



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
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ATLANTA, GEORGIA 30303-1257

April 30, 2013

Mr. George Hamrick, Vice President
Carolina Power and Light Company
Shearon Harris Nuclear Power Plant
P. O. Box 165, Mail Code: Zone 1
New Hill, North Carolina 27562-0165

**SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED
INSPECTION REPORT 05000400/2013002**

Dear Mr. Hamrick:

On March 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris reactor facility Unit 1. The enclosed inspection report documents the inspection results which were discussed on April 18, 2013, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Two NRC identified findings and one self-revealing finding of very low safety significance (Green) were identified during this inspection. Two of these findings were determined to involve a violation of NRC requirements. Further, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations/findings or significance of these NCVs/findings, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Shearon Harris facility.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II; and the NRC Resident Inspector at the Shearon Harris facility.

G. Hamrick

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Randall A. Musser, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Docket No.: 50-400
License No.: NPF-63

Enclosure: Inspection Report 05000400/2013002
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

G. Hamrick

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Letter to George T. Hamrick from Randall Musser dated April 30, 2013.

SUBJECT: SHEARON HARRIS NUCLEAR PLANT - NRC INTEGRATED INSPECTION
REPORT 05000400/2013002

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-400

License No.: NPF-63

Report No.: 05000400/2013002

Licensee: Carolina Power and Light Company

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road
New Hill, NC 27562

Dates: January 1, 2013 through March 31, 2013

Inspectors: J. Austin, Senior Resident Inspector
P. Lessard, Resident Inspector
M. Meeks, Senior Operations Engineer (Section 1R11)
A. Goldau, Operations Engineer (Section 1R11)
A. Alen, Reactor Inspector (Section 1R17)
J. Eargle, Senior Reactor Inspector (Section 1R17)
T. Fanelli, Construction Inspector (Section 1R17)
D. Mas-Penaranda, Reactor Inspector (Section 1R17)

Approved by: Randall A. Musser, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000400/2013002: Carolina Power and Light Company; on January 1, 2013 – March 31, 2013; Shearon Harris Nuclear Power Plant, Unit 1; Operability Evaluations, Plant Modifications, and Event Follow-up.

The report covered a three month period of inspection by resident inspectors and announced baseline inspection by regional inspectors. Two NRC-identified findings and one self-revealing finding of very low safety significance (Green) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, issued June 19, 2012 “Significance Determination Process” (SDP). The cross-cutting aspects were determined using IMC 0310, “Components Within the Cross-Cutting Areas”, issued October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC’s Enforcement Policy dated January 28, 2013. The NRC’s program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, “Reactor Oversight Process” revision 4.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

Green: A self-revealing Green finding (FIN) was identified for the licensee’s failure to establish and implement an adequate operating procedure (OP-136, Feedwater Heaters, Vents and Drains, Revision 41) to restore the “4B” feedwater heater (FWH) alternate level control valve (1HD-323) to automatic operation. The licensee entered this issue into the Corrective Action Program (CAP) as Action Request (AR) #592336. The licensee took corrective action to reduce reactor power immediately and revise OP-136 to include a power reduction prior to restoring 1HD-323 to automatic operation.

The licensee’s failure to establish and implement an adequate operating procedure (OP-136, Feedwater Heaters, Vents and Drains, Revision 41) to restore 1HD-323 to automatic operation was identified as a performance deficiency. The performance deficiency was 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, failure to establish and implement an adequate operating procedure resulted in a steam plant transient that caused an unplanned reactor power increase to 101.1 percent Rated Thermal Power (RTP). In accordance with IMC 0609.04, “Initial Characterization of Findings,” and Exhibit 1 of IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings at Power,” the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not involve the complete or partial loss of a support system that contributes to the likelihood of an initiating event and it did not affect mitigation equipment. The finding has a cross-cutting aspect of Implements and Institutionalizes Operating Experience, as described in the Operating Experience component of the Problem Identification and Resolution cross-cutting area because the licensee failed to institutionalize operating experience from the previous month. (P.2(b)) (Section 40A3).

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Cornerstone: Mitigating Systems

Green: An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action was identified for the licensee's failure to take corrective actions related to incorrect operability determinations which resulted in violation of TS 3.8.1.1 (Electrical Power Sources) associated with the S-2B-SB failure to secure on October 26, 2012. The licensee entered the issue into their CAP as AR #569593. As corrective actions, on October 31, 2012, Operations opened the supply breaker (1B21-SB-4B) for the primary shield fan to remove any impact to the Emergency Diesel Generator (EDG) operability. Additionally, the licensee created AR #584473 to evaluate and correct issues associated with their operability determinations.

The licensee's failure to take timely, appropriate corrective actions for inadequate operability determinations was a performance deficiency. The performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the failure to take timely, appropriate corrective actions could have resulted in a more safety significant violation of TS than the identified violation of TS 3.8.1.1 (Electrical Power Sources) associated with the S-2B-SB failure to secure on October 26, 2012. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not involve a deficiency affecting the design or qualification of a mitigating system and did not represent a loss of system function. The cause of the finding was directly related to the cross-cutting aspect for appropriate corrective actions to address safety issues in a timely manner commensurate with their safety significance and complexity in the CAP component of the cross-cutting area of Problem Identification and Resolution, in that the licensee failed to take appropriate and timely corrective actions to address incorrect determinations of operability (P.1(d)). (Section 1R15.2)

Green: The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," involving two examples. In one example, the licensee did not translate instrument uncertainties associated with the EDG low-pressure alarm and pressure indicator into operating and alarm response procedures. In the second example, the licensee failed to verify the design adequacy for blocking the EDG non-emergency generator trips during emergency operation. The licensee entered the first example into their CAP as ARs #586788, #586837, #588517, and #589308 and initiated a standing instruction to verify starting air pressure was maintained above 200 psig while evaluating appropriate corrective actions. The licensee entered the second example into their CAP as ARs #382359 and #412546, and implemented a facility change to correct the design deficiency.

The failure to translate instrument uncertainties associated with the EDG low-pressure alarm and pressure indicator into operating and alarm response procedures, and failure

Enclosure

to verify the design adequacy for blocking the EDG non-emergency generator trips were performance deficiencies. The performance deficiencies were more than minor because they were associated with the Design Control attribute of the Mitigating System Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors assessed the finding using IMC 0609 Attachment 4, "Initial Characterization of Findings;" and IMC 0609 Appendix A, "The Significance Determination Process for Findings At-Power," and determined the finding was of very low safety significance (Green) because the design deficiencies were confirmed not to result in loss of operability of the EDGs. The finding was reviewed for cross-cutting aspects and none were identified since the performance deficiencies were not indicative of current licensee performance. (Section 1R17)

B. Licensee-Identified Violations

One violation of very low safety significance that was identified by the licensee has been reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's CAP. That violation and corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near RTP for the entire inspection period with one exception. On March 29, 2013, power was reduced to 53 percent due to an oil leak on the "B" main feedwater pump (MFP) motor which required the pump to be secured. The licensee repaired the oil leak, restored the "B" MFP to service and restored power to RTP on March 31, 2013.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

.1 Readiness For Impending Adverse Weather Condition

a. Inspection Scope

On January 30, 2013, severe weather with high winds and potential tornadoes was predicted for the plant area and inspectors reviewed the licensee's overall preparations/protection for impending adverse weather conditions. The inspectors walked down areas of the plant susceptible to high winds, including the licensee's emergency alternating current (AC) power systems. The inspectors evaluated the licensee staff's preparations against the site's procedures to determine if the staff's actions were adequate. During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors' evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. The inspectors also reviewed a sample of CAP items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

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1R04 Equipment Alignment

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed three partial system walkdowns of the following risk-significant systems:

- “B” Motor Driven Auxiliary Feedwater (MDAFW) and the Turbine Driven Auxiliary Feedwater (TDAFW) systems while the “A” MDAFW pump was inoperable due to planned maintenance on January 30, 2013;
- Compressed Air System (air compressors, dryers and a sample of the distribution header) following spurious trips of the “C” Air Compressor on February 7, 2013; and
- “A” Emergency Diesel Generator (EDG) while the “B” EDG was inoperable due to a planned maintenance outage on February 20, 2013.

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, applicable portions of the UFSAR, Technical Specification (TS) requirements, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

The inspectors reviewed the following AR associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #578621, “C” Air Compressor started unexpectedly

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Quarterly Resident Inspector Tours

a. Inspection Scope

The inspectors conducted six fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Fuel Handling Building (FHB), 261' and 286' Elevation
- "A" Diesel, 280' and 292' Elevation
- "B" Diesel, 280' and 292' Elevation
- Reactor Auxiliary Building (RAB), 286' Elevation, PIC Rooms A and B and Cable Vault
- RAB Exhaust Fan Area
- "A" Switchgear Room

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP.

