Surry 1
1Q/2011 Plant Inspection Findings

Initiating Events

Significance: G Dec 31, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Follow Procedure Results in Inadvertent Actuation of Safety Injection
A self-revealing Green NCV of TS 6.4, Unit Operating Procedures and Programs, was identified for the failure to follow procedure 1-OPT-ZZ-001, ESF Actuation with Undervoltage and Degraded Voltage 1H Bus. Specifically, on October 26, 2010, a test lead was incorrectly installed in the Unit 1 relay room for the logic circuit associated with the A train of Consequence Limiting Safeguards (CLS). This resulted in an inadvertent safety injection, isolated component cooling water supply to the standby residual heat removal (RHR) train, and automatically initiated several safety-related components including emergency diesel generator (EDG) #1. Operators entered AP-10.20, Response To Spurious Safety Injection With RCS Temperature Less Than 350°F, and terminated the safety injection in approximately three minutes. The licensee entered this issue into the CAP (CR 400908).
Failure to install the test leads as required by procedure 1-OPT-ZZ-001, is a performance deficiency. The finding is more than minor because it is associated with the configuration control attribute of the Initiating Events Cornerstone and adversely affected the cornerstone's objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding, evaluated in accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, Checklist 3, identified the finding is of very low safety significance (Green) because the finding did not lead to a loss of decay heat removal. This finding has a cross cutting aspect in the work practices component in the Human Performance area, because human error prevention techniques were not properly used commensurate with the risk significance of the assigned task (H.4(a)).
Inspection Report# : 2010005 *(pdf)*

Significance: G Aug 16, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Identify and Correct Degraded Unit 1 Nuclear Instrument RC Filters
An NRC identified non-cited violation of 10 CFR 50, Appendix B, Criteria XVI, Corrective Action, was identified for the licensee's failure to identify and correct degraded RC filters associated with Unit 1 Nuclear Instrument (NI) cabinets for N-42 and N-44 based on a similar degraded condition identified on Unit 2 NI cabinet N-43 in November 2009. The issue was entered into the licensee's corrective action program as condition report CR383881. All the RC filters in the Surry Unit 1 and 2 NI cabinets have been replaced with new RC filters.
The finding was determined to be of more than minor significance because it is associated with the equipment performance attribute of the Initiating Events cornerstone. It adversely affected the cornerstone objective of protection against external events, i.e., fire. The performance deficiency was screened using phase 1 of the Significance Determination Process (SDP) and was determined to be a fire initiator contributor and to
have impact on post fire safe shutdown, therefore a phase 2 analysis utilizing Inspection Manual chapter 0609 Appendix F was required. Since the finding involved MCR fire scenarios, a phase 3 analysis was required. A phase 3 risk analysis was performed by a regional SRA in accordance with IMC 0609 Appendix F, NUREG/CR6850, and utilizing the latest Surry SPAR probabilistic risk analysis model. The fire scenarios were
determined to impact MCR operator actions but would not credibly require MCR evacuation for either habitability or safe shutdown functional requirements. The dominant sequence was a fire induced reactor trip transient initiator, with failures of auxiliary feedwater, main feedwater and failure to implement feed and bleed leading to
core damage. Factors which mitigated the risk of the fire were the minimal fire growth potential and the potential for NI cabinet fires to damage SSD equipment. The risk evaluation result was an increase of <1E-6 for core damage frequency, a finding of very low risk significance (Green). This finding involved the cross cutting area of problem identification and resolution, the component of operating experience (OE), and the aspect of evaluating

internal OE (P.2.a), because the licensee did not effectively evaluate the internal operating experience gained from the November 2009 RC filter failure prior to the failure of the RC filters on June 8, 2010.

Inspection Report# : 2010006 *(pdf)*

Significance: G Jun 30, 2010
Identified By: Self-Revealing
Item Type: FIN Finding
Inadequate Rigging Practices Result in Damage to Safety Related Equipment
A self-revealing Green Finding was identified for failure to adequately rig a 300 pound motor in the auxiliary building in accordance with the manufacturer's recommendations on May 11, 2010. As a result, the motor slipped from its rigging and dropped approximately 15 feet onto the A component cooling water (CCW) pump motor below, damaging the motor's cabling and electrical junction box. The CCW pump was declared inoperable (CR 380834), the damage was repaired, and the CCW pump restored to an operable status on May 15, 2010.

Inspectors determined that the failure to implement adequate rigging practices in accordance with vendor recommendations as required by procedure MA-AA-101, Revision 5, "Fleet Lifting and Material Handling" constituted a performance deficiency and a finding which was reasonably within the licensee's ability to foresee and correct and which should have been prevented. The finding is similar to MC 0612, Appendix E example 4.f, and is more than minor because it resulted in damage to and inoperability of a risk significant component. The finding is associated with the human performance attribute of the initiating events cornerstone and adversely affected the cornerstone objective to limit the likelihood of those events which upset
plant stability and challenge critical safety functions during shutdown as well as power operations because a loss of the component cooling water system would have resulted in a unit transient. The finding, evaluated per Attachment 4 of MC-0609, "Phase 1 – Initial Screening and Characterization of Findings," was determined to be of very low safety significance (Green) because it did not contribute to both the likelihood of a plant transient and the loss of accident mitigation equipment. This finding has a cross-cutting aspect in the area of human performance, decision making because the licensee did not make safety/risk significant decisions using a systematic process, especially when faced with uncertain decisions, to ensure safety is maintained (H.1(a)). Specifically, the rigging team made safety/risk significant decisions within lifting/rigging procedures that did not include a systematic process for evaluating each lift, especially loads <5000 lbs in the vicinity of risk significant equipment.
Inspection Report# : 2010003 *(pdf)*

Mitigating Systems

Significance: G Mar 31, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Correct Multiple Conditions Adverse to Fire Protection
A Green, self-revealing non-cited violation of Condition 3.I to the Surry Unit 1 and Unit 2 Updated Facility Operating Licenses, DPR-32 and DPR-37, was identified for the licensee's failure to take corrective action for degraded conditions adverse to the fire protection program. The licensee entered this issue into their corrective action program as condition report 398628.

