



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

April 30, 2010

Carolina Power and Light Company
ATTN: Mr. Eric McCartney
Vice President - Robinson Plant
H. B. Robinson Steam Electric Plant
Unit 2
3581 West Entrance Road
Hartsville, SC 29550

**SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT - NRC INTEGRATED
INSPECTION REPORT 05000261/2010002**

Dear Mr. McCartney:

On March 31, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your H.B. Robinson reactor facility. The enclosed integrated inspection report documents the inspection findings, which were discussed on April 21 with yourself 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.

This report documents one NRC identified finding and one self-revealing finding of very low safety significance (Green). Both of these findings were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program (CAP), the NRC is treating these findings as non-cited violations (NCV), in accordance with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV, 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 the H.B. Robinson facility. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this report, with the basis for your disagreement, to the Regional Administrator, Region II, and the Senior Resident Inspector at H.B. Robinson facility. The information you provide will be considered in accordance with Inspection Manual Chapter (IMC) 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document

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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.: 50-261
License No.: DPR-23

Enclosure: Inspection Report 05000261/2010002
w/Attachment: Supplemental Information

cc w/encls: See page 3

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Letter to Eric McCartney from Randall A. Musser dated April 30, 2010

SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT - NRC INTEGRATED
INSPECTION REPORT 05000261/2010002

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-261

License No: DPR-23

Report No: 005000261/2010002

Facility: H. B. Robinson Steam Electric Plant, Unit 2

Location: 3581 West Entrance Road
Hartsville, SC 29550

Dates: January 1, 2010 – March 31, 2010

Inspectors: J. Hickey, Senior Resident Inspector
D. Bollock, Resident Inspector
J. Sowa, Project Engineer
G. Wilson, Senior Project Engineer
J. Worosilo, Project Engineer

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

Enclosure

SUMMARY OF FINDINGS

IR 05000261/2010002, 01/01/2010 – 03/31/2010; Carolina Power and Light Company; H.B. Robinson Steam Electric Plant, Unit 2; Flood Protection, Operability Evaluations.

The report covered a three month period of inspection by resident inspectors, a senior project engineer and project engineers. One NRC-identified and one self-revealing findings of very low safety significance (Green) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). The cross-cutting aspects were determined using IMC 0305, Operating Reactor Assessment Program. Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. A self-revealing non-cited violation of Technical Specification 5.4.1, Procedures, was identified in that the licensee used inaccurate drawings to hang clearances on freeze protection circuits which resulted in the Refueling Water Storage Tank (RWST) level instrument lines freezing. The licensee failed to properly translate the design of the freeze protection circuits to the drawings used in the clearances, causing the RWST level sensing line freeze protection to be unavailable. The licensee removed the clearance, re-energized the freeze protection and level indications were restored. The licensee entered the drawing discrepancy issue into the corrective action program as AR 374561

The disabling of the RWST level instrument freeze protection during the RHR pump work is a performance deficiency. The finding is more than minor because it affected the mitigating systems cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events. Specifically, the RWST level instrument line freezing caused the required post accident instrumentation of the RWST to be inoperable. Using Appendix A of the Significance Process (SDP) described in IMC 0609, Mitigating System Cornerstone, this finding was determined to have very low safety significance (Green) because no loss of operability or functionality of the RWST resulted from the level sensing line freezing. There is no cross-cutting aspect of this NCV since the incorrect drawing that resulted in the inaccurate clearance was last revised in 1986 and is not indicative of current licensee performance. (Section 1R15)

- Green. The inspectors identified a NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, in that the licensee failed to maintain a safety-related cable in an environment for which it was designed. Specifically, the "A" Emergency Diesel (EDG) Fuel Oil Transfer Pump power supply cable was exposed to continuous submersion in water. The licensee removed the accumulated water from the hand hole, resealed, and reinstalled the hand hole cover. The licensee entered the issue into the corrective action program as AR 370343.

