

Harris 1

1Q/2011 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: FIN Finding

Reactor Trip due to Failing to Properly Assemble an Oil Filter in the Hydrogen Seal Oil System

Green. A self-revealing Green finding was identified for the licensee's failure to follow Work Control Management procedure WCM-006, Graded Approach to Planning and Scheduling, which has requirements that would have ensured the proper rebuild of the oil filter assembly in the hydrogen seal oil (HSO) system. Specifically, this resulted in inadequate maintenance on the filter assembly which caused the handle of the assembly to eject during power operations, causing an oil spill which necessitated a manual reactor trip. The licensee entered this issue into the CAP as Action Request (AR) #366174. The licensee took corrective action to replace the oil filter assembly, as well as clean and replace the spilled oil. Additionally, the licensee reviewed both completed and upcoming work orders to verify they were properly classified based upon potential impact on plant operations.

The licensee's failure to follow WCM-006 requirements which resulted in the improper rebuild of the oil filter assembly in the HSO system was identified as a performance deficiency. The finding was determined to be more than minor because it was associated with the procedure quality attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. Specifically, the performance deficiency resulted in an initiating event causing a manual reactor trip and the possibility of an oil fire in the vicinity of the offsite power electrical supply ducts. Using IMC 0609, "Significance Determination Process," Phase 1 Worksheet, the inspectors concluded that a Phase 2 evaluation was required since the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigating systems would not have been available. This conclusion was based upon the potential for the spilled oil to ignite in a location that could have challenged the offsite electrical power supply bus ducts following the reactor trip. A regional Senior Reactor Analyst completed a Phase 3 evaluation under the Significance Determination Process. The performance deficiency was characterized as of very low safety significance (Green) based upon the results of this evaluation. The dominant accident sequence involved the postulation of oil igniting in the spill zone. Once ignited, suppression efforts were unsuccessful, causing the loss of the turbine building and a loss of offsite power. Given this damage state, recovery of offsite power was not considered credible. Subsequently, it was postulated that the emergency diesel generators failed which ultimately led to a loss of core cooling and core damage. The finding has a cross cutting aspect of Work Planning, as described in the Work Control component of the Human Performance cross-cutting area because the failure to correctly classify the work package as "Quality Critical" resulted in not correctly mitigating the risk associated with working on this equipment by including additional guidance to assist the technicians in completing the work successfully (H.3(a))

Inspection Report# : [2010003](#) (*pdf*)

Mitigating Systems

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedure Results in Emergency Safeguards Sequencer Actuation and Safety Injection Signal (SIS) while the Plant was in Mode 6.

A self-revealing Green NCV of Technical Specifications (TS) 6.8.1, Procedures, was identified for the licensee's failure to follow procedure MST-I0073, Train "B" 18 Month Manual Reactor Trip, Solid State Protection System

Actuation Logic & Master Relay Test. Specifically, step 7.4.14 of MST-I0073 required the licensee to place the Master Relay Selector Switch (MRSS) in the “Off” position. Contrary to this requirement on October 28, 2010, the licensee failed to place the MRSS in the “Off” position at step 7.4.14. Instead, at step 7.5.85, the technicians noticed that the MRSS remained in Position “3” and then placed the MRSS in the “Off” position. This action combined with the current plant condition caused an invalid “B” train safety injection signal (SIS) and “B” Emergency Safeguards Sequencer (ESS) actuation while the plant was in Mode 6. The licensee entered this issue into their corrective action program (CAP) as action request (AR) #430289. As corrective action, the licensee restored the plant to the pre-actuation condition and conducted training for the maintenance technicians.

