San Onofre 3
4Q/2006 Plant Inspection Findings

Initiating Events

Significance: G Dec 31, 2006
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
UNPLANNED POWER INCREASE RESULTS IN VIOLATION OF TECHNICAL SPECIFICATIONS
A self-revealing noncited violation of Technical Specification 5.5.1.1 was identified for the failure of operations personnel to follow procedures while diluting the reactor coolant system. This resulted in the Technical Specification required surveillances on the core operating limits supervisory system not being performed prior to exceeding 20 percent reactor power following a Unit 3 reactor startup. The issue was entered into the licensee's corrective action program as Action Request 061200640.

The finding was determined to be more than minor because unplanned reactivity excursions could be reasonably viewed as a precursor to a significant event, in that they could lead to more serious situations where reactor protection equipment may be required. Using the Manual Chapter 0609, “Significance Determination Process,” Phase 1 worksheet, the finding was determined to have very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The core operating limits supervisory system was verified operable within approximately one hour after the event, and all other mitigating equipment and functions remained available. The finding had a crosscutting aspect in the area of human performance associated with work practices in that Unit 3 control room operators did not perform a controlled reactor power increase in accordance with established procedural requirements. In addition, supervisory oversight failed to ensure that the reactivity change was properly planned and briefed prior to execution
Inspection Report# : 2006005 *(pdf)*

Mitigating Systems

Significance: G Dec 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO PREVENT RECURRENCE OF PREMATURE TRIPPING OF SQUARE D THERMAL OVERLOADS
The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” for the failure to prevent recurrence of a significant condition adverse to quality involving the premature tripping of Square D thermal overloads used for equipment protection on safety-related equipment. This deficiency had not been properly evaluated or corrected since 2001. This issue was entered into the licensee's corrective action program as Action Request 061000859.

The finding was determined to be more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and it affected the cornerstone objective by challenging the availability and capability of safety-related components. Using the Manual Chapter 0609, “Significance Determination Process,” Phase 1 worksheet, the finding was determined to have very low safety significance because it did not result in an actual loss of safety function for affected systems. This finding also had crosscutting aspects in the area of problem identification and resolution associated with the corrective action program because the licensee failed to thoroughly evaluate and correct the problem in a timely manner
Inspection Report# : 2006005 *(pdf)*

Significance: G Nov 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Diesel Ground Alarm Procedure
The team identified a noncited violation of Technical Specification 5.5.1.a for an inadequate emergency diesel generator ground fault alarm response procedure. Specifically, the procedure had operators check for grounds associated with the emergency diesel generator itself but did not specify actions to address the more likely ground locations, which included components on the 4.16kV bus. Since other plant procedures permit cross-tying the safety-related buses on the opposite unit in the event of a loss of an emergency diesel generator, the failure to properly consider grounds in other locations could result in additional equipment failures. The licensee captured this finding in their corrective action program as Action Request 060700753.

The failure to provide an adequate alarm response procedure was a performance deficiency. This issue 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. Specifically, under certain circumstances, the emergency diesel generators may not have functioned following a seismic event. Using the Manual Chapter 0609, Significance Determination Process, Phase 1 screening worksheet, the issue screened as having very low safety significance 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.

Inspection Report# : 2006009 *(pdf)*

Significance: G Nov 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Incorrect Methodology for 125VDC Calculations
The team identified a noncited violation of Part 50 of Title 10 of the Code of Federal Regulations, Appendix B, Criterion III, Design Control, for the failure to properly calculate control circuit voltages associated with the Unit 3 motor-driven auxiliary feedwater Pump 3P504 breaker. Correcting the error used approximately 1/3 of the available design margin. The licensee captured this finding in their corrective action program as Action Request 060700765.

The failure to properly implement proper design controls was a performance deficiency. This issue was more than minor because, if left uncorrected, it could become a more significant safety concern. Specifically, the noted calculations are used for operability determinations and plant modifications. Uncorrected errors could mask equipment operability issues. This issue was similar to non-minor violation Example 3.j in NRC Inspection Manual Chapter 0612, Appendix E, Examples of Minor Issues, because there was a reasonable doubt of the operability of the pump breaker. Using the Manual Chapter 0609, Significance Determination Process, Phase 1 screening worksheet, the issue screened as having very low safety significance because it was a design deficiency confirmed not to result in loss-of-operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment.
Inspection Report# : 2006009 *(pdf)*

