

## San Onofre 2

### 4Q/2004 Plant Inspection Findings

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#### Initiating Events

**Significance:** N/A Dec 03, 2004

Identified By: Self Disclosing

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\(pdf\)](#)

**G**

**Significance:** Apr 10, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

##### **Steam Generator Foreign Material Exclusion**

The inspectors identified a noncited violation of Technical Specification 5.5.1.1 and Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, because the licensee failed to implement adequate foreign material exclusion control during maintenance on Steam Generator E089, in accordance with established procedures.

The finding is greater than minor because it had a credible impact on safety since, if left uncorrected, the finding would become a more risk significant safety concern. Lack of control of foreign material in steam generators has the potential to significantly compromise the integrity of steam generator tubes and thus increase the likelihood of a steam generator tube rupture initiating event. The finding is of very low safety significance because the foreign material did not adversely effect the operability of the steam generator, and did not actually contribute to the likelihood of a loss-of-coolant accident initiator, given the material composition of the foreign material and the location that it was left in the steam generator. This finding also had crosscutting aspects associated with human performance because personnel failed to adequately control foreign material during maintenance activities.

Inspection Report# : [2004002\(pdf\)](#)

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#### Mitigating Systems

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**Significance:** Dec 31, 2004

Identified By: NRC

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\(pdf\)](#)

**G**

**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\(pdf\)](#)

**Significance:**  Oct 26, 2004

Identified By: NRC

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\(pdf\)](#)

**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\(pdf\)](#)

**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\(pdf\)](#)

**G**

**Significance:** Aug 03, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Provide Adequate Instructions for EDG Maintenance**

The inspectors identified a noncited violation of Technical Specification 5.5.1.1 because the licensee failed to provide adequate instructions in a maintenance order for the replacement of a power indicating lamp in a power supply associated with the Unit 2 Train A emergency diesel generator. The implementation of the inadequate maintenance order resulted in the unplanned inoperability of the Unit 2 Train A EDG for approximately 2 hours.

The finding was determined to be more than minor because it affected the procedure quality attribute of the mitigating systems cornerstone. The finding was determined to have very low safety significance (Green) because the inadequate maintenance order instructions did not result in an actual loss of safety function. In addition, the fuel transfer pumps were still capable of being started locally through manual operator action.

Inspection Report# : [2004004\(pdf\)](#)

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**Significance:** Jul 07, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

### **Licensee Failure to Correct Deficiencies in Saltwater Cooling Pump Removal and Installation Procedure**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, because the licensee failed to correct deficiencies in Procedure SO23-I-5.4, "Saltwater Cooling Pump Removal and Installation," following the improper assembly of saltwater cooling Pump 3P307 on March 13, 2004.

The finding was more than minor since it affected the procedure quality attribute of the mitigating systems cornerstone. The finding was determined to have very low safety significance (Green) because the inadequate procedure did not result in an actual loss of safety function. This finding also had cross-cutting aspects associated with problem identification and resolution based on the fact that the condition was entered into the corrective action program but no corrective actions were implemented.

Inspection Report# : [2004003\(pdf\)](#)

## **Barrier Integrity**

## **Emergency Preparedness**

## **Occupational Radiation Safety**

**G****Significance:** Apr 10, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**Two Examples of a Failure to Control a High Radiation Area with Radiation Levels Greater than 1.0 rem in One Hour at 30 Centimeters**

Green. The inspector reviewed the circumstances related to a self-revealing non-cited violation of Technical Specification 5.8.2 because the licensee failed to control two high radiation areas with radiation levels greater than 1.0 rem in one hour at 30 centimeters. On March 8, 2004, a plant operator entered the Unit 2 Volume Control Tank Valve Room 319A and received a personal electronic dosimeter alarm due to higher than expected radiation levels. Health Physics personnel subsequently surveyed the room and determined that the radiation levels were as high as 15 rem per hour at 30 centimeters. In addition, Room 305H, Ion Purification Exchanger Room to E075, was found to have radiation levels as high as 5 rem per hour at 30 centimeters. Neither of these rooms was controlled in accordance with Technical Specification requirements.

The two examples of a failure to control a high radiation area with radiation levels greater than 1.0 rem in one hour at 30 centimeters is a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of Program and Process and affected the cornerstone objective to ensure the adequate protection of a worker's health and safety from exposure to radiation. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it was not associated with as low as is reasonably achievable planning or work controls, there was no overexposure or a substantial potential for overexposure, and the ability to assess dose was not compromised. The finding was entered into the licensee's corrective action program as Action Request 040300701.

Inspection Report# : [2004002\(pdf\)](#)**G****Significance:** Apr 10, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Post a Radiological Hazard**

Green. On March 10, 2004, the inspector identified a non-cited violation of Technical Specification 5.5.1.1a because the licensee failed to post a radiological hazard (hot spot). A survey performed by the licensee on February 17, 2004, identified a hot spot, with radiation levels of 350 millirem per hour on contact and 50 millirem per hour at 30 centimeters, on the 17-foot elevation of the Unit 2 containment building.

The failure to post a hot spot is a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of Program and Process and affected the cornerstone objective to ensure the adequate protection of a worker's health and safety from exposure to radiation. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it was not associated with as low as is reasonably achievable planning or work controls, there was no overexposure or a substantial potential for overexposure, and the ability to assess dose was not compromised. The finding was entered into the licensee's corrective action program as Action Request 040201480.

Inspection Report# : [2004002\(pdf\)](#)

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## Public Radiation Safety

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## Physical Protection

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

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## 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 : March 09, 2005