San Onofre 3
2Q/2008 Plant Inspection Findings

Initiating Events

Significance: G Oct 11, 2007
Identified By: Self-Revealing
Item Type: FIN Finding
Ineffective Corrective Actions for Instrument Air Header Ruptures
The inspectors reviewed a self-revealing Green finding involving ineffective corrective actions taken in response to site and industry operating experience with instrument air header ruptures. Specifically, contrary to Section 6.2.3 of Procedure SO-123-I-1.42, "Maintenance Division Experience Report," Revision 0, the licensee failed to implement corrective actions to prevent recurrence for an equipment failure with the potential to cause a significant plant transient, and failed to appropriately consider previous industry and plant experience similar to the event. Additionally, licensee personnel failed to properly evaluate and take corrective actions based on industry operating experience through 2006 involving improperly made soldered joints in instrument air systems. As a result, an additional failure of an improperly made instrument air header joint occurred at SONGS on June 20, 2007. The licensee entered this issue in their corrective action program as Action Request AR 070600867.

This finding was more than minor since it was associated with the equipment reliability attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. This finding required a Phase 2 analysis per the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets since the loss of instrument air is a transient initiator resulting in the loss of the feedwater system which is part of the power conversion system which can be used to mitigate the consequences of an accident. Based on the results of the Phase 2 analysis and a subsequent Phase 3 analysis, the finding was determined to be of very low safety significance (Green) because of the availability of the diverse auxiliary feedwater system and the ability of the operators to depressurize the steam generators and utilize the condensate system for heat removal. These results were evaluated by a senior reactor analyst. This finding has a crosscutting aspect in the area of problem identification and resolution associated with operating experience in that the licensee failed to effectively implement changes to station processes, procedures, and equipment in response to operating experience involving improperly made instrument air system joints [P.2(b)].
Inspection Report# : 2007013 *(pdf)*

Significance: G Oct 11, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failured to Follow Abnormal Operating Instruction in Response to a Loss of Instrument Air
The inspectors identified a Green noncited violation of Technical Specification 5.5.1.1 involving the failure to meet procedural requirements following a loss of instrument air. Specifically, operators failed to monitor nitrogen tank levels or take precautions for the possibility of oxygen-deficient areas in the plant following actuation of the low pressure backup nitrogen system. The licensee entered this issue in their corrective action program as Action Request AR 070700291.

This finding was more than minor since it was associated with the human performance attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. This finding required a Phase 2 analysis in accordance with the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets since the loss of instrument air is a transient initiator resulting in the loss of the feedwater system which is part of the power conversion system which can be used to mitigate the consequences of an accident. Based on the results of the Phase 2 analysis, the finding was determined to be of very low safety significance because of the low likelihood of a complete loss of instrument air and the availability of the auxiliary feedwater system. The cause of this finding has a crosscutting aspect in the area of human performance associated with resources because licensee personnel were not adequately trained on the operation of the low pressure nitrogen system to effectively implement the abnormal operating instruction [H.2(b)].

Inspection Report# : 2007013 *(pdf)*

Mitigating Systems

Significance: G Jan 12, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Follow Operability Procedure
The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure of operations personnel to meet operability determination procedural requirements following unexplained load swings on Emergency Diesel Generator 3G002. Specifically, operations personnel failed to evaluate the operability of the diesel, per procedure, once a degrading condition had been identified. The licensee entered this issue in their corrective action program as Action Request AR 071201393.

The inspectors determined that the failure to follow SONGS’s Procedure SO123 XV 52, Revision 7, “Functionality Assessments and Operability Determinations,” constituted a performance deficiency and a violation. The inspectors determined that the violation was more than minor because it is associated with the mitigating systems cornerstone attribute of human performance and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The failure to identify the degraded condition associated with Emergency Diesel Generator 3G002 led to operation of Unit 3 with an inoperable diesel for approximately 9 days. Furthermore, the inspectors determined that the cause of the violation is related to the crosscutting area of problem identification and resolution because the licensee did not thoroughly evaluate the problem, including not properly classifying, prioritizing, and evaluating for operability a condition adverse to quality [P.1(c)].