The failure to follow procedure MST-I0073 for the proper operation of the MRSS was a performance deficiency. The finding was more than minor because it is similar to the more than minor example 4.b from MC 0612 Appendix E in that an operator incorrectly operated a switch causing a plant transient. Additionally, it is associated with the human performance attribute of the Mitigating Systems cornerstone, and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, it resulted in an invalid SIS causing the ESS to start the “B” ESW and “B” CCW pumps. Using IMC 0609, Significance Determination Process, Phase 1 screening worksheet and Appendix G (Shutdown Operations), Attachment 1, Checklist 4, this finding was determined to be of very low safety significance because it did not meet any of the guidelines which require quantitative assessment. The finding has a cross-cutting aspect of Human Error Prevention, as described in the Work Practices component of the Human Performance cross-cutting area because the technicians proceeded in the face of uncertainty without consulting supervision when they encountered unexpected plant conditions (H.4(a)).
Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Comply with the Limiting Conditions for Operation, While the Refueling Water Storage Tank was Aligned to the Non-seismically Qualified Fuel Pool Purification System.

The inspectors identified a Green NCV of TS 3.1.2.6, Borated Water Sources, for the failure to comply with the limiting conditions for operation, while the Refueling Water Storage Tank (RWST) was aligned to the non-seismic Fuel Pool Purification system (FPPS) for purification, causing the RWST to be inoperable. Specifically, when FPPS was aligned to the RWST, the licensee did not declare the RWST inoperable. The licensee took corrective actions (AR #422180) and revised OP-116.1, FPPS, to remove the capability to purify the RWST in Modes 1 through 4.

The failure to comply with the actions of TS Limiting Condition for Operation (LCO) 3.1.2.6 while the Refueling Water Storage Tank (RWST) was aligned to the nonseismic FPPS for purification on May 24, 2010, causing the RWST to be inoperable, was a performance deficiency. The performance deficiency was more than minor because it affected the Design Control attribute of the Mitigating System cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, when the FPPS was aligned to the RWST, the licensee did not declare the RWST inoperable. The inspectors evaluated the significance of this finding Using Attachment 4 of IMC 0609, the significance of this finding was determined to be of very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in loss of operability or functionality, did not represent a loss of system safety function, did not represent actual loss of safety function of a single train for longer than its TS Allowed Outage Time, did not represent an actual loss of safety function of one or more non-TS Trains of equipment designated as risk-significant, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had a cross-cutting aspect of Conservative Assumptions, as described in the Decision Making component of the Human Performance cross-cutting area because, assumptions used in the justification to support the procedure change (i.e. a license amendment was not deemed required to support the procedure change) to OP-116.01 were non-conservative and the review of the issue in May 2010 did not adequately validate the assumptions (H.1(b)).

Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Post Maintenance Test Procedure Results in Deenergization of the "B" Safety Bus and Loss of Decay Heat Removal

A self-revealing Green NCV of TS 6.8.1, Procedures, was identified for the licensee's failure to develop an adequate procedure for the post maintenance test of the recently replaced main generator lockout relay (MGLR). Specifically, the licensee failed to ensure that the post maintenance testing (PMT) was within the clearance boundary that was established for the MGLR replacement. This resulted in the inadvertent deenergization of the "B" Safety Bus and the "B" Residual Heat Removal (RHR) pump, which was the only pump providing decay heat removal (DHR). As corrective action, the licensee entered AOP-25, Loss of One Emergency AC Bus, and restored DHR with the "B" RHR pump after approximately three minutes. The resultant increase in Reactor Coolant System temperature was approximately one degree. Additionally, the licensee plans to revise PLP-400, Post Maintenance Testing, to provide the work planner with additional guidance in the development of PMT for protective relays. The licensee entered this issue into their CAP as AR #431732.

The licensee's failure to develop an adequate procedure for the post maintenance test of the recently replaced MGLR was a performance deficiency. The performance deficiency was more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone, and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, it resulted in the inadvertent deenergization of the "B" Safety Bus and loss of DHR. Using IMC 0609, "Significance Determination Process,"