The inspectors found that the failure to take action to correct multiple oversized breakers constituted a performance deficiency. The finding is more than minor because it adversely affected the external factors attribute (fire) of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the Unit 2 '1B' RWST chiller motor and the Unit '2B' hydrogen recombiner breakers were the most susceptible to fire due to their size; also a cable fault could potentially damage safety related cables routed nearby. In addition, the Unit 1 '2B' charging component cooling water pump is safety related and its cable was also unprotected. The inspectors reviewed IMC 0609, Appendix F, Attachment 1, and determined the category of post fire safe shutdown was affected and the finding required a phase 3 analysis. A phase 3 risk analysis was performed by a regional SRA in accordance with IMC 0609 Appendix F,

NUREG/CR6850, NUREG/CR 6850 supplement 1, and utilizing the latest NRC Surry SPAR probabilistic risk analysis model and determined that the risk increase in core damage frequency was <1E-6, a finding of very low risk significance, Green. The cause of this finding involved the cross-cutting area of human performance, the component of work control, and the aspect of work planning, H.3(a), because the licensee failed to appropriately prioritize, schedule, and complete work activities consistent with risk insights and the safety significance of the equipment.

Inspection Report# : 2011002 *(pdf)*

Significance: G Jun 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Demonstrate that the Reliability of Systems or Components were effectively controlled per 10 CFR 50.65 (a)(2)
The NRC identified a Green Non-Cited Violation of 10CFR50.65 a(2) for the licensee's failure to demonstrate that the reliability of High Safety Significant (HSS) systems and Low Safety Significant (LSS) systems in stand-by was being effectively controlled through the performance of appropriate preventative maintenance, such that the systems or components remain capable of performing their function. Specifically, the licensee's MR program would not demonstrate that a system should remain in category a(2) as defined by regulatory requirements.
The inspectors determined the licensee's MR program could not demonstrate that reliability of High Safety Significant (HSS) systems and Low Safety Significant (LSS) systems in stand-by were being effectively controlled through the performance of appropriate preventative maintenance, such that the systems or components remain capable of performing their function is a performance deficiency. Specifically, the monitoring established by the license did not effectively demonstrate that systems in a(2) were being effectively controlled through performance of appropriate preventative maintenance. This masking of poor equipment performance does not allow the licensee to determine if a system should be in increased
monitoring of a(1).

The finding was more than minor because it adversely affected the equipment performance attribute of the reactor safety mitigating systems cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of HSS and LSS systems to perform their functions when required. Specifically, multiple HSS and LSS systems could have a high probability of failure, because poor equipment performance would not be recognized by the licensee. This could prevent a poor performing system from being placed into the a(1) category when required and appropriate corrective action would not be taken.

The finding was evaluated using MC-0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," and determined to be of very low safety significance (Green), because the finding did not involve an actual failure of equipment. This finding had a crosscutting aspect in the area of human performance and resources because the licensee did not ensure that personnel, procedures, and other resources were available and adequate to assure proper implementation of MR program. The MR personnel did not have the training required to implement the program within the required industry regulations and guidelines (H.2.b).
Inspection Report# : 2010003 *(pdf)*

Barrier Integrity

Significance: G Dec 31, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Heavy Load Lift of the 1B RCP Motor Over Exposed Reactor Fuel
An NRC-identified Green NCV of Technical Specification (TS) 6.4, Unit Operating Procedures and Programs, was identified. Personnel failed to follow the defined heavy load shipping path inside containment as specified in procedure, GMP-001, Heavy Load Rigging and Movement, which resulted in the movement of the 1B reactor coolant pump motor over exposed reactor fuel. The licensee has entered the issue into the CAP (CR 404106).

Transport of the 1B reactor coolant pump motor over the exposed reactor core is a performance deficiency. The finding is more than minor because it can reasonably be viewed as a precursor to a significant event, the heavy load traveled over exposed irradiated fuel with the reactor vessel head removed. In accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix G, “Shutdown Operations Significance Determination Process,” Attachment 1, Checklist 4, the inspectors conducted a Phase 1 SDP screening and determined the finding required a Phase 2 analysis. The Phase 2 analysis determined the finding is of very low safety significance (Green) because: (1) there is a low probability of dropping the load based on a study in NUREG-1774 performed for crane operating experience; (2) the polar crane was in working condition and had no known deficiencies that would have affected the crane’s ability to lift the load; and, (3) the duration of the heavy load lift over the exposed reactor core was very short. In addition, in accordance with NRC IMC 0609, Appendix H, “Containment Integrity SDP,” the finding would not contribute to LERF due to the time since the reactor was shutdown. The finding has a cross-cutting aspect in the work practices component of the Human Performance area because plant supervisors failed to properly supervise workers executing procedure steps (H.4(c)).

Inspection Report# : 2010005 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

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

Miscellaneous

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