Enclosure

Failure to maintain a safety related cable in an environment for which it was designed is a performance deficiency. The finding is more than minor in accordance with IMC 0612, Appendix B (Block 9, Figure 2), "Issue Screening," because if left uncorrected, the performance deficiency has the potential to lead to a more significant safety concern. Specifically, subjecting the "A" EDG fuel oil transfer pump cable to continuous submersion could, over time degrade the cable and result in failure. In accordance with IMC 0609 (Table 4a), "Phase 1 – Initial Screening and Characterization of Findings", the finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency which resulted in a loss of operability or functionality.

The cause of the finding was directly related to the problem evaluation cross-cutting aspect in the corrective action program component of the Problem Identification and Resolution area because the licensee did not thoroughly evaluate the condition described in NRC Generic Letter 2007-01 Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients (P.1 (c)) (Section 1R06).

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status The unit began the inspection period at 55 percent rated thermal power due to maintenance on a main turbine control valve. The unit was restored to rated thermal power later that day. On March 28, a fire in 4kV switchgear resulted in an automatic reactor trip, safety injection and an Alert emergency declaration. The unit remained shutdown through the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

- Impending Adverse Weather, Tornado Watch

When a tornado watch was issued on January 24 and 25, the inspectors reviewed actions taken by the licensee in accordance with Procedure OMM-021, Operation During Adverse Weather Conditions, to ensure that the adverse weather conditions would neither initiate a plant event nor prevent any system, structure, or component from performing its design function.

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

- 372419, Feedwater Ultrasonic Flow Measurement failure
- 349392, Monthly heater inspection discrepancies

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

Partial System Walkdowns:

The inspectors performed the following three partial system walkdowns, while the indicated structures, systems, and/or components (SSCs) were out-of-service for maintenance and testing:

- "A" EDG while the "B" EDG was inoperable
- "A" Containment Spray Pump while the "B" Containment Spray Pump was inoperable
- "B" Train of service water (SW) while "B" SW pump was out for GEMCO switch replacement

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To evaluate the operability of the selected trains or systems under these conditions, the inspectors compared observed positions of valves, switches, and electrical power breakers to the procedures and drawings listed in the Attachment.

Complete System Walkdown:

The inspectors conducted a detailed review of the alignment and condition of the Dedicated Shutdown Diesel Generator system to verify that the existing alignment of the system was consistent with the correct alignment. To determine the correct system alignment, the inspectors reviewed the procedures, drawings, and the Updated Final Safety Analysis Report (UFSAR) section listed in the Attachment. The inspectors also walked down the system. During the walkdown, the inspectors reviewed the following:

- Valves were correctly positioned and did not exhibit leakage that would impact the functions of any given valve;
- Electrical power was available as required;
- Major system components were correctly labeled, lubricated, cooled, ventilated, etc.;
- Hangers and supports were correctly installed and functional;
- Essential support systems were operational;
- Ancillary equipment or debris did not interfere with system performance;
- Tagging clearances were appropriate;
- Valves were locked as required by the locked valve program;
- Breakers were correctly positioned;
- Electrical power was available as required;
- Major system components were correctly labeled;
- Cabinets, cable trays, and conduits were correctly installed and functional;
- Visible cabling appeared to be in good material condition; and
- Tagging clearances were appropriate.

The inspectors reviewed the documents listed in the Attachment to verify that the ability of the system to perform its functions could not be affected by outstanding design issues, temporary modifications, operator workarounds, or adverse conditions.

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

- 192308, PS-971F Primary Sample valve out of position
- 274913, "A" Spent Fuel Cooling Pump ground cable disconnected
- 294291, Pipe caps not shown on drawing

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

For the five areas identified below, the inspectors reviewed the control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures to verify that those items were consistent with UFSAR Section 9.5.1, Fire Protection System, and UFSAR Appendix 9.5.A, Fire Hazards Analysis. The inspectors walked down accessible portions of each area and reviewed results from related surveillance tests to verify that conditions in these areas were consistent with descriptions of the areas in the UFSAR. Documents reviewed are listed in the Attachment.