The inspectors reviewed the following ARs associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #581706, Spurious Fire Detection System Trouble Alarm
- AR #582511, Ionization Detector Emergency Service Water Alarming with no Fire
- AR #585036, Hot Tool Room Door Left Open Blocking a Fire Pull Station

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program

.1 Biennial Review

a. Inspection Scope

The inspectors reviewed the facility operating history and associated documents in preparation for this inspection. During the week of January 21-25, 2013, the inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of operating tests associated with the licensee's operator requalification program. Each of the activities performed by the inspectors was done to assess the effectiveness of the facility licensee in implementing requalification requirements identified in 10 CFR Part 55, "Operators' Licenses." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and Inspection Procedure 71111.11, "Licensed Operator Requalification Program." The inspectors also evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations using ANSI/ANS-3.5-2009, "American National Standard for Nuclear Power Plant Simulators for use in Operator Training and Examination." The inspectors observed two crews during the performance of the operating tests. Documentation reviewed included written examinations, Job Performance Measures (JPMs), simulator scenarios, licensee procedures, on-shift records, simulator modification request records, simulator performance test records, operator feedback records, licensed operator qualification records, remediation plans, watchstanding records, and medical records. The records were inspected using the criteria listed in Inspection Procedure 71111.11. Documents reviewed during the inspection are documented in the List of Documents Reviewed.

The inspectors also reviewed the practice of using the Shift Technical Advisor (STA) to perform an initial dose assessment and radioactive release determination during a declared emergency, along with the parallel responsibility of providing engineering insight and technical oversight.

On January 28, 2013, the inspectors, other regional specialists, and regional management performed an in-office detailed review of the licensee's grading of a simulator scenario given during the previous week. The administrative re-evaluation of the simulator scenario was conducted in accordance with facility licensee procedure TRN-NGGC-0420, "Conduct of Simulator Training and Evaluation," and the results of the administrative re-evaluation performed by the region personnel were compared to the licensee's evaluation.

b. Findings

No findings were identified.

.2 Quarterly Review

a. Inspection Scope

On February 4, 2013, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations while responding to a "C" steam generator level transmitter failure, "C" reactor coolant pump vibration and seal issue, reactor trip and safety injection actuation to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Ability to take timely and conservative actions
- Prioritization, interpretation, and verification of annunciator alarms
- Correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

b. Findings

No findings were identified.

.3 Licensed Operator Performance in the Actual Plant/Main Control Room

a. Inspection Scope

On February 11, 2013, the inspectors observed operators in the plant's main control room during entry into their abnormal operating procedure for the unexpected loss of net positive suction head for the "B" Heater Drain Pump (AOP-10, Feedwater Malfunctions). Power was reduced to below 99 percent and the pump was secured by the operators due to erratic performance of the associated Feed Water Heater (FWH) level controller. On March 22, 2013, the inspectors also observed operators in the plant's main control room during Digital Electro Hydraulic (DEH) testing. The inspectors evaluated the following areas:

- Operator compliance and use of plant procedures, including procedure entry and exit, performing procedure steps in the proper sequence, procedure place-keeping, and TS entry and exit;
- Control board/in-plant component manipulations;
- Communications between crew members;

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- Use and interpretation of plant instruments, indications, and alarms; diagnosis of plant conditions based on instruments, indications, and alarms;
- Use of human error prevention techniques, such as pre-job briefs and peer checking;
- Documentation of activities, including initials and sign-offs in procedures, control room logs, TS entry and exit, entry into out-of-service logs; and
- Management and supervision of activities, including risk management and reactivity management.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment. The inspectors evaluated degraded performance issues involving the following risk significant components:

- AR #578621, “C” Air Compressor started unexpectedly
- AR #561532, Chill Water Cooler (WC-2A) Auxiliary Oil Pump Lube Oil Leak
- AR #582010, Reactor Coolant Hot Leg Sample Valve (1SP-948) closed spuriously

The inspectors focused on the following attributes:

- Implementing appropriate work practices;
- Identifying and addressing common cause failures;
- Scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- Characterizing system reliability issues for performance;
- Counting unavailability time during performance of maintenance;
- Trending key parameters for condition monitoring;
- Ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- Verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) are appropriate and adequate goals and corrective actions for systems classified as (a)(1).

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the five maintenance and emergent work activities affecting risk-significant equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Elevated green risk condition due to "A" Solid State Protection System testing on January 3, 2013;
- Elevated risk condition for temporary modification implementation on the DEH turbine control system on February 1, 2013, risk remained green;
- Elevated green risk condition due to the planned maintenance outage on the "B" EDG on February 20, 2013;
- Yellow Risk due to placing "B" Feed Regulating Valve (FRV) in manual for scheduled testing on February 28, 2013; and
- Elevated green risk condition due to the planned maintenance outage on the "A" EDG on March 6-7, 2013.

These activities were selected based on their potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

b. Findings

No findings were identified.

1R15 Operability Evaluations

.1 Quarterly Review

a. Inspection Scope

The inspectors selected the following six potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations, to

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determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment.

- AR #580712, "B" Residual Heat Removal (RHR) Pump Cooler Inlet Isolation Valve (1CC-152) has a Body to Bonnet Leak;
- AR #585621, Breaker 1A32-SA-1B for AH-86ASA (ESW Intake Elect Equipment Room Cooling Unit) was Sluggish to Operate;
- AR #595527, "B" EDG Left Turbocharger to Intercooler Flange Bolt Loose;
- AR #597874, AH-10A ("C" Changing Safety Injection Pump Room Cooler Auto started below required temperature);
- AR #586988, Pinhole leak on 1SW-1057 ("A" Chiller Condenser Supply Valve) weld; and
- AR #566647, Maintenance and Test Equipment out of Calibration potentially affecting Break Calibration.

b. Findings

No findings were identified.

.2 (Closed) Unresolved Item (URI) 05000400/2012005-01: Failure of the Primary Shield Supply Fan (S-2B-SB) to Remain Secure when Stopped

a. Inspection Scope

As described in Unresolved Item (URI) 05000400/2012005-01, the inspectors identified issues related to the failure of the primary shield supply fan (S-2B-SB) to remain stopped when secured from the main control board on October 26, 2012..

The inspectors interviewed station personnel and performed a review of the licensee's procedures, and CAP documents regarding this issue. This URI is closed.

b. Findings

Introduction: An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action was identified for the licensee's failure to take corrective actions related to incorrect operability determinations which resulted in violation of TS 3.8.1.1.

Description: The inspectors recently identified deficiencies with several determinations of operability which resulted in CAP entries. Examples of these deficiencies are illustrated in the following corrective action documents:

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- AR #562556, Operability Determination on “A” Chiller
- AR #564728, Two Operability Evaluations on “A” EDG had different results
- AR #566201, Containment Sump Operability

These recent operability determination deficiencies have resulted in administrative changes, addition of compensatory measures, engineering evaluations, engineering changes and a violation of Technical Specifications. In their review of these deficiencies, the licensee addressed each item individually and not collectively. As a result, the licensee failed to correct the underlying adverse condition of inadequate operability determinations. This resulted in a violation of technical specifications as described below.

On October 26, 2012, after starting primary shield fan S-2A-SA for monthly equipment swaps, operations attempted to stop primary shield fan S-2B-SB by taking the hand switch to stop. The fan immediately restarted after releasing the hand switch. A second attempt was made with the same results. The licensee documented this condition in a work order. On October 30, 2012, the inspectors challenged the licensee as to the impact this issue had on the operability of the “B” EDG and if they should be in an LCO (limiting condition for operation). On October 31, 2012, the licensee opened the supply breaker for the S-2B-SB fan to remove any impact to the EDG operability. The licensee entered this issue into their CAP as AR #569593. The licensee’s past operability review concluded that for approximately five days conditions existed that required entry into the LCO action (correct condition within 72 hours or be in hot standby within the next 6 hours) for Technical Specification (TS) 3.8.1.1 (Electrical Power Sources) and was not recognized or resolved.

Analysis: The licensee’s failure to take timely, appropriate corrective actions for inadequate operability determinations was a performance deficiency. The performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the failure to take timely, appropriate corrective actions could have resulted in a more safety significant violation of TS than the identified violation of TS 3.8.1.1 (Electrical Power Sources) associated with the S-2B-SB failure to secure on October 26, 2012. In accordance with IMC 0609.04, “Initial Characterization of Findings,” and Exhibit 2 of IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings at Power,” the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not involve a deficiency affecting the design or qualification of a mitigating SSC and did not represent a loss of system function. The cause of the finding was directly related to the cross-cutting aspect for appropriate corrective actions to address safety issues in a timely manner commensurate with their safety significance and complexity in the CAP component of the cross-cutting area of Problem Identification and Resolution, in that the licensee failed to take appropriate and timely corrective actions to address incorrect determinations of operability (P.1(d)).

Enforcement: 10 CFR 50 Appendix B, Criterion XVI, Corrective Action, states in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, the licensee failed to take corrective actions related to incorrect operability

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determinations and on October 26, 2012, the licensee did not perform an appropriate operability determination which resulted in violation of TS 3.8.1.1. The licensee entered the issue into their CAP as AR #569593 and took immediate corrective actions to open the supply breaker for the primary shield fan to remove any impact to EDG operability. Additionally, the licensee created AR #584473 to evaluate and correct issues associated with their operability determinations. Because this violation was of very low safety significance and was entered into the licensee's CAP, this violation is being treated as an NCV consistent with the NRC Enforcement Policy and is identified as NCV 05000400/2013002-01, "Inadequate Corrective Actions Involving the Incorrect Determinations of Operability."

