent an actual loss of a single train of a safety system for greater than its Technical Specification allowed outage time.

Inspection Report# : [2005004\(pdf\)](#)

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Significance: Jun 26, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY IMPLEMENT MAINTENANCE RULE REQUIREMENTS FOR SBSCS HEADER CRACKS

The inspectors identified a noncited violation of 10 CFR 50.65 (a)(1) for the failure to include component deficiencies of a system important to safety in the maintenance rule program. Specifically, the licensee did not incorporate piping header failures of the Unit 2 and Unit 3 steam bypass control system into the maintenance rule program to ensure appropriate monitoring and goal setting activities were established. This issue was entered into the corrective action program as AR 050200923.

The finding was determined to be greater than minor because it affected the equipment reliability attribute of the mitigating systems cornerstone and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding was determined to have very low safety significance because the SBSCS did not actually experience a loss of safety function.

Inspection Report# : [2005003\(pdf\)](#)

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Significance: Feb 10, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to prevent recurrence of missing taper pins from Fisher butterfly valves

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified for the licensee's failure to prevent recurrence of the significant condition adverse to quality of missing taper pins from safety-related Fisher butterfly valves. This deficiency, which affected the operability of the component cooling water system, had been identified six times since 1993.

The finding was more than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and it affected the cornerstone objective by challenging the availability and capability of the containment spray system. In addition, if left uncorrected, the finding could become a more significant safety concern in that the loss of taper pins would continue to challenge the availability and capability of mitigating systems. Based on the results of the Significance Determination Process Phase 1 evaluation, the finding was determined to have very low safety significance (Green), because it did not result in an actual loss of safety function of the containment spray system. This finding also had crosscutting aspects associated with problem identification and resolution, because the extent of the condition was not properly evaluated.

Inspection Report# : [2005002\(pdf\)](#)

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Significance: Dec 31, 2004

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Improper High Pressure Safety Injection Check Valve Maintenance

A self-revealing, noncited violation of Technical Specification 5.5.1.1 was identified for the failure of the licensee to implement adequate maintenance procedures which led to RWST inventory to inadvertently be introduced into the reactor coolant system.

The finding was determined to be more than minor because it affected the procedure quality attribute of the mitigating systems cornerstone. Based on the results of the significance determination process (Phase 1 evaluation), the finding was determined to have very low safety significance (Green) because the improper maintenance performed did not result in an actual loss of safety function. The finding had crosscutting aspects in the area of human performance because the inadequate MO directly contributed to the cause of the finding.

Inspection Report# : [2004005\(pdf\)](#)

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Significance: Oct 26, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Measures to Prevent Installing Spare Past Their Shelf-life

A non-cited violation was identified for failure to establish measures to ensure non-conforming replacement parts would not be installed in the plant. The licensee's apparent cause evaluation for a premature failure of an electrolytic capacitor in the Channel C power supply of the plant protection system noted that the failed component should not have been installed in the plant because it was beyond its recommended shelf life at the time of installation. This may have contributed to the power supply failure 18 months into a 10-year service life. The team noted that the licensee failed to subsequently implement measures to ensure that replacement parts with electrolytic capacitors were within their shelf-life prior to installation in safety-related systems, which was a violation of 10 CFR 50, Appendix B, Criterion XV. The licensee's program controlled only electrolytic capacitors stocked individually. This issue was entered in to the licensee's corrective action program under Action Request 041101130.

This finding affected the mitigating systems cornerstone, and was more than minor because, if left uncorrected, it could become a more significant safety problem, since it could increase the failure rate of the plant protection system. This issue screened as Green in a Phase 1 assessment, since the finding did not result in a loss of function, since only one train was affected by the only known failure.

Inspection Report# : [2004009\(pdf\)](#)

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Significance: Oct 26, 2004

Identified By: NRC

Item Type: FIN Finding

Intermittent Failure Not Rigorously Troubleshoot or Postmaintenance Tested

A finding was identified concerning non-rigorous troubleshooting and postmaintenance testing of an intermittent failure which led to the declaring equipment operable without reasonable assurance that the system would reliably perform as intended. Between September 10 and 16, 2004, an intermittent failure spuriously tripped in the Steam Generator 2 low flow or pre-trip bistables in Channel A of the plant protection system in Unit 3 five times. On separate occasions, maintenance technicians replaced different circuit cards that were thought to possibly cause the failures observed. Each time, operators declared the system operable based on passing its surveillance test without any additional monitoring for further intermittent failures and without confirming that any of the removed parts were bad. The team determined that no formal troubleshooting plan was used until the team asked to review the plan. Upon creating a formal plan, the licensee promptly identified debris in a circuit card connected thought to have been introduced during a recent calibration activity.

The performance deficiency associated with this event was a failure to follow the guidance of Generic Letter 91-18 to ensure there was a reasonable assurance that the system would perform reliably before declaring it operable. This resulted in receiving a repeat spurious bistable trip signal during unrelated testing on a redundant channel, necessitating unplanned LCO actions which placed the plant closer to a trip condition. This finding was greater than minor because it affected the equipment performance attribute of the Initiating Events cornerstone and directly affected the cornerstone objective of limiting events that challenge plant stability. The finding was of very low safety significance because it did not contribute to the likelihood of a LOCA initiator, did not increase the likelihood of both a reactor trip and unavailability of

mitigation equipment, and did not simultaneously increase the likelihood of a fire or flooding event as described in the Significance Determination Process Phase 1 screening worksheet.