In accordance with Inspection Manual Chapter 0609, “Significance Determination Process,” Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings,” the inspectors concluded the violation was of very low safety significance (Green) because it did not represent an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time

Inspection Report# : 2008006 *(pdf)*

Significance: G Jan 12, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Surveillance Test Procedure
The inspectors identified a Green noncited violation of Technical Specification 5.5.1.1 for an inadequate monthly Surveillance Test Procedure SO23-3-3.23, “Diesel Generator Monthly and Semi-Annual Testing,” Revision 30. The licensee failed to provide adequate guidance for evaluating momentary transients while performing emergency diesel generator surveillance testing. The licensee entered this issue in their corrective action program as Action Requests AR 071201393.

The failure to have a proper procedure in place for emergency diesel generator surveillance testing was considered a performance deficiency. The inspectors determined that the violation was more than minor because it is associated with the mitigating systems cornerstone attribute of human performance and it affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The failure to fully understand the statement regarding momentary transients contributed to the delayed identification of a degraded condition associated with the Emergency Diesel Generator 3G002. The inspectors determined that the cause of the violation is related to the crosscutting area of human performance because operations personnel did not use conservation assumptions in decision making. Specifically, the operations personnel did not understand what the reference to momentary transients meant and failed to evaluate the statement in the procedure further in the face of uncertainty. The procedure indicated that momentary transients might be acceptable and operations personnel made the decision to accept the guidance without proper investigation [H.1(b)].

In accordance with Inspection Manual Chapter 0609, “Significance Determination Process,” Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings,” the inspectors concluded the violation was of very low safety significance (Green) because it did not represent an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time

Inspection Report# : 2008006 *(pdf)*

Significance: G Dec 31, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Properly Implement Maintenance Rule Requirements for EDG AVRs
Green. The inspectors identified a Green noncited violation of 10 CFR 50.65(a)(1) for the failure to include Units 2 and 3 emergency diesel generator automatic voltage regulator deficiencies as functional failures in the maintenance rule program. The inspectors noted that the voltage regulator deficiencies should have placed the emergency diesel generators into maintenance rule 10 CFR 50.65(a)(1) status approximately six months after the failure occurred. This caused a lapse in the determination of appropriate system monitoring and goal setting to maintain system reliability. This issue was entered into the licensee's corrective action program as Action Request 070300161.

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. Based on the results of the Significance Determination Process Phase 1 evaluation, the finding was determined to have very low safety significance because it did not result in an actual loss of a system safety function, 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 also had crosscutting aspects in the area of problem identification and resolution associated with the corrective action program (P.1(c)) because the licensee failed to thoroughly evaluate the cause and extent of condition of the failed EDG AVRs.
Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 31, 2007
Identified By: NRC
Item Type: VIO Violation
Failure to Prevent Recurrence of Premature Tripping of Square D Thermal Overloads
Green. A self revealing Green violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified for the failure to prevent recurrence of premature tripping of Square D thermal overloads used for equipment protection on safety-related equipment. The licensee failed to scope the thermal overloads associated with the Unit 3 saltwater cooling pump room because they had previously determined that it had sufficient margin such that it would not be susceptible to failure. The licensee has since replaced all 75 susceptible thermal overloads that were previously scoped out of the corrective action process. This issue was entered into the licensee's corrective action program as Action Request 070800454.

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. The inspectors also noted that this a repetitive problem in implementing corrective actions. Based on the results of the Significance Determination Process Phase 1 evaluation, the finding was determined to have very low safety significance because it did not result in an actual loss of a system safety function, 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 also had crosscutting aspects in the area of problem identification and resolution associated with the corrective action program (P.1(c)) because the licensee failed to thoroughly evaluate the extent of condition of insufficient solder material on safety-related thermal overloads.
Inspection Report# : 2007005 *(pdf)*

Significance: G Oct 11, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation

Inadequate Evaluation Results in CCW Pump Runout
A self-revealing, Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified when Unit 2 experienced a loss of instrument air due to the failure of a soldered joint. Specifically, the loss of instrument air resulted in component cooling water (CCW) Pump 024 being in a runout condition for approximately 75 minutes due to a previous system modification. The licensee entered this issue in their corrective action program as Action Requests AR 070700051 and 070600872.