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed selected samples of evaluations to confirm that the licensee had appropriately considered the conditions under which changes to the facility, UFSAR, or procedures may be made, and tests conducted, without prior NRC approval. The inspectors reviewed six evaluations and additional information such as drawings, calculations, supporting analyses, the UFSAR, and TS associated with the evaluations to confirm that the licensee had appropriately concluded that the changes, tests, or experiment could be accomplished without obtaining a license amendment. The six evaluations reviewed are listed in the List of Documents Reviewed section.

The inspectors reviewed documentation for 17 changes for which the licensee had determined that evaluations were not required, to confirm that the licensee's conclusions to screen out these changes were correct and consistent with 10 CFR 50.59. The 17 changes reviewed are listed in the List of Documents Reviewed section.

The inspectors reviewed Engineering Change (EC) packages for 10 material, component, and design-based modifications to evaluate the modifications for adverse effects on system availability, reliability, and functional capability. The 10 modifications reviewed are as follows:

- EC #70350, Alternate Seal Injection System, Rev. 18;
- EC #73905, Eliminate Contact Failure Vulnerability of 6.9 kV ESS Load Blocks for certain 6.9 kV Train B Emergency Safeguards Loads (Auxiliary Feedwater, Emergency Service Water, and Component Cooling Water Pumps), Rev. 0;
- EC #74866, Mechanism-operated Cell Switch Set-Up for Installed 6.9 kV Vacuum Breakers, Rev. 0;
- EC #78484, Digital Modification to Solid State Protection System Control Boards, Rev. 6;
- EC #79281, Pumps for Underground Cable Sumps, Rev. 28;
- EC #81091, Instrument Distribution Panel Voltage Drop Analysis, Rev. 0;
- EC #81301, Resolve Spurious Closure of Valve 1CC-252 on Transient Flow, Rev. 0;
- EC #81662, Installation of Check Valve in Fuel Supply Line on the Dedicated Shutdown Diesel Generator, Rev. 1;

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- EC #82239, Replace the Existing Alternate Seal Injection Pump Room Cooler (1AV-E026) with a Permanent Air Conditioner, Rev. 3; and
- EC #83459, (Commercial Grade Dedication), Switch, Aux, 16POS, Mechanism-operated Cell, Siemens, JS/WU, Rev. 1.

Documents reviewed included procedures, engineering calculations, modification design and implementation packages, work orders, site drawings, corrective action documents, applicable sections of the living UFSAR, supporting analyses, TS, and design basis information. The inspectors additionally reviewed test documentation to ensure adequacy in scope and conclusion. The inspectors review was also intended to verify that all details were incorporated in licensing and design basis documents and associated plant procedures.

The inspectors also reviewed selected ARs associated with modifications and screening/evaluation issues to confirm that problems were identified at an appropriate threshold were entered into the CAP, and appropriate corrective actions had been initiated and tracked to completion.

b. Findings

1. Failure to Implement Design Control Measures for the Emergency Diesel Generator Starting and Control Air System

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," involving two examples. In one example, the licensee did not translate instrument uncertainties associated with the EDG low-pressure alarm and pressure indicator into operating and alarm response procedures. In the second example, the licensee failed to verify the design adequacy for blocking the EDG non-emergency generator trips during emergency operation.

Description: The EDG Starting Air System (SAS) provides a readily available source of pressurized air to support the auto-start of the EDGs during design bases events such as a loss of offsite power. The SAS for each EDG consists of two electrical motor-driven air compressors, two air dryers, and two air accumulators. The inspectors identified two examples of a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" associated with the SAS. The examples are as follows:

Example 1: EDG Starting Air Low-Pressure Alarm and Setpoint Uncertainties - Technical Specification 4.8.1.1.2.a.6 requires a minimum pressure of 190 psig in at least one SAS accumulator for operability of the EDG. Operating procedure OP-155, "Diesel Generator Emergency Power System," Rev. 63, provides instructions for ensuring the standby readiness of the EDGs, including readiness of support equipment needed by the EDGs to perform their safety function. The procedure has steps to verify that starting air pressure is maintained above 190 psig using local gauges at the accumulators. Additionally, the licensee uses these gauges to verify that starting air is maintained above 190 psig during the performance of operator rounds procedures. The inspectors determined that the licensee failed to account for the instrument uncertainties associated

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with these gauges. The licensee performed an instrument uncertainty calculation and determined that there was ± 6.9 psig of uncertainty associated with the gauges.

The inspectors reviewed the licensee's alarm response procedures APP-DGP-001, "Diesel Generator Panels," Rev. 25 and noted that the low-pressure alarm setpoint was 190 psig. The inspectors determined that the licensee failed to account for the instrument loop uncertainties associated with the alarm. The licensee performed an instrument loop calculation and determined that there was ± 9.8 psig of uncertainty associated with the alarm.

The inspectors determined that these deficiencies, if left uncorrected could result in the air pressure being below the operability limit (190 psig) before the associated EDG is declared inoperable, or before the alarm is annunciated in the control room, and would affect the reliability and capability of the EDGs to perform their safety function. Additionally, the team noted that the licensee is committed to Rev. 1 of Regulatory Guide (RG) 1.105, as specified in UFSAR section 1.8, "Conformance to Regulatory Guides". The Regulatory Guide specifies, in part, that, for systems important to safety, the setpoints should be established with sufficient margin between the TS limit for the process variable and the nominal trip setpoints to allow for uncertainties such as (1) inaccuracy of the instrument, (2) uncertainties in the calibration, and (3) instrument drift. The licensee entered all of the identified deficiencies into their CAP as ARs #586788, #586837, #588517 and #589308 and initiated a standing instruction (13-006) to verify starting air pressure was maintained above 200 psig until corrective actions are evaluated.

Example 2: Design for Blocking Non-Emergency Generator Trips During EDG Emergency Mode Of Operation - The inspectors noted that the EDG control air utilizes air from the starting air accumulators. Additionally, the inspectors noted that in 1994, plant change request #3995 downgraded the starting air compressors and all downstream system piping up to but excluding the dryer outlet check valves to non-safety related components.

In February of 2010, the inspectors questioned whether the EDGs relied on control air while they are running, given that the SAS is not leak tight, and over time will depressurize if the receivers are not re-charged. The licensee entered this issue into their CAP, as AR #382359 and investigated the effects of losing control air. In July of 2010, the licensee initiated AR #412546 after the EDG vendor stated that they cannot guarantee with 100 percent certainty that the EDG will not trip when control air pressure decays below 40 psig and, therefore, can not conclusively confirm that control air is not required to keep the EDG running during a design basis event. Additionally, the licensee initiated a standing instruction (10-023) to maintain one starting air compressor available per EDG to ensure their operability. The licensee performed a failure modes and effects analysis and determined that if control air is lost, pressure switches would change state and unblock the non-emergency generator trips (loss of excitation, negative phase sequence, overcurrent, and reverse power flow). The inspectors noted that these non-emergency trips were required to be blocked during emergency operation of the EDG per TS Surveillance Requirement 4.8.1.1.2.13 and as described in section 8.3.1 of the

UFSAR. The inspectors determined that the licensee failed to verify that the design for blocking the non-emergency generator trips did not rely on system pressure being maintained (long-term) by the equipment upstream of the safety related dryer outlet check valves when plant change request #3995 was implemented.

In 2012, the licensee implemented EC #82234 to install new relays in the EDG control logic that energize on an EDG emergency start and provide contacts that will block the non-emergency generator trips independent of SAS pressure. The licensee performed a past operability/reportability evaluation and determined that the EDGs were past operable based on the fact that at least one air compressor was available to ensure starting air would not decay below 40 psig. The inspectors determined that while not all of the equipment relied upon to ensure operability was safety related, there was reasonable assurance that the EDGs could perform their safety function.

Analysis: The failure to translate instrument uncertainties associated with the EDG low-pressure alarm and pressure indicator into operating and alarm response procedures, and failure to verify the design adequacy for blocking the EDG non-emergency generator trips were performance deficiencies. The performance deficiencies were more than minor because they were associated with the Design Control attribute of the Mitigating System Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiencies reduced the reliability and capability of the starting and control air systems to support the EDGs in performing their safety function. The inspectors assessed the finding using IMC 0609 Attachment 4, "Initial Characterization of Findings" dated 6/19/12, and IMC 0609 Appendix A, "The Significance Determination Process for Finding At-Power" dated 6/19/12, and determined the finding was of very low safety significance (Green) because the design deficiencies were confirmed not to result in loss of operability of the EDGs. The finding were reviewed for cross-cutting aspects and none were identified since the performance deficiencies were not indicative of current licensee performance.