Phase 1 screening worksheet of the SDP, the inspectors determined that the use of Appendix G, Shutdown Operations Significance Determination Process, was necessary. Using Checklist 3 of Attachment 1 of Appendix G, the inspectors determined that this issue affected both the DHR equipment guidelines and the

emergency electrical bus guidelines and therefore required a Phase 2 analysis. Using Worksheet 8 of Attachment 2 of Appendix G, the inspectors determined that recovery credit was appropriate because 1) sufficient time was available to implement these actions, 2) environmental conditions allow access where needed, 3) procedures exist, 4) training was conducted on the existing procedures under conditions similar to the scenario assumed, and 5) any equipment needed to complete these actions is available and ready for use. Using a time to boil of greater than one hour and the fact that the steam generators were not available for cooling, the result of the Phase 2 was that a Phase 3 was necessary. A regional Senior Reactor Analyst evaluated the performance deficiency under the Phase 3 protocol of the Significance Determination Process. Based upon the results of that evaluation, the performance deficiency was characterized as of very low safety significance (Green). The finding has a cross-cutting aspect of Work Coordination, as described

in the Work Control Component of the Human Performance cross-cutting area because the licensee did not understand the potential operational impact of the work activities or adequately account for current plant conditions (H.3(b)).

Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedure to Properly Align the MOC Switch Contacts Associated with Breaker 1A-6 Results in Actuation of the "B" MDAFW Pump.

A self-revealing Green NCV of TS 6.8.1, Procedures, was identified for the licensee's failure to correctly implement Section D.2.10 of Engineering Change (EC) #74866R1 when aligning the Mechanism Operated Cell (MOC) switch for the "A" Main Feed Water Pump (MFP) breaker 1A-6. Specifically, the misalignment of the MOC resulted in the inadvertent auto actuation of the "B" Motor Driven Auxiliary Feed Water (MDAFW) pump. As corrective action (AR #432568), the licensee realigned MOC switch contacts under task 3 of Work Order (WO) #01658137 per the instructions of EC #74866R1. Post Modification testing verified contact continuity in both the breaker open and closed and was completed satisfactory.

The failure to follow Section D.2.10 of EC #74866R1 on WO #01658137 task 1 was a performance deficiency. The performance deficiency was more than minor because it is associated with the human performance attribute of the Mitigating System cornerstone, and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the misalignment of the MOC resulted in the inadvertent automatic start of the "B" MDAFW pump. Using IMC 0609, "Significance Determination Process," Phase 1

screening worksheet of the SDP, this finding was determined to be very low safety significance because it was not a design or qualification deficiency confirmed to result in a loss of operability or functionality, did not represent a loss of system safety function, did not result in a loss of safety system function for a single train for greater than TS allowed outage time, did not result in a loss of safety function of one or more non-TS trains of equipment designated as risk significant for greater than 24 hours, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect of Human Error Prevention, as described in the Work Practices component of the Human Performance cross-cutting area because the licensee did not apply sufficient human error prevention tools to ensure the correct alignment of the MOC switch contacts associated with vacuum circuit breaker 1A-6 (H.4(a)).

Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Procedural Guidance to Properly Lift/Land Leads

A self-revealing Green NCV of Technical Specification (TS) 6.8.1, Procedures, was identified for the licensee's failure to establish and implement procedural requirements that would ensure the Program "C" relay wiring configuration in the "A" Sequencer remained in accordance with plant drawings following maintenance. Procedure OPS-NGGC-1303, Independent Verification, did not require the use of plant drawings to verify the "As Built" configuration when lifting and landing leads, which ultimately led to the deenergization of the "A" 6.9kV Safety bus during a surveillance test. The licensee took corrective action (AR #424668) and replaced the 86UV/SA relay, tested components within the circuit that could be affected, corrected the wiring issue and issued a memo to set expectations for utilizing plant design drawings when lifting/landing leads.

The failure to establish and properly implement procedural guidance to maintain the Program "C" relay in the "A" Sequencer wired in accordance with plant drawings following maintenance on April 28, 2009, was a performance deficiency. The performance deficiency was more than minor because it affected the procedure quality attribute of the Mitigating System cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the leads being incorrectly landed would have prevented the "A" EDG from automatically reenergizing the "A" 6.9kV Bus. Using IMC 0609, "Significance Determination Process," Phase 1 Worksheet, the inspectors concluded that a Phase 2 evaluation was required because this finding represented a loss of safety function of the "A" 6.9kV safety bus. The inspectors performed a Phase 2 analysis using IMC 0609, Appendix A, "Determining the Safety Significance of Reactor Inspection Findings for At-Power Situations" and the site specific risk informed inspection notebook, it was determined that a Phase 3 analysis was required. A regional Senior Reactor Analyst performed a Phase 3 evaluation under the Significance Determination Process and concluded the finding was Green. The finding has a cross-cutting aspect of Documentation and Component Labeling, as described in the Resources component of the Human Performance cross-cutting area because the licensee did not effectively communicate expectations regarding the utilization of design drawings to aid in the proper completion of the verification sign-off form (OPS-NGGC-1303) (H.2(c)).