The following areas were inspected:

- Dedicated Shutdown Diesel
- 4.6 kV Switchgear Room
- Auxiliary Feedwater (AFW) Pump Room
- Residual Heat Removal (RHR) heat exchanger (HX) and Waste Holdup Tank Room
- Auxiliary Building 2nd Level (Zone 15)

Also, to evaluate the readiness of personnel to prevent and fight fires, the inspectors observed fire brigade performance during the following fire event.

- Response to the 4kV bus fire on March 28.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

Unresolved Item (URI) 05000261/2009005-01, "A" EDG Fuel Oil Transfer Pump Power Supply Cable Submerged in Water

a. Inspection Scope

In the fourth quarter 2009, the inspectors examined potential degradation of power cables for the "A" EDG fuel oil transfer pump power supply cable due to submergence in water. The inspectors opened an URI for this issue pending the licensee's evaluation of the basis for qualification of these cables in submerged conditions. This inspection was conducted to evaluate that information.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in that the licensee failed to maintain the "A" EDG fuel oil transfer pump power supply safety-related cable in an environment for which it was

designed. The licensee failed to demonstrate the cable is qualified for continuous submerged conditions, and that the cable will remain operable. The cable is currently operable.

Description: On December 10, 2009, during an inspection of the underground cable hand hole H569-SA, the "A" EDG fuel oil transfer pump power supply cable was identified as being submerged in 3 inches of water. The affected cable, C2947A-SA was installed by Engineering Change 51005 on October 30, 2003. The cable is a three conductor #8 AWG 600V Rockbestos Firewall III intended for use in harsh and demanding environments. Unresolved Item 05000261/2009005-01, "A" EDG Fuel Oil Transfer Pump Power Supply Cable Submerged in Water was opened to allow for additional inspection activities associated with the cable. The inspectors determined, after discussions with additional NRC specialists, that the cable rating does not include continuous submerged conditions.

The hand hole is approximately 24" X 24" X 24," has a 4" conduit that enters approximately 9" from the top and another 4" conduit that exits approximately 3" from the bottom on opposite sides of the hand hole. Each of the conduits is sealed with RTV foam. No evidence of rain water or ground water penetration was evident. Since this was the first time the hand hole cover had been removed since installation, the licensee concluded the source of the water was from condensation. The licensee removed the accumulated water from the hand hole, resealed, and reinstalled the hand hole cover the same day.

The post installation megger reading for cable C2947A-SA was greater than 999 mega ohms, on October 30, 2003. After five years of service, the cable tested at greater than 999 mega ohms on December 15, 2008. Based on these test results, the inspectors concluded the cable has been and remains operable.

The licensee will establish preventive maintenance activities to megger test both EDG fuel oil transfer pump power supply cables and inspect the hand holes annually.

Analysis: Failure to maintain safety related cables in an environment for which they were designed is a performance deficiency. The inspectors determined that the performance deficiency was not similar to the examples for minor deficiencies contained in IMC 0612, Appendix E, "Examples of Minor Issues". The finding was more than minor in accordance with IMC 0612, Appendix B (Block 9, Figure 2), "Issue Screening," because if left uncorrected, the performance deficiency has the potential to lead to a more significant safety concern. Specifically, subjecting the "A" EDG fuel oil transfer pump cable to continuous submersion could, over time, degrade the cable and result in failure. In accordance with IMC 0609 (Table 4a), "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency which resulted in a loss of operability or functionality.

The cause of the finding was directly related to the problem evaluation aspect in the corrective action program component of the Problem Identification and Resolution area because the licensee did not thoroughly evaluate the condition described in NRC

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Generic Letter 2007-01 Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients. (P.1 (c))

Enforcement: 10 CFR Part 50, Appendix B Criterion III, Design Control requires in part, that measures shall be established to ensure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, since October 30, 2003, the licensee did not maintain safety related cable C2947A-SA in an environment for which it was designed. The licensee entered the issue into the corrective action program as AR 370343. Because this violation was of very low safety significance, and it was entered into the licensee's corrective action program, this violation is being treated as an NCV, consistent with the NRC Enforcement Policy. This violation is therefore designated as NCV 05000261/2010002-02, "A" Emergency Diesel Generator Fuel Oil Transfer Pump Power Supply Cable Subjected to Continuous Submersion in Water Design Deficiency