Enforcement: Appendix B to 10 CFR 50, Criterion III, "Design Control," requires, in part, that "measures shall be established to assure that the design bases are correctly translated into procedures", and that "measures shall provide for verifying or checking the adequacy of design". Contrary to the above, since initial plant operation, the licensee failed to translate instrument uncertainties associated with the EDG low-pressure alarm and pressure indicator into procedures, and since 1994, the licensee failed to verify the adequacy of design for blocking the EDG non-emergency generator trips during emergency operations. This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee's CAP as AR #586788, #586837, #588517, #589308, #382359 and #412546. (NCV 05000400/2013002-02, "Failure to Implement Design Control Measures for the EDG Starting and Control Air System.")

2. (Opened) URI 05000400/2013002-03: Solid State Protection System Digital Modification

Introduction: The inspectors identified an unresolved item (URI) associated with the licensee's implementation of a digital modification to the solid state protection system (SSPS) logic and control boards. This item remains unresolved pending NRC staff review of additional information to determine if the change could have been performed under a 10 CFR 50.59 evaluation and whether it should have been submitted to the NRC for prior approval.

Description: The SSPS logic and control boards provide the coincidence logic to produce actuation signals for operation of the reactor protection system (RPS) and the engineered safety features actuation systems (ESFAS). Engineering change 78484, "Replace SSPS Boards with new Westinghouse Design Boards," Rev. 6, examined a digital modification to the existing SSPS logic and control boards. The original boards used fixed logic devices (transistor-transistor logic devices) whereas the replacement boards use reprogrammable logic devices (complex programmable logic devices (CPLDs)). The licensee performed a 10 CFR 50.59 Screening (AR 537776) using procedure REG-NGGC-0010, "10 CFR 50.59 and Selected Regulatory Reviews," Rev. 18. The procedure used the guidance in NEI 96-07, "Guidelines for 10 CFR 50.59 Implementation," Rev. 1, as supplemented by NEI 01-01, "Guidelines on Licensing Digital Upgrades," Rev. 1, to evaluate the design and implementation of digital modifications to instrumentation and control systems under 10 CFR 50.59. The licensee's screening indicated (in summary) that the new design boards performed the same functions and were functionally tested; therefore, did not adversely affect the SSPS design bases functions previously evaluated in the UFSAR. The screening further determined the modification could be implemented without a more detailed 10 CFR 50.59 evaluation. The inspectors reviewed the screening using the licensee's procedural guidance and determined the modification adversely affected the SSPS design functions described in the UFSAR because:

- (1) The response times of the new design boards were slower. Section 4.3.3 of NEI 01-01, "Other Digital Issues in the Screening Process," indicates that performance changes from UFSAR described requirements (i.e. response time) should be screened in and require further evaluation under 10 CFR 50.59.
- (2) Human System Interface (HIS) features (i.e. dip switches, RS-232 communication ports, and indicating light-emitting diodes or "LED") were added. Section 4.3.4 of NEI 01-01, "Screening Human System Interface Changes," indicates that changes that create new potential failure modes in the interaction of operators and maintenance personal with the system should be further evaluated for the potential increase in the likelihood of malfunctions.
- (3) The new boards were loaded with a "data file" (which NEI 01-01 defines as a type of base software) that configures the CPLD logic. Section 4.3.2 of NEI 01-01 "Software Considerations," indicates that digital modifications that involve the use of software applications should be conservatively treated as an adverse

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effect (requiring evaluation under 10 CFR 50.59) due to the potential introduction of new failure modes (software based failures, including Common Cause Failures (CCF)) not previously evaluated in the UFSAR, especially when modifications involve redundant high risk safety systems (i.e. RPS.ESFAS)

In response to the inspectors' questions, the licensee performed a 10 CFR 50.59 evaluation (AR #588797) and determined the change could be implemented without prior NRC review and approval. The licensee indicated that (1) the new boards still met the response time requirements for the SSPS as described in the UFSAR, (2) the HIS vulnerabilities were mitigated by configuration at the vendor facility, and (3) the CPLDs were not software-based and that the "data files" were simple logic files that were fully tested, verified, and validated to operated as expected. The licensee asserted that the development and quality assurance processes used, including design, verification & validation, and configuration control mitigated any potential increase in the likelihood of malfunctions due to software (or embedded "data file") (10 CFR 50.59 criteria (c)(2)(ii)). The licensee also compared the hardware functional testing performed by the vendor with criteria in Branch Technical Position (BTP) 7-19, "Guidance for Evaluation of Diversity and Defense-in-Depth in Digital Computer-Based I&C Systems," Rev. 6, section 1.9, to show that software CCFs required no further evaluation. Specifically, the licensee indicated that the functional testing for the boards was adequate for 100 percent testing for every possible combination of inputs and every possible sequence of device states were tested and all outputs were verified on the boards (and embedded software) to eliminate consideration of software based CCF. Based on this testing, the licensee concluded that the use of software did not create a possibility of malfunctions of the SSPS with a different result than previously evaluated in the UFSAR (10 CFR 50.59 criteria (c)(2)(vi)).

After reviewing the 10 CFR 50.59 evaluation, the inspectors found that they did not have sufficient information to determine that NRC review and approval was not required prior to implementation of the modification. Specifically, the inspectors could not verify the licensee's conclusions regarding the software reliability and the simplicity and testing of the new boards. Because the licensee claimed that the CPLDs were not software-based, the licensee did not address the software development processes described in NEI 01-01, section 5.3.3, "Digital System Quality." Specifically, the inspectors noted that second and third party commercial vendors were involved in the manufacturing of the CPLDs and development of the base software "data-file" without a quality software development process as addressed in NEI 01-01. In addition, because of the licensee's claim that the CPLDs were not software-based, the licensee excluded the possibility of software CCF as addressed in NEI 01-01, section 3.2.2, "Software Common Cause Failure." The inspectors concluded that software CCF of the SSPS could introduce new failure modes not previously analyzed in the UFSAR. With respect to the simplicity and testing of the SSPS boards, the inspectors questioned the simplicity of the boards and the appropriateness of using testing to rule out consideration of CCFs. In addition, the testing performed by the licensee did not meet the guidance in BTP 7-19. The inspectors also concluded that the HSI features added to the SSPS boards provided additional risk of failures not associated with the original SSPS boards when used by operators and maintenance personnel.

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In order to determine if the change could have been performed under a 10 CFR 50.59 evaluation and whether it should have been submitted to the NRC for prior approval, this issue remains unresolved pending NRC staff review of additional information to be provided by the licensee to address the issues described above. This issue is being tracked as URI 05000400/2013002-03, Solid State Protection System Digital Modification.

3. (Opened) URI 05000400/2013002-04: No. 1 Reactor Coolant Pump Seal Leakoff Line Over-Pressurization

Introduction: The inspectors identified a URI associated with licensee's capability to meet their station blackout (SBO) mitigation strategy. This item remains unresolved pending the inspectors' review of the additional information to determine compliance with 10 CFR 50.63, "Loss of All Alternating Power."

Description: The reactor coolant pumps' (RCP) No.1 seal leakoff line was designed to recover leakoff volume, at low pressure and temperature, and return it to the chemical and volume control system (CVCS). The leakoff lines (one per pump) join into a common header before exiting containment to the CVCS. In 1992, Westinghouse Technical Bulletin, NSD-TB-91-07-R1, "Over-Pressurization of RCP No.1 Seal Leakoff Line," informed specific licensees (including Harris) of the potential over-pressurization of the No.1 seal leakoff line during high seal leakoff flow conditions as a result of abnormal performance of the No.1 RCP seal. Specifically, the leakoff line pipe segment downstream of the air operated valve (which fails open on loss of instrument air) and upstream of the flow element restriction orifice was designed to 150 psig and could over-pressurize and fail under high flow conditions. While Harris had implemented recommendations contained in the bulletin, the licensee did not upgrade the piping for higher pressures nor evaluate the line capability to handle expected seal leakage flow rates associated with loss of seal cooling (LOSC) events documented in Westinghouse Owner Group Report WCAP-10541 "Reactor Coolant Pump Seal Performance Following a Loss of All AC Power," Rev 2. The technical bulletin specifically stated that the validity of the information in WCAP-10541 was dependent upon the assumption that the integrity of the leakoff line was maintained. The inspectors reviewed WCAP-10541 and noted that the leakoff line could experience a pressure transient between 800-2000 psig during a LOSC event before seal leakage flow rates stabilize at approximately 21gpm and 800psig. The report also indicated that the backpressure provided by the leakoff line (upstream of the orifice) is what limits seal leakage to 21gpm and reduction of this backpressure would result in higher seal leakage flow rates.

In 2003, Information Notice (IN) 2003-19, "Unanalyzed Condition of Reactor Coolant Pump Seal Leakoff Line During Postulated Fire Scenarios or Station Blackout," informed licensees of specific LOSC events (SBO and fires coincident with loss of all AC events) that could over-pressurize and fail the leakoff line. The IN reemphasized the pressures that will be experienced by the leakoff line (800-2000 psig) and that the failure of the line would result in RCP leak rates in excess of the 21gpm determined by Westinghouse and the 25 gpm assumed in SBO coping analyses. The inspectors reviewed the licensee's

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evaluation of IN 2003-19 (AR #1069790-09) and determined the licensee's actions did not adequately address the potential for over-pressurizing the seal leakoff line.