This finding was greater than minor because it was associated with the mitigating systems cornerstone attribute of design control and affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding did not affect the initiating events cornerstone functions of the component cooling water system because the condition would only have existed given a loss of instrument air initiator had already occurred. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, Phase 1 Worksheet, "Significance Determination Process (SDP) Phase 1 Screening Worksheet for the Initiating Events, Mitigating Systems, and Barriers Cornerstones," this finding was determined to be of very low safety significance because the finding was a design deficiency confirmed not to result in a loss of operability per "Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment."
Inspection Report# : 2007013 *(pdf)*

Significance: G Oct 11, 2007
Identified By: Self-Revealing
Item Type: FIN Finding
Ineffective Corrective Actions for a Failed Control Room Annunciator
The inspectors reviewed a self-revealing Green finding involving the failure to take effective corrective actions for a failed control room annunciator. Specifically, after the annunciator for actuation of the backup nitrogen supply to the instrument air system failed to function on demand on several occasions from 1994 through 2007, the corrective actions taken by the licensee to restore the annunciator to service were inadequate and narrowly focused. The annunciator subsequently failed to function during the loss of instrument air event on June 20, 2007. The licensee entered this issue in their corrective action program as Action Request AR 070601250.

This finding was more than minor since it was associated with the human performance attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. This finding required a Phase 2 analysis in accordance with the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets since the loss of instrument air is a transient initiator resulting in the loss of the feedwater system which is part of the power conversion system which can be used to mitigate the consequences of an accident. Based on the results of the Phase 2 analysis, the finding was determined to be of very low safety significance because of the low likelihood of a complete loss of instrument air and the availability of the auxiliary feedwater system. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program in that the licensee failed to thoroughly evaluate the failed annunciator such that the resolution appropriately addressed the causes [P.1(c)].
Inspection Report# : 2007013 *(pdf)*

Significance: G Oct 11, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Procedure for Loss of Instrument Air
The inspectors identified a Green noncited violation of Technical Specification 5.5.1.1 involving the failure to maintain an adequate abnormal operating instruction for a loss of instrument air event. The licensee entered this issue in their corrective action program as Action Request AR 070801151.

This finding was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events, in that a less than adequate abnormal operating procedure could have prevented operators from promptly tripping the reactor, allowing conditions to continue to degrade and resulting in a demand on the reactor protection system. Using the Significance Determination Process Phase 1 Screening Worksheet in Appendix A of Inspection Manual Chapter 0609, the inspectors determined this finding had very low safety significance because it did not result in an actual loss of safety function per "Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment." This finding has a crosscutting aspect

in the area of human performance associated with resources in that the licensee failed to provide operators with complete, accurate, and up-to-date procedures [H.2(c)].
Inspection Report# : 2007013 *(pdf)*

Significance: G Oct 11, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Simulator Incorrectly Modeled Plant Response to Loss of Instrument Air
A self-revealing, Green noncited violation of 10 CFR Part 55.46(c)(1) was identified involving the licensee's failure to incorporate a design change in modeling plant response for the plant-referenced simulator. Specifically, during operator training in the plant-referenced simulator, the controlled bleedoff valves for the reactor coolant pumps were modeled to fail closed on a loss of instrument air, whereas the valves in the plant remained open during an actual loss of instrument air event on June 20, 2007. The licensee entered this issue in their corrective action program as Action Requests AR 070600873 and 070900160.

This finding was greater than minor because it was associated with the mitigating systems cornerstone attribute of human performance and affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated this finding using the Appendix I, "Licensed Operator Requalification Significance Determination Process" worksheets of Manual Chapter 0609 because the finding is a requalification training issue related to simulator fidelity. The finding is of very low safety significance because the discrepancy did not have an adverse impact on operator actions such that safety related equipment was made inoperable during normal operations or in response to a plant transient. This finding has a crosscutting aspect in the area of human performance associated with resources in that the licensee did not provide operators with adequate facilities and equipment for use in operator training [H.2(d)].
Inspection Report# : 2007013 *(pdf)*

Significance: G Oct 11, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Follow Procedure for an Impaired Annunciator
The inspectors identified a Green noncited violation of Technical Specification 5.5.1.1 involving the failure to meet procedural requirements governing impaired annunciators. Specifically, after the identification of a failed annunciator, operators did not enter the annunciator in the failed annunciator log or mark the affected annunciator window with an annunciator compensatory action flag. The licensee entered this issue in their corrective action program as Action Request AR 070700291.