Inspection Report# : [2010005](#) (pdf)

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedure to Install the Load Block 5 Auxiliary Relay

Green. A self-revealing Green NCV of TS 6.8.1, Procedures, was identified for the licensee's failure to follow procedure PIC-E069, Sequencer Electomechanical Timing Relays; D.C. Pick-Up, D.C. Drop-Out, A.C. Pick-Up, and A.C. Drop-Out. Specifically, the licensee failed to properly reinstall the Load Block 5 Auxiliary Relay, resulting in the automatic start of "B" Motor Driven Auxiliary Feedwater (MDAFW) pump and water flowing to all three steam generators. Operators immediately secured the "B" MDAFW pump. The licensee entered this issue into their corrective action program (CAP) as action request (AR) #381672. As corrective action, the licensee removed and correctly installed the relay followed by a successful post maintenance test. Additionally, the licensee plans to revise ADM-NGGC-0104, Work Management Process, to require the work implementer to specify which mitigating actions and/or human performance barriers will be used for critical steps.

The failure to follow procedure PIC-E069 section 7.6 for the restoration of the load block 5 auxiliary relay was a performance deficiency. The violation was more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone, and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, it resulted in the automatic start of the “B” MDAFW pump and water flowing to all three steam generators. Using IMC 0609, “Significance Determination Process,” Phase 1 screening worksheet of the SDP this finding was determined to be of very low safety significance because it was not a design or qualification deficiency confirmed to result in a loss of operability or functionality, did not represent a loss of system safety function, did not result in a loss of safety system function for a single train for greater than TS allowed outage time, did not result in a loss of safety function of one or more non-TS trains of equipment designated as risk-significant for greater than 24 hours, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect of Human error prevention, as described in the Work Practices component of the Human Performance cross-cutting area because the licensee did not apply sufficient human error prevention tools to ensure the correct installation of the relay (H.4(a))

Inspection Report# : [2010003](#) (*pdf*)

Barrier Integrity

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Implement Procedural Guidance to Maintain the FHBEES Boundary

The inspectors identified a Green NCV of Technical Specification (TS) 6.8.1, Procedures, for the licensee’s failure to properly implement procedural guidance to maintain the Fuel Handling Building Emergency Exhaust System (FHBEES) boundary. Specifically, the licensee failed to properly implement procedural guidance to maintain the FHBEES boundary while two doors were propped open on October 21, 2010 and October 22, 2010. This was apparent when the inspectors identified one individual unaware of their responsibilities and another individual inattentive. The licensee entered this issue into their CAP as action request (AR) #428580 and AR #428858. The licensee took corrective action to relieve the inattentive individual and conducted additional training for all of the other individuals responsible for closing the doors.

The failure to properly implement procedural guidance to maintain the FHBEES boundary while two doors were propped open from October 21, 2010 until October 22, 2010 was a performance deficiency. The performance deficiency was more than minor because it was associated with the Barrier Performance attribute of the Barrier Integrity cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The potential safety consequence is that if spent fuel had been damaged in the spent fuel pool during this time, the FHBEES may not have been able to properly filter and monitor a radioactive release. Using IMC 0609, “Significance Determination Process,” Phase 1 Worksheet, the inspectors determined this issue to be of very low safety significance because it only represented a degradation of the radiological barrier function provided for the fuel handling building. The finding has a cross-cutting aspect of Training and Work Hours, as described in the Resources component of the Human Performance crosscutting area because the licensee did not effectively train the individuals regarding their procedural responsibilities when the FHBEES doors were propped open (H.2(b))

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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