The licensee entered the issue into the CAP as AR #589248 and indicated that the alternate seal injection (ASI) system, installed in December of 2010 to meet the site's new fire protection program requirements (NFPA-805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants"), automatically starts on a LOSC event (SBO or fire related) and will maintain seal cooling. By maintaining seal cooling, the RCP seal leakage flow rates are expected to remain at nominal operating values (2-5 gpm) and prevent seal leakage flow rates that would challenge the integrity of the No.1 seal leakoff line. The inspectors questioned the appropriateness of crediting the ASI system for SBO events and the system's capability to prevent over-pressurization of the leakoff line. Specifically:

- The inspectors noted that the ASI system was not credited for meeting the current licensing bases for SBO.
- The ASI has a delayed start and the inspectors questioned whether seal cooling would be restored before seal leakage increases to the point of challenging the leakoff line.

This issue remains unresolved pending the inspectors' review of additional information to be provided by the licensee to address the issues described above and determine compliance with 10 CFR 50.63, "Loss of All Alternating Power." This issue is being tracked as: URI 05000400/2013002-04, No. 1 Reactor Coolant Pump Seal Leakoff Line Over-Pressurization.

1R18 Plant Modifications

a. Inspection Scope

The following engineering design package was reviewed and selected aspects were discussed with engineering personnel:

EC #89987, Temporary Modification to Disable the "B" Chiller High/Low Service Water Flow Alarm

This document and related documentation were reviewed for adequacy of the associated 10 CFR 50.59 safety evaluation screening, consideration of design parameters, implementation of the modification, post-modification testing, and relevant procedures, design, and licensing documents were properly updated. The inspectors observed ongoing and completed work activities to verify that installation was consistent with the design control documents. The modification disables the "B" Chiller high/low service water flow alarm at the Auxiliary Equipment Panel #1. This alarm was locked in because of a partially clogged sensing line and will be resolved during the Fall 2013 Refueling Outage.

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b. Findings

No findings were identified.

1R19 Post Maintenance Testinga. Inspection Scope

The inspectors reviewed the following six post-maintenance test (PMT) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

<u>Procedure</u>	<u>Title</u>	<u>Related Maintenance Activity</u>	<u>Date</u>
OST-1087	Motor Driven Auxiliary Feedwater Pumps Full Flow Test Quarterly Interval Mode 1	Work Order (WO) #1923462, "B" MDAFW Pump Discharge Check Valve Disassembly and Inspection	January 31, 2013
OST-1073	"B" EDG Operability Test Monthly Interval Modes 1-6	WO #1868733, Replace PS-01DG-2472B1V ("B" Right Bank Starting Air Pressure Switch)	February 21, 2013
PM-I0062 and MPT-I0175	Quarterly Maintenance on Incipient Fire Detection System Detectors and Annual Surveillance of the Incipient Fire Detection System Detectors and Fire Alarm Control Panel	WO #2206241, Process Instrumentation and Control Cabinet Room Incipient Fire Detector (1SFD-E083) has a Fault	February 25, 2013
OPS-NGGC-1308	Plant Status Control	WO #2044270, Replace Actuator Spring for AV-D37SA-1 (Reactor Auxiliary Building Supply Header Isolation Damper)	February 26, 2013
OST-1124	Train B 6.9 kV Emergency Bus Under Voltage Trip Actuating device Operational Test and Contact Check Modes 1-6	WO #2219547, Relay Replacement	March 20, 2013
OP-179	Security Building Emergency Electrical System	WO #2219352, Frequency Drop during Diesel Run	March 22, 2013

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These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following: the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing, and test documentation was properly evaluated. The inspectors evaluated the activities against TS and the UFSAR to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment.

The inspectors reviewed the following ARs associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #590436, 1SFD-E083 Trouble due to Vacuum Fault
- AR #593370, Potentially Inadequate PMT
- AR #581787, Vacuum Fault Occurred on Incipient Fire Detection Zone

b. Findings

No findings were identified.

1R22 Surveillance Testing

.1 Routine Surveillance Testing

a. Inspection Scope

For the three surveillance tests below, the inspectors observed the surveillance tests and/or reviewed the test results for the following activities to verify the tests met TS surveillance requirements, UFSAR commitments, inservice testing requirements, and licensee procedural requirements. The inspectors assessed the effectiveness of the tests in demonstrating that the SSCs were operationally capable of performing their intended safety functions.

- MST-I0001, "A" Solid State Protection System Actuation Logic and Master Relay Test on January 3, 2013
- OST-1021, Daily Surveillance Requirements, Mode 1,2 on January 12, 2013
- OST-1005, Control Rod And Rod Position Indicator Exercise Quarterly Interval Modes 1 – 3 on March 11, 2013

b. Findings

No findings were identified.

.2 Inservice Testing (IST) Surveillance

a. Inspection Scope

The inspectors reviewed the performance of OST-1411, Auxiliary Feedwater Pump Operability Test Quarterly Interval Mode 1, 2, and 3 on March 18, 2013, to evaluate the effectiveness of the licensee's American Society of Mechanical Engineers (ASME) Section XI testing program for determining equipment availability and reliability. This surveillance satisfies the IST requirements for the Turbine Driven Auxiliary Feedwater (TDAFW) Pump and associated valves throughout the AFW system. The inspectors evaluated selected portions of the following areas:

- Testing procedures and methods
- Acceptance criteria
- Compliance with the licensee's IST program, TS, selected licensee commitments, and code requirements
- Range and accuracy of test instruments
- Required corrective actions

b. Findings

No findings were identified.

.3 Reactor Coolant System Leak Detection Inspection Surveillance

a. Inspection Scope

The inspectors observed and reviewed the test results for Reactor Coolant System (RCS) leak detection surveillance, OST-1026, RCS Leakage Evaluation, Computer Calculation, Daily Interval, Modes 1-4 on March 22, 2013. The inspectors observed in plant activities and reviewed procedures and associated records to determine whether: effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; and the calibration frequency were in accordance with TSs, the UFSAR, procedures, and applicable commitments; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; test data and results were accurate, complete, within limits, and valid; equipment was returned to a position or status required to support the performance of its safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the CAP.

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b. Findings

No findings were identified.

1EP6 Emergency Planning Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency preparedness drill conducted on March 5, 2013, to verify licensee self-assessment of classification, notification, and protective action recommendation development in accordance with 10 CFR 50, Appendix E. The drill tested the licensee's ability to respond to an automatic trip which failed to shutdown the reactor and a subsequent steam generator tube rupture.

The inspectors reviewed the following ARs associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #593315, Incorrect Plant Announcement
- AR #593311, Untimely Release in Progress Declaration
- AR #593193, Drill Notebook not Properly Maintained

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

To verify the accuracy of the PI data reported to the NRC, the inspectors compared the licensee's basis in reporting each data element to the PI definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, Regulatory Assessment Performance Indicator Guideline.

Initiating Events Cornerstone

- Unplanned Scrams per 7000 Critical Hours
- Unplanned Power Changes per 7000 Critical Hours
- Unplanned Scrams with Complications

The inspectors sampled licensee submittals for the performance indicators listed above for the period from the first quarter 2012 through the fourth quarter 2012.

The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Inspection reports for the period to validate the accuracy of the submittals. Specific documents reviewed are described in the Attachment to this report.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems

.1 Routine Review of items Entered Into the Corrective Action Program

a. Inspection Scope

To aid in the identification of repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed frequent screenings of items entered into the licensee's CAP. The review was accomplished by reviewing daily AR reports.

b. Findings

No findings were identified.

.2 Selected Issue Follow-up Inspection: Operability Determination Issues

a. Inspection Scope

The inspectors selected AR #584473, Operability Determination Issues for detailed review. This AR was associated with recent instances of the licensee incorrectly determining operability. The inspectors reviewed this report to verify that the licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions. The inspectors evaluated the report against the requirements of the licensee's CAP as delineated in corporate procedure CAP-NGGC-0200, Condition Identification and Screening Process, and 10 CFR 50, Appendix B.

b. Findings

No findings were identified during this review. However, a related finding is described in section 1R15.2 of this report.

.3 Selected Issue Follow-up Inspection: EDG Performance Deep Dive

a. Inspection Scope

The inspectors selected AR #G-12-1807, EDG Performance Deep Dive for detailed review. This AR explored performance and reliability issues that have been recently encountered with the EDGs. The inspectors reviewed this report to verify that the

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licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions. The inspectors evaluated the report against the requirements of the licensee's CAP as delineated in corporate procedure CAP-NGGC-0200, Condition Identification and Screening Process, and 10 CFR 50, Appendix B.

b. Findings

No findings were identified.

4OA3 Follow-up of Events

.1 Reactor Power Transient due to Inadvertent Isolation of the "4B" Feedwater Heater

a. Inspection Scope

The inspectors reviewed the plant's response to an unplanned reactor power increase that occurred on March 2, 2013, due to the inadvertent isolation of the "4B" FWH. Documents reviewed in this inspection are listed in the Attachment.