This finding was more than minor since it was associated with the human performance attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. This finding required a Phase 2 analysis in accordance with the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets since the loss of instrument air is a transient initiator resulting in the loss of the feedwater system which is part of the power conversion system which can be used to mitigate the consequences of an accident. Based on the results of the Phase 2 analysis, the finding was determined to be of very low safety significance because of the low likelihood of a complete loss of instrument air and the availability of the auxiliary feedwater system. This finding has a crosscutting aspect in the area of human performance associated with resources because the operators were not sufficiently trained to consistently implement the annunciator operating procedure [H.2(b)].
Inspection Report# : 2007013 *(pdf)*

Significance: G Oct 11, 2007
Identified By: Self-Revealing
Item Type: FIN Finding
Inadequate Implementation of Corrective Actions for Air Operated Valve Regulators
A Green self-revealing finding was identified associated with the failure of the reactor coolant pump controlled bleed off valve to shut during a loss of instrument air event. The licensee failed to adequately implement corrective actions from previously evaluated industry operating experience for new valve regulators that were installed in the unit. The licensee entered this issue in their corrective action program as Action Request AR 070600873.

The finding was greater than minor because it was associated with the mitigating systems cornerstone attribute of design control and affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigation systems cornerstone and it was confirmed not to result in loss of operability per "Part 9900, Technical guidance, Operability Determination Process for Operability and Functionality Assessment"
Inspection Report# : 2007013 *(pdf)*

Significance: G Sep 27, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Evaluate Operating Experience for Missing Nuts in 4kV Electrical Breakers
The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion V (Procedures) for the failure to follow requirements for evaluating applicable 4 kV breaker operating experience. Engineers had inappropriately determined that operating experience related to loose and/or missing mechanism operated cell components, dated 2003, was not applicable to San Onofre. Subsequently, a safety related 4 kV breaker (offsite power to 4 kV safety bus) malfunctioned because of a missing nut. In addition, following the breaker malfunction, the licensee's extent of condition review was initially untimely and lacked rigor. After NRC prompting, other loose and missing fastening nuts were identified. This issue was entered into the licensee's corrective action program as Action Request 070601194.

The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and it affected the cornerstone objective by reducing the availability, reliability, and capability of the electrical systems. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding had very low safety significance (Green) because it did not result in a loss of system safety function, 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 cause of the finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program component (P.1(c)) because of the poor extent of condition evaluation.
Inspection Report# : 2007004 *(pdf)*

Significance: G Sep 27, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate corrective Actions to Prevent Water Intrusion into auxiliary Feedwater Valve Cabinet 3MS4706
The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Actions) for the failure to prevent the recurrence of a significant condition adverse to quality, water intrusion into auxiliary feedwater electrical Cabinet 3MS4706. In the most recent event, the water rendered Valve 3HV4706 (auxiliary feedwater turbine driven pump to steam Generator 3E089 discharge valve) inoperable. Several previous occurrences of water intrusion were identified in the 1990s, including one instance where a valve contactor was significantly corroded. This issue was entered into the licensee's corrective action program as Action Request 070701029.

The finding was more than minor because it was associated with the equipment performance and external factors attributes of the mitigating systems cornerstone and it affected the cornerstone objective by reducing the availability, reliability, and capability of the auxiliary feedwater system. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding had very low safety significance (Green) because it did not result in a loss of system safety function, 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.
Inspection Report# : 2007004 *(pdf)*

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance: G Dec 31, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Follow a Radiation Exposure Permit Requirement
Green. The inspector reviewed a self-revealing noncited violation of Technical Specification 5.5.1.1 when a worker failed to follow radiation work permit instructions. On July 14, 2007, after completing a pre-job site review, a worker proceeded to verify work authorization boundaries in Unit 3, Room 209, without contacting radiation protection for current radiological conditions and discussing the work scope and locations as required by the radiation work permit. The worker approached Valve S31902MU012 and received a dose rate alarm. The maximum dose rate levels in the area were 30 millirem per hour on contact with the piping system and 12 millirem per hour at 30 centimeters. The licensee's corrective actions were to coach the worker and to develop and implement a mechanism to communicate associated boundary walk downs in maintenance orders.

The failure to follow a radiation work permit instruction is a performance deficiency. This finding is greater than minor because it is associated with one of the cornerstone attributes (exposure control) and affected the Occupational Radiation Safety cornerstone objective, in that workers not following their radiation work permit does not ensure adequate protection of the worker health and safety from additional personnel exposure. The finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Further, this finding had a human performance cross-cutting aspect in the work practices component because the workers did not use human error prevention techniques, such as self checking, to ensure the full work scope, locations, and radiological conditions were discussed with radiation protection personnel as required by the radiation work permit [H4a].
Inspection Report# : 2007005 *(pdf)*

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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