Significance: G Nov 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Identify Air Voids in Safeety Injection Suction Piping
The team identified a noncited violation of the Code of Federal Regulations, Title 10, Part 50, Appendix B, Criterion XVI, Corrective Actions, for the failure to promptly identify a condition adverse to quality (trapped air in the safety injection suction lines). Each suction line contained approximately 11.5 cubic feet of trapped air, but the licensee's official design calculations assumed the lines were full of water. Additionally, industry operating experience notified the licensee that air in the safety injection system suction lines could cause operational problems (a condition adverse to quality) but the licensee failed to promptly identify the condition at San Onofre Nuclear Generating Station. The licensee's engineering evaluation erroneously determined that San Onofre Nuclear Generating Station was not vulnerable to the condition

identified in the operating experience. The licensee captured this finding in their corrective action program as Action Request 060700747.

The failure to promptly identify and correct a condition adverse to quality in response to applicable operating experience was a performance deficiency. This finding was more than minor because it affected the mitigating system cornerstone objective (equipment performance attribute) to ensure the reliability and capability of equipment needed to respond to initiating events. Using the Manual Chapter 0609, Significance Determination Process, Phase 1 screening worksheet, the finding was of very low safety significance because it was a design deficiency confirmed not to result in loss-of-operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment. This finding has a cross-cutting aspect in the area of problem identification and resolution, in that the licensee failed to thoroughly evaluate applicable industry operating experience concerning air voids in recirculation piping suction lines.
Inspection Report# : 2006009 *(pdf)*

Significance:  Nov 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Identify Diesel Generator Seismic Nonconformance
The team identified a Code of Federal Regulations, Title 10, Part 50, Appendix B, Criterion XVI, Corrective Actions, violation for the failure to promptly identify a condition adverse to quality (Train A emergency diesel generators lost seismic qualification). The licensee had identified that a ground fault on a nonsafety-related uninterruptible power supply could cause the emergency diesel generator to trip during a fire but failed to further determine that the same scenario could occur during a seismic event. The licensee captured this finding in their corrective action program as Action Request 060600500.

The failure to promptly identify a condition adverse to quality was a performance deficiency. This finding is more than minor because it affected the mitigating system cornerstone objective (equipment performance attribute) of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, Train A emergency diesel generator operability was not assured for seismic events. Using the Manual Chapter 0609, Significance Determination Process, Phase 1 screening worksheet, the internal events portion of the worksheet did not apply, because the finding only involved an external seismic event with a loss of offsite power. Additionally, for external events, the finding screened as have very low safety significance because it did not involve the loss or degradation of equipment or function specifically designed to mitigate an external event (e.g., seismic snubbers, flooding barriers, tornado doors) and the safety function was not considered completely failed or unavailable, as the Train B emergency diesel generators were unaffected by the issue. This finding has a cross-cutting aspect in the area of problem identification and resolution, in that engineers failed to perform an appropriate extent of condition review and promptly identify the nonconforming emergency diesel generators, a condition adverse to quality.
Inspection Report# : 2006009 *(pdf)*

Significance:  Jul 12, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Follow Procedures Addressing Foreign Material Exclusion
The team identified a noncited violation of Part 50 of Title 10 of the Code of Federal Regulations, Appendix B, Criterion V, Procedures, for the failure to follow procedural requirements and establish the Units 2 and 3 CST-120 condensate storage tank enclosures as foreign material exclusion areas. The team found several pieces of foreign material in each enclosure. Foreign materials in these areas could have caused auxiliary feedwater system operational problems following a seismic event. In addition, the licensee failed to properly address industry operating experience related to foreign materials in auxiliary feedwater system water sources. Finally, a related condensate storage tank sizing calculation failed to consider the potential for reactor vessel head void formation during the cooldown to shutdown cooling conditions. The licensee captured this finding in their corrective action program as Action Requests 060700471 and 0601000172.

The failure to follow plant procedures was a performance deficiency. This finding is more than minor because it affected the mitigating system cornerstone objective (equipment performance attribute) of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined that a

Phase 3 significance determination was required because the finding screened as potentially risk significant due to a seismic initiating event. Region IV senior risk analysts performed a Phase 3 significance determination and determined that the issue represents a finding of very low safety significance.
Inspection Report# : 2006009 *(pdf)*

Significance: G 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)*

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance: G Dec 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE CONTAINMENT AIRBORNE RADIOACTIVITY BRIEFING
The inspectors identified a noncited violation of 10 CFR 19.12 for the failure of health physics personnel to adequately inform workers of the radiological conditions of the Unit 3 containment on October 23, 2006. A contract health physics technician and a health physics supervisor failed to inform workers of the airborne radiological conditions. This issue was entered into the licensee's corrective action program as Action Request 061001435.