The inspectors reviewed the following AR associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #592336, "4B" FWH Extraction Steam Lost

b. Findings

Introduction: A self-revealing Green finding (FIN) was identified for the licensee's failure to establish and implement an adequate operating procedure (OP-136, Feedwater Heaters, Vents and Drains, Revision 41) to restore the "4B" FWH alternate level control valve (1HD-323) to automatic operation. Specifically, this resulted in a steam plant transient that caused an unplanned reactor power increase to 101.1 percent RTP on March 2, 2013.

Description: On March 2, 2013, the licensee was operating at RTP with the "B" Heater Drain Pump (HDP) secured for corrective maintenance. Valve 1HD-323 was being operated in manual to control flow to the main condenser from the "4B" FWH. In this condition, 1HD-323 was the only output from the "4B" FWH and was therefore controlling water level in the heater. The licensee entered OP-136 to restore 1HD-323 to automatic control. This procedure directed the operator to fully close 1HD-323 prior to restoring the air supply to the automatic valve operator. However, with 1HD-323 closed, there was no flow out of the "4B" FWH. Extraction steam continued to flow into the "4B" FWH which resulted in water level rapidly increasing. This increase caused the automatic isolation of extraction steam to the "4B" FWH and a resultant loss of steam plant efficiency. This reduction of efficiency caused reactor power to peak at 101.1 percent RTP.

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During the licensee's investigation of this issue, they determined that OP-136 did not provide adequate guidance to allow operators to restore 1HD-323 to automatic. Additionally, the investigation revealed that operations' management and an operating crew had determined that OP-136 would not work for this evolution on February 13, 2013, approximately two weeks prior to this transient. At that time, the licensee had the opportunity to correct the procedure prior to causing this event but failed to institutionalize this operating experience and knowledge.

Analysis: The licensee's failure to establish and implement an adequate operating procedure (OP-136, Feedwater Heaters, Vents and Drains, Revision 41) to restore 1HD-323 to automatic operation was identified as a performance deficiency. The performance deficiency was 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, failure to establish and implement an adequate operating procedure resulted in a steam plant transient that caused an unplanned reactor power increase to 101.1 percent RTP. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not involve the complete or partial loss of a support system that contributes to the likelihood of an initiating event and it did not affect mitigation equipment. The finding has a cross-cutting aspect of Implements and Institutionalizes Operating Experience, as described in the Operating Experience component of the Problem Identification and Resolution cross-cutting area because the licensee failed to institutionalize operating experience from the previous month. (P.2(b))

Enforcement: This finding does not involve enforcement action because no violation of a regulatory requirement was identified. The licensee took corrective action to reduce reactor power immediately and revise OP-136 to include a power reduction prior to restoring 1HD-323 to automatic operation. The licensee entered this finding into their CAP as AR #592336. The licensee took corrective action to reduce reactor power immediately and revise OP-136 to include a power reduction prior to restoring 1HD-323 to automatic operation. Because this finding does not involve a violation and is of very low safety or security significance, it is identified as a FIN 05000400/2013002-05, "Reactor Power Transient due to Inadvertent Isolation of the "4B" Feedwater Heater."

40A5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

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These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

The inspectors reviewed the following ARs associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #584010, Fire Watch Security Access Level too Low
- AR #580545, Unsearched Material
- AR #586361, Security Power System Health Downgraded to Yellow

b. Findings

No findings were identified.

.2 (Closed) NRC Temporary Instruction (TI) 2515/187, Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns

a. Inspection Scope

Inspectors verified that licensee's walkdown packages for the areas contained the elements as specified in NEI 12-07 Walkdown Guidance document:

The inspectors accompanied the licensee on their walkdown of the following locations:

- 253' Elevation Diesel Fuel Oil Storage Building (E-1931)
- 242' Elevation Diesel Fuel Oil Storage Building (E-1964)
- Door #253 on roof of RAB elevation 289' (1FP-D0253)

The inspectors verified that the licensee confirmed the following flood protection features:

Visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection for indications of degradation that would prevent its credited function from being performed was performed.

- Reasonable simulation, used for responding to high lake level;
- Critical SSC dimensions were measured;
- Available physical margin, where applicable, was determined; and
- Flood protection feature functionality was determined using either visual observation or by review of other documents.

The inspectors independently performed their walkdown and verified that the following flood protection features were in place.

- RAB roof, east side of steam tunnel penthouse (RAB-WP-1A and RAB-WP-1B)

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The inspectors verified that noncompliance's with current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into the licensee's CAP. In addition, issues identified in response to Item 2.g that could challenge risk significant equipment and the licensee's ability to mitigate the consequences will be subject to additional NRC evaluation.

b. Findings

No findings were identified.

4OA6 Management Meetings

Exit Meeting Summary

On April 18, 2013, the inspectors presented the remainder of the inspection results to Mr. George Hamrick, and other members of the licensee staff. Proprietary information reviewed by the team as part of routine inspection activities was returned to the licensee or destroyed in accordance with prescribed controls.

4OA7 Licensee-Identified Violation

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meet the criteria of the NRC Enforcement Policy, for being disposition as a Non-Cited Violation.

10 CFR 50, Appendix B, Criterion XVI, Corrective Action requires, in part, that in the case of significant conditions adverse to quality corrective actions shall be taken to preclude repetition. Contrary to this requirement, corrective actions taken after the Containment Pre-Entry Purge Outside Containment Isolation Valve (1CP-1) failed EST-220, Type C Local Leak Rate Test on February 23, 2004 failed to preclude repetition (AR #119086). Specifically, the licensee failed to incorporate adequate guidance to re-torque the stud bolts on the seat clamping ring into procedure CM-M0225. This resulted in 1CP-1 failing EST-220, Type C Local Leak Rate Test due to excessive leakage again on December 3, 2012. This violation was determined to be of very low safety significance (Green) because the finding did not represent an actual open pathway and did not involve an actual reduction in function of hydrogen igniters in the reactor containment. The licensee entered this issue into their CAP as AR #575878. As corrective actions, the licensee revised the seat replacement procedure, properly torqued the stud bolts and satisfactorily tested 1CP-1.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

S. Allen, Licensing Engineer
D. Corlett, Supervisor, Licensing/Regulatory Programs
J. Dufner, Director, Engineering
D. Griffith, Training Manager
G. Hamrick, Vice President Harris Plant
E. Kapopoulos, Plant General Manager
M. McDane, Simulator Support Engineer
S. O'Connor, Manager, Support Services
J. O'Keefe, Superintendent Nuclear Operations Performance
M. Parker, Superintendent, Radiation Control
M. Robinson, Superintendent, Environmental and Chemistry
S. Schwindt, Licensed Operator Continuing Training Supervisor
S. Scott, Superintendent Operations Training
T. Slake, Manager, Security
A. Sylvester, Operator Initial Training Supervisor
T. Toler, Acting Manager, Nuclear Oversight
J. Warner, Manager, Outage and Scheduling
M. Wallace, Licensing Senior Specialist
F. Womack, Manager, Operations

NRC personnel

R. Musser, Chief, Reactor Projects Branch 4, Division of Reactor Projects, Region II

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSEDOpened

05000400/2013002-03	URI	Solid State Protection System Digital Modification (Section 1R17)
05000400/2013002-04	URI	No. 1 Reactor Coolant Pump Seal Leakoff Line Over-Pressurization (Section 1R17)

Opened and Closed

05000400/20013002-01	NCV	Inadequate Correction Actions Involving the Incorrect Determination of Operability (Section 1R15.2)
05000400/20013002-02	NCV	Failure to Implement Design Control Measures for the EDG Starting and Control Air System (Section 1R17)
05000400/20013002-05	FIN	Reactor Power Transient due to Inadvertent Isolation of the "4B" Feedwater Heater (Section 4OA3)

Closed

Temporary Instruction (TI) 2515/187	TI	Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns (Section 4OA5.2)
05000400/2012005-01	URI	Failure of the Primary Shield Supply Fan (S-2B-SB) to Remain Secure when Stopped (Section 1R15.2)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

ORT-1415, Electric Unit Heater Check Monthly Interval
 OP-161.01, Operations Freeze Protection and Temperature Maintenance Systems
 AP-300, Severe Weather
 AP-301, Seasonal Weather Preparations and Monitoring

Section 1R04: Equipment Alignment

Partial System Walkdown

Emergency Diesel Generator system:
 Procedure OP-155 Diesel Generator Emergency Power System,

Section 1R05: Fire Protection

FPP-001 Fire Protection Program Manual
 FIR-NGGC-0009, NFPA 805 Transient Combustibles And Ignition Source Controls Program
 FPP-013, Fire Protection – Minimum Requirements, Mitigating Actions and Surveillance Requirements
 FPP-012-02-RAB261, Reactor Auxiliary Building Elevation 261 Fire Pre-Plan
 FPP-012-04-DBG, Diesel Generator Building Fire Pre-Plan
 FPP-012-01-CNMT, Containment Building Fire Pre-Plan
 FPP-012-03-FHB, Fuel Handling Building Fire Pre-Plan
 FPP-012-07-TB, Turbine Building Fire Pre-Plan
 FPP-012-06-WPB, Waste Processing Building Fire Pre-Plan
 FPP-012-08-SEC, Out Building Fire Pre-Plan
 FPP-012-09-LAF, Large Area Fire Pre-Plan
 FPP-012-02-RAB 236, Reactor Auxiliary Building Elevation 236 Fire Pre-Plan
 FPP-012-02-190-216, Reactor Auxiliary Building Elevations 190 and 216 Fire Pre-Plan
 FPP-012-02-RAB286, Reactor Auxiliary Building Elevation 286 Fire Pre-Plan
 FPP-012-02-RAB305-324, Reactor Auxiliary Building Elevations 305 and 324 Fire Pre-Plan

Section 1R11: Licensed Operator Requalification Program

Records

License Reactivation Packages (three operators' reactivation packages reviewed)
 LORP Training Attendance records (two years of records reviewed)
 Medical Files (Full medical history of ten operators reviewed)
 Remedial Training Records (two years of records reviewed.)
 Remedial Training Examinations (two years of records reviewed)
 Feedback Summaries (two years of records reviewed)
 Simulator Service Requests (two years of records reviewed)
 Condition Reports Resulting in Clock Resets (42 records reviewed)

Condition Reports Generated During/As A Result of the Inspection

NCR 584884
 NCR 584894
 NCR 591180
 NCR 591181
 NCR 591182

Written Examinations

1-3S, LOCT Session 12-01 SRO Biennial Written Exam (Open Reference), 02/16/2012.
 2-1S, LOCT Session 12-01 SRO Biennial Written Exam (Open Reference), 01/19/2012.