Inspection Report# : [2004009\(pdf\)](#)

G

Significance: Oct 26, 2004

Identified By: Self-Revealing

Item Type: FIN Finding

Response Procedures for Clogged Intake Screens Did Not Address a Plant-Level Response to Avoid Unnecessary Trips

A self-revealing finding was identified because plant procedures for responding to debris at the plant intake did not address responding to a large influx of sea grass. The licensee identified this issue during their root cause assessment of the July 24, 2004, manual trip of Unit 3. Sea grass blocked the sea water intake for the circulating water system, and operators unsuccessfully attempted to keep the traveling screens clear until they eventually failed and stopped rotating. Neither SO23-2-5, "Operating Instruction for Circulating Water System," Revision 21, nor SO23-2-7, "Operation of Traveling Rakes and Screens," Revision 10, nor Alarm Response Instruction SO23-15-99.C, "Annunciator Panel 99.C," Revision 6 provided adequate guidance. Specifically, these procedures contained no guidance to take plant-level actions to reduce circulating water flow if actions to clear the screens were inadequate to restore normal flow. The licensee implemented appropriate corrective actions to improve the applicable response procedures, and improved policies for proactive monitoring of tide and weather conditions which could produce excessive sea grass intake. Reference Licensee Event Report 05000362/2004001-00 and Action Request 040600324. The team determined that the finding did not represent a noncompliance because it related to non-safety-related secondary plant equipment.

The finding is a performance deficiency because the alarm response and system operating procedures did not provide adequate instructions to operators to allow them to appropriately respond to more significant episodes of sea grass intrusion at the plant intake. The licensee's root cause assessment stated that more debris was expected during periods of strong surf and large tidal scope, such as was experienced in this event. This finding was more than minor because it was similar to Example 4.b in Manual Chapter 0612, Appendix E. This finding affected the Initiating Events cornerstone objective that procedures have sufficient quality to limit the likelihood of those events that upset plant stability during power operations. This issue screened as having very low safety significance in a Phase 1 assessment, since the finding affected only the initiating events cornerstone, and it affected a transient initiator without simultaneously affecting transient mitigation equipment.

Inspection Report# : [2004009\(pdf\)](#)

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Significance: Oct 07, 2004

Identified By: NRC

Item Type: FIN Finding

INADEQUATE PROGRAM TO PROVIDE TRAINING FOR OPERATORS ASSIGNED DUTIES AS FIRE TECHNICAL ADVISORS

A finding was identified related to an inadequate program to provide training for operators assigned duties as fire technical advisors. The team identified that the fire protection training program was made applicable only to the onsite fire department members. The licensed operators, who perform this advisory role to the onsite fire department, were not provided specific initial or periodic refresher training to be able to perform this role effectively, and there were only enough fire drills conducted for each fire technical advisor to participate in one fire drill every 3 years on average. The licensee approved fire protection program requires that fire department members receive periodic refresher training. This includes repeat classroom instruction for all members over a 2-year period and participation in at least two drills per year. However, the licensee's approved fire protection training program did not discuss training requirements for fire technical advisors. No violation of regulatory requirements occurred because San Onofre Nuclear Generating Station, Units 2 and 3, were licensed before the NRC clarified fire brigade training requirements. This finding was entered into the licensee's corrective action program under Action Request 040801076.

This issue was more than minor because it affected the mitigating systems cornerstone objectives for human performance and protection from external factors (fire), which is to support the capability to prevent undesirable consequences. In Manual Chapter 0609, Appendix F, this finding was categorized as affecting fire prevention and administrative controls, and was assigned a low degradation rating based on the NRC's and licensee's fire drill observations that coordination was generally acceptable between the fire department and the operating crews. Based on this, this finding screens as having very low safety significance (Green) in a Phase 1 Initial Qualitative Screening.

Inspection Report# : [2004008\(pdf\)](#)

Barrier Integrity

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Significance: Aug 23, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Maintenance Order for the Movement of a Control Element Assembly

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified for the failure to follow the instructions in a maintenance order for the movement of equipment in the Unit 2 spent fuel pool. A four finger control element assembly was dropped in the cask area of the spent fuel pool because it had not been properly grappled. This issue involved human performance crosscutting aspects associated with maintenance engineering personnel failing to follow the instructions in a maintenance order.

The finding is determined to be greater than minor because if left uncorrected it could become a more significant safety concern in that failing to follow instructions could impact the safe movement of components in the spent fuel pool, and increase the probability of a fuel handling accident. 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 the spent fuel pool or any of its components.

Inspection Report# : [2005004\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

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

Miscellaneous

Significance: N/A Oct 26, 2004

Identified By: NRC

Item Type: FIN Finding

Identification and Resolution of Problems

The team concluded that the licensee was effective in identifying, evaluating, and correcting problems. The licensee was proactive in performing self-assessments which were probing and aggressive in addressing negative behavior trends at a low level. The quality of root and apparent cause evaluations continued to be inconsistent, although appropriate actions were being taken to address this issue. The team identified that the operability assessment process was not being implemented consistent with procedures, in part because the procedures did not cover control room operator responsibilities.

Inspection Report# : [2004009\(pdf\)](#)

Last modified : November 30, 2005