The finding was determined to be more than minor because if left uncorrected it would become a more significant safety concern in that the failure to inform workers of radiological conditions could result in unintended exposures. The inspectors processed the finding through Appendix C, "Occupational Radiation Safety Significance Determination Process," of Manual Chapter 0609, "Significance Determination Process," and determined that the finding is of very low safety significance because it was not an ALARA issue; there was not an overexposure or substantial potential for an overexposure; and the ability to assess dose was not compromised. The cause of the finding has a crosscutting aspect in the area of human performance associated with work practices in that the contract health physics technician did not follow established health physics procedures for adequately informing workers of radiological conditions. In addition, supervisory oversight of the radiological condition briefings failed to ensure that nuclear safety was supported in that the airborne radioactivity component of the health physics briefings was being omitted and the supervisor was not cognizant of the

airborne radioactivity levels
Inspection Report# : 2006005 *(pdf)*

Significance: G Dec 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO ADEQUATELY LABEL A CONTAINER OF RADIOACTIVE MATERIAL
The inspector identified a noncited violation of 10 CFR 20.1904(a) because the licensee failed to adequately label a container of radioactive material. On August 4, 2006, a vial of spent resin that had a dose rate of 5 millirem per hour on contact and contained 14 microcuries of fission and activation products (primarily cesium-137 and cobalt-60) was found in the reactor chemistry lab trash can designated for “clean” non-radioactive waste. The health physics department had previously determined that when the vial was transferred to the reactor chemistry lab, the vial was in a plastic bag that was appropriately labeled with the words “Caution Radioactive Material” and sufficient information about the radiation hazards as required by 10 CFR 20.1904(a). However, when the inspector questioned whether the vial was adequately labeled, the licensee conducted an apparent cause evaluation and determined that the vial was found in the “clean” trash without an adequate label. The licensee’s immediate corrective action was to place a radioactive material label with dose rate information on the bag and store it in a lead pig. This issue was entered into the licensee's corrective action program as Action Request 060800249.

The finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Exposure Control, and affected the cornerstone objective to ensure the adequate protection of a worker’s health and safety from exposure to radioactive materials because workers could have received additional exposure. The finding was processed through the Occupational Radiation Safety Significance Determination Process and was determined to be of very low safety significance because: (1) it was not an as low as reasonably achievable finding, (2) there was no personnel overexposure, (3) there was no substantial potential for personnel overexposure, and (4) the finding did not compromise licensee’s ability to assess dose. Additionally, this finding had a crosscutting aspect in the area of human performance related to work practices because the licensee’s staff did not perform self checking to ensure the container of radioactive material was adequately labeled
Inspection Report# : 2006005 *(pdf)*

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Significance: N/A Sep 22, 2006
Identified By: NRC
Item Type: FIN Finding
Corrective Action Program Assessment
The inspectors reviewed 260 action requests, work orders, associated root and apparent cause evaluations, and other supporting documentation to assess problem identification and resolution activities. Overall, the team concluded that the licensee was effective in identifying, evaluating, and correcting problems. Corrective actions, when specified, were generally implemented in a timely manner. The licensee continued to be proactive in performing self-assessments which were probing and self-critical, and in addressing negative behavior trends at a low level. However, the team concluded that the licensee’s efforts to address a longstanding trend in human performance errors has not been completely effective

because workers were not consistently using the error prevention techniques. The team noted that the licensee used bench marking of industry best practices to make numerous improvements to the corrective action program since the last PI&R inspection. While some of the changes were too recent to evaluate, the team concluded that improvements in the quality of evaluations, documentation of the decision making process, and scope and timing of corrective actions showed improvement. The team identified that the quality and documentation for operability assessments and operational decision-making improved over the course of the evaluation period. The licensee expanded review of operating experience during cause evaluations, however several root cause evaluations identified instances where applicable operating experience had not been addressed sufficiently to prevent subsequent events. On the basis of 41 interviews conducted during this inspection, workers at the site felt free to input safety findings into the corrective action program, raise safety concerns to their supervision or bring concerns to the employee concerns program. The team concluded that a positive safety-conscious work environment exists at San Onofre Nuclear Generating Station.
Inspection Report# : 2006013 *(pdf)*

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