Simulator Steady State Tests

Steady State Tests at all power levels (last two tests reviewed)

Simulator Transient Tests

Main Turbine Trip (no Reactor Trip), (last two tests reviewed)
 Power Ramp from 100 percent to 75 percent and back to 100 percent, (last two tests reviewed)
 Slow De-Pressurization to Saturated Conditions Due to a Pressurizer Steam Space Leak, (last two tests reviewed)

Simulator Scenario Based Tests

SBT 2013 AOE Set 1-1B (1-2B) for DSS-007 revision 13, performed on 11-5-12
 SBT 2013 AOE Set 1-1A for DSS-039 revision 04, performed on 11-5-12
 SBT 2013 AOE Set 1-3B for DSS-038 revision 05, performed on 11-6-12
 SBT 2013 AOE Set 2-2B for DSS-010 revision 18, performed on 11-14-12

Scenario Packages

DSS-007: PT-446 failure, LT-115 failure, steam space SBLOCA, Loss of Emergency Coolant Recirculation, Revision 13
 DSS-010: Letdown HX temperature failure, 'B' S/G safety leak, 'B' SGTR, Revision 18
 DSS-013: Leaking PZR PORV, Inadvertent MSIV closure, ATWS, SBLOCA, Revision 17
 DSS-038: NI-42 failure, Turbine runback, Loss of Secondary Heat Sink, Revision 05
 DSS-039: 'B' NSW pump failure, 'A' S/G tube leak, 'A' SGTR, Revision 04
 DSS-054: Electrical fire in Containment, 'A' CCW pump trip, Loss of All AC Power, Revision 00
 DSS-055: 'C' S/G level failure, 'C' RCP high vibrations, Feed line rupture in Containment, Revision 00

JPM Packages

JPM-CR-003, Shift Steam Dump Control to Tave Mode, Revision 11
 JPM-CR-007, Start EDG 1A-SA from the MCB, Revision 13
 JPM-CR-039, RCP Motor Trouble, Revision 09
 JPM-CR-044, Lowering CCW Surge Tank Level, Revision 15
 JPM-CR-056, Manually Align SI Following a Loss of Offsite Power, Revision 15
 JPM-CR-060(e), Establishing SI Following a Major RCS Leak While on RHR, Revision 00
 JPM-CR-105, Isolate Ruptured S/G—MSIV Will Not Close, Revision 09
 JPM-CR-166, Classify an Emergency Event, Revision 05
 JPM-CR-192, Classify an Emergency Event, Revision 04
 JPM-CR-193, Classify an Emergency Event, Revision 05

JPM-CR-203, LOSP While Paralleling EDG from MCB for Testing, Revision 01
 JPM-CR-214, Terminate SI, Revision 03
 JPM-CR-261(b)-L, Response to Loss of Instrument Bus SIII, Revision 00
 JPM-CR-271, Classify an Emergency Event, Revision 00
 JPM-CR-272, Classify an Emergency Event, Revision 00
 JPM-CR-232(d)-L, Pull to POAH/Corrective Action to >10 percent Steam Leak, Revision 00
 JPM-IP-112, Supplying Air Compressors from ESW, Revision 10
 JPM-IP-113, Ruptured S/G Steam Release Path Isolation—In Plant Actions, Revision 08
 JPM-IP-162, Perform an Instrument Air Leak Isolation Locally, Revision 05
 JPM-IP-212, Locally Torque Shut VCT Outlet Valves with Low VCT Level during a Loss of Air When the Reactor is Critical, Revision 04
 JPM-IP-213, Align Equipment for Extended Power Loss, Revision 03
 JPM-IP-231, Resetting Safeguards Signal at SSPS, Revision 03
 JPM-IP-241, Operate a Steam Generator PORV Locally, Revision 01
 JPM-IP-273, Local Inspection of Annunciator Cabinets, Revision 00
 JPM-IP-274, Shift AFW Pump Suction Locally, Revision 00

Benchmark Tests

SST-001, “Steady State Accuracy and Stability Test”, Performed 11/16/09, 12/15/10
 SST-002, “Steady State Accuracy and Stability Test”, Performed 11/16/09, 12/15/10
 SST-003, “Steady State Accuracy Test”, Performed 11/16/09, 12/15/10
 TT-001, “Reactor Trip”, Performed 10/10

Job Performance Measure (JPM) Packages

Transfer Control to the ACP
 Reset Turbine Driven Aux Feedwater Pump
 Isolate Ruptured SG – MSIV Will Not Close
 Place Containment Cooling in the Maximum Cooling Mode
 Classify an Event – ALERT

General Documentation Reviewed

Biennial written examination for 2010 – weeks 1 through 5
 Calculation E-5525, Safe Shutdown in Case of Fire
 Remedial Action Plan – 2009 – 2010
 Requal attendance records 2009-2010
 EOP-User’s Guide, Part 4, Rev 29
 LERs 2009 to 2010

Procedures

OSP-NGGC-1000, Fleet Conduct of Operations, Revision 3
 Operations Management Manual, OMM-001, Operations Administrative Requirements, Rev 92
 Training Administrative Procedure (TAP) -403, Examination and Testing, Rev 19
 TAP 410, NRC License Examination Security Program, Rev 15
 TAP-412, Simulator Operations, Maintenance and Testing, Rev 8
 Training Program Procedure (TPP)-206 Training Program Procedure-Simulator Rev 10
 TPP- 306, Licensed Operator Continuing Training Program, Revision 20
 TRN-NGGC-0002, Performance Review and Remedial Training, Rev 0
 TRN-NGGC-0420, Conduct of Simulator Training and Evaluation, Rev 0,

TRN-NGGC-0440, Rev 0
 TRN-NGGC-1000, Conduct of Training, Rev 3
 AOP- 004, Remote Shutdown
 HNP-E/ELEC-0001 Appendix 1 Compliance Assessment by Scenario
 TRN-NGGC-1000, Conduct of Training, Rev 3
 EOP-USER'S-GUIDE, User's Guide, Revision 39.
 EOP-USER'S-GUIDE, User's Guide, Revision 39.
 OMM-027, AOP User's Guide, Revision 04.
 OPS-NGGC-1000, Fleet Conduct of Operations, Revision 10.

TAP-403, Examination and Testing, Revision 23
 TAP-410, NRC License Examination Security Program, Revision 18
 TAP-412, Simulator Operation, Maintenance, and Testing, Revision 09
 TPP-206, Simulator Program, Revision 11
 TPP-306, Licensed Operator Continuing Training Program, Revision 23
 TRN-NGGC-0002, Performance Review and Remedial Training, Revision 04
 TRN-NGGC-0420, Conduct of Simulator Training and Evaluation, Revision 03
 TRN-NGGC-0425, Simulator Scenario Based Testing, Revision 00
 TRN-NGGC-0440, Regulated Exam Security, Revision 00
 TRN-NGGC-0441, Licensed Operator Requal Annual/Biennial Exam Development, Revision 01
 TRN-NGGC-1000, Conduct of Training, Revision 07

Section 1R12: Maintenance Effectiveness

NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants
 ADM-NGGC-0101, Maintenance Rule Program

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation

OMP-003, Outage Shutdown Risk Management
 OMM-001, Conduct of Operations
 WCP-NGGC-1000, Conduct of On-Line Work Management
 OPS-NGGC-1311, Protected Equipment
 WCM-001, On-line Maintenance
 ADM-NGGC-0006, Online Equipment Out of Service (EOOS) Models for Risk Assessment

Section 1R15: Operability Evaluations

OPS-NGGC-1305, Operability Determinations

Section 1R17: Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

Full Evaluations

AR 0351569, Compensatory Measure for Containment Spray Additive System, Rev. 0
 AR 0409191, Generator Modification to Prevent a Generator Lockout (EC 77381), Rev. 0
 AR 0442030, Removal of Check Valves in the ESW System (EC 77543), Rev. 0