1R11 Licensed Operator Regualification

a. Inspection Scope

The inspectors observed licensed-operator performance during simulator training for crew three to verify that operator performance was consistent with expected operator performance, as described in Operations Training LOCT Outage-2, 3 & 8. This training tested the operators' ability to operate components from the control room, direct auxiliary operator actions, and determine the appropriate emergency action level classifications while responding to a loss of coolant accident and loss of component cooling water both while in a shutdown condition. The inspectors focused on clarity and formality of communication, the use of procedures, alarm response, control board manipulations, group dynamics, and supervisory oversight.

The inspectors observed the post-training critique to verify that the licensee identified deficiencies and discrepancies that occurred during the simulator training.

Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two degraded SSC/function performance problems or conditions listed below to verify the appropriate handling of these performance problems or conditions in accordance with 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, and 10 CFR 50.65, Maintenance Rule. Documents reviewed are listed in the Attachment.

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The problems/conditions and their corresponding ARs were:

- 373926, "A" RHR Pump leaking shaft seal replacement
- 369893, 480 volt Bus 3 ground detection circuit fuse size discrepancy

During the reviews, the inspectors focused on the following:

- Appropriate work practices,
- Identifying and addressing common cause failures,
- Scoping in accordance with 10 CFR 50.65(b),
- Characterizing reliability issues (performance),
- Charging unavailability (performance),
- Trending key parameters (condition monitoring),
- 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification, and
- Appropriateness of performance criteria for SSCs/functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified (a)(1).

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

For the five time periods listed below, the inspectors reviewed risk assessments and related activities to verify that the licensee performed adequate risk assessments and implemented appropriate risk-management actions when required by 10 CFR 50.65(a)(4). For emergent work, the inspectors also verified that any increase in risk was promptly assessed, and that appropriate risk-management actions were promptly implemented. Documents reviewed are listed in the Attachment. Those periods included the following:

- January 11, failure of both Reactor Water Storage Tank level instruments emergent work;
- January 15 through January 22, including "A" Auxiliary Feedwater Pump maintenance, Main/Auxiliary/Startup Transformer replacement preparations and SI-867A Boron Injection Tank Inlet Limitorque inspection and breaker maintenance;
- February 12 through February 19, including Main/Auxiliary/Startup Transformer replacement preparations, AFW-V2-20B sectionalizing valve maintenance and a crane lift near the Reactor Water Storage Tank;
- February 26 through March 4, including Main/Auxiliary/Startup Transformer replacement preparations, crane work below off-site power cables, CVC-277A "C" charging pump recirculation valve replacement, and "B" and "C" Safety Injection Pumps unavailable due to testing; and

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- March 5 through March 12, including Main/Auxiliary/Startup Transformer replacement preparations, “A” Deepwell Pump inspection, Reactor Protection System surveillance testing, and realignment of the inservice safety injection pump for the spare safety injection pump.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the five operability determinations associated with the ARs listed below. The inspectors assessed the accuracy of the evaluations, the use and control of any necessary compensatory measures, and compliance with the Technical Specification (TS). The inspectors verified that the operability determinations were made as specified by Procedure OPS-NGGC-1305, Operability Determinations. The inspectors compared the justifications provided in the determinations to the requirements from the TS, the UFSAR, associated design-basis documents, to verify that operability was properly justified and the subject components or systems remained available, such that no unrecognized increase in risk occurred:

- 374561, Refueling Water Storage Tank Level (RWST) Instrumentation sense line freezing
- 374393, “A” RHR Pump shaft sleeve seal leakage evaluation
- 377961, V6-34D Containment Cooling Service Water Return Isolation Valve failed to close
- 382604, “B” EDG output breaker failed to close
- 387229, CVC-121D, Charging system drain pipe branch weld leak

Documents reviewed are listed in the Attachment.

b. Findings

Introduction: A self-revealing non-cited violation of Technical Specification 5.4.1, Procedures, was identified in that the licensee used inaccurate drawings to hang clearances on freeze