AR 0442400, Revised SGTR Margin to Overfill Results to HNP FSAR (LDCR 3202), Rev. 0
 AR 0467465, Alternate Seal Injection and Back-up Diesel Generator System, Rev. 15
 AR 0501629-11, High Pressure Turbine Path Replacement (EC 74970), Rev. 1

Screened Out Items

EC 48001, Reactor Coolant Pump No.1 Seal Leak-off line Over-Pressurization, Rev. 0
 EC 67559, ESW Booster Pump Casing Upgrade to Stainless Steel, Rev. 3
 EC 69610, Upgrade Class 1E Inverters SI, SII, SIII, SIV due to Obsolescence, Rev. 7
 EC 70350, Add Spot Cooler to the ASI Room, Rev. 15
 EC 70355, 6.9kv 'Train A' Bkr Replacement (Replace Air Circuit Bkr with Vacuum Bkr), Rev. 4
 EC 71393, Replacement of HE3, EF3 & FJ3 Breakers with Cut Ham HFD, HMCP & HJD
 (Obsolete MCC Bkr Replacement), Rev. 1
 EC 73905, Eliminate Contact Failure Vulnerability of 6.9 kV ESS Load Blocks for certain 6.9 kV
 Train B ESF Loads (AFW, ESW, and CCW Pumps), Rev. 0
 EC 78484, Digital Modification to SSPS Control Boards. Rev. 6
 EC 79281, Pumps for Underground Cable Sumps, Rev. 28
 EC 79797, 6.9 kv Bkr Replacement (Replace Air Circuit Bkr with Vacuum Bkr), Rev. 1
 EC 81289, EQ Program Applicability for the Main Steam PORV Limit Switches Installed in
 Harsh Environment. Rev. 0
 EC 81662, Installation of Check Valve in Fuel Supply Line, Dedicated Shutdown D/G, Rev. 1
 EC 82029, Replacement for Obsolete Diesel Gen. Over-current Relays 51V-A, B, and C, Rev. 0
 EC 82234, Install New Relays to be used in the EDG Control Logic, Rev. 1
 EC 82239, Replace the Existing ASI Pump Room Cooler (1AV-E026) with a Permanent Air
 Conditioner, Rev. 3
 EC 82397, Replace Pressure Sensor Valve for P3 in The Engine Control Panel, Rev. 8
 EC 83877, RHR Pump Seal Cooler CCW Throttle Valve Replacement, Rev. 2

Basis Documents

Technical Specifications, Current
 Updated Final Safety Analysis Report, Current
 DBD-104, Safety Injection System, Rev. 14
 DBD-106, Containment Spray, Rev. 14
 DBD-201, Emergency Diesel Generator System, Rev 12
 DBD-320, Alternate Seal Injection System (ASI System – 2007), Rev. 0
 ML101880126, - Shearon Harris Nuclear Power Plant, Unit 1 – Issuance of Amendment to
 Incorporate an Expanded Range of Eductor Flow Rates for Containment Spray Additive
 System, July 16, 2010

Condition Reports Reviewed

AR 00106979-09, Unanalyzed Condition of Reactor Coolant Pump Seal Leakoff Line During
 Postulated Fire Scenarios or Station Blackout
 AR 00306772, PPP-312 Revision 4 Revise To Add New Drawings
 AR 00337476, OST-1021 Requirement for PIC 17/19 Room Temperature
 AR 00351623, 1CT-118 Adjustments Made for a Containment Spray
 AR 00382359, Design Basis Question for EDG Control Air
 AR 00391538, RHR Pump 'B' Seal Cooler Flow Recorded Out of Spec
 AR 00412546, Design Basis Question for EDG Control Air Followup
 AR 00416744, TMM-116 to Incorporate ECs 67999 And 70350

AR 00439136, Received ALB-008/2-3 ASI System Trouble
 AR 00443239, EC 70350 Room Temperature Maintenance
 AR 00457332, ISI-801 Revise To Add Note For MOV PMT
 AR 00463742, OP-155 Addition of A Note That At Least One EDG Air Compressor Should Be Maintained Available
 AR 00467018, While OST-1124 Was Run, Sec. 7.1 Test Failed
 AR 00469890, High Temperature In Hot Machine Shop
 AR 00472616, Unexpected Start of TDAFW Pump
 AR 00487331, Failure of DSDG to Start During OPT -1530
 AR 00562219, Discrepancy in FPP-013 ASI Room Temperature Operability
 AR 00572939, ECs have been performed to replace the Older 6.9 kV Circuit Breakers with new Vacuum Breakers
 AR 00579281, Nuisance Alarms During EC 82239 ASI Room Cooler MOD

Procedures

ADM-NGGC-0106, Configuration Management Program Implementation, Rev. 8
 AOP-018, Reactor Coolant Pump Abnormal Conditions, Rev. 43
 AOP-036.08, Fire Areas: 1-A-SWGRA and 1-A-SWGRB, Rev. 19
 APP-ASI-SCP, Alternate Seal Injection System Control Panel, Rev. 1
 APP-DGP-001, Diesel Generating Panels, Rev. 25
 CM-E0010, Molded Case Circuit Breaker Test, Rev. 21
 CM-E0028, MCC Molded Case Circuit Breaker Change Out, Rev. 35
 EGR-NGGC-0153, Engineering Instrument Setpoints, Rev. 11
 EOP-ECA-0.0, Loss of All AC Power, Rev. 1
 EOP-EPP-014, Faulted Steam Generator Isolation, Rev. 18
 EOP-EPP-015, Uncontrolled Depressurization Of All Steam Generators Rev. 22
 EOP-FRP-H, Response to Steam Generator High Level, Rev. 10
 EOP-GUIDE-1, Path 1 Guide, Rev. 26
 EOP-PATH-1, Path 1, Rev. 23
 FPP-013, Fire Protection-Minimum Requirements, Mitigating Actions and Surveillance Requirements, Rev. 73
 Harris Nuclear Plant Outside Building Auxiliary Operator Logs, Rev. 9
 OP-114, CAS Area HVAC, Rev. 3
 OP-155, Diesel Generator Emergency Power System, Rev. 63
 OP-172, Reactor Auxiliary Building HVAC System, Rev. 53
 OPT-1510, EDG Weekly Inspection/Checks Modes at All Times, Rev. 23
 OPT-1532, ASI Squib Valves Fire Test 54 Months Interval Modes 1-4, Rev. 1
 OST-1021, Daily Surveillance Requirements Daily Interval Modes 1 And 2, Rev. 91
 OST-1022, Daily Surveillance Requirements Daily Interval Modes 3 And 4, Rev. 70
 PM-E0048, 6.9 kV Vacuum Breaker Inspection, Rev. 6
 REG-NGGC-0010, 10 CFR 50.59 and Selected Regulatory Reviews, Rev. 18
 TMM-116, Check Valve Monitoring, Rev. 22

Completed Procedures

OST-1089, Emergency Diesel Generator Starting Air Dryer Check Valve Operability Test Quarterly Interval Modes 1-2-3-4-5-6, 12/16/12
 OST-1089, Emergency Diesel Generator Starting Air Dryer Check Valve Operability Test Quarterly Interval Modes 1-2-3-4-5-6, 10/2/12

EST-926, IST Program Multi-Point Curve Determination Pump Test (1SW-E004), 12/9/10
 EST-926, IST Program Multi-Point Curve Determination Pump Test (1SW-E003), 5/26/12
 OST-1119, Containment Spray Eductor Flow Rate – B Train, (Trend 6/2009 – 10/2012)
 OST-1118, Containment Spray Eductor Flow Rate – A Train, (Trend 1/2010 – 1/2013)
 OP-155, Attachment 6 EDG Operational Data Checklist, 3/30/12
 OP-155, Attachment 6 EDG Operational Data Checklist, 6/24/12

Work Orders

01648699, Perform MPT-I0476 EDG 1B-SB Starting Air Pressure Calibration, 10/5/11
 01730354-01, EL, CM-E0028, 1B21-SB-9B: 002, Replace W/ Cutler-HAM Breaker, 1CS-752,
 dated 12/02/10
 01734291, Perform MPT-I0475 EDG 1A-SA Starting Air Pressure Calibration, 10/5/11
 01872628, Perform MPT-10480 EDG 1B-SB Engine Control Panel Pneumatic Pressure
 Instruments Calibration, 2/22/12
 01886117-01, EL, I76, 1A-SA-12, EC 79797, PM-E0048 Functional Test and Setup, 03/13/12
 01907854, Perform MPT-10479 EDG 1A-SA Engine Control Panel Pneumatic Pressure
 Instruments Calibration, 10/22/12
 01942824 03, 1SDG-E001, Fuel Line Check Valve Installation per EC 81662, 7/7/11
 01942824 04, Test New Check Valve Prior to Installation per EC 81662, 7/6/11
 02028402-02, I, EC 81301, Bench Calibrate New AGASTAT for FY/685CX, 04/30/12
 02028402-04, I, EC 81301, Perform Testing for 1CC-252 per Section E.1, E.2, 05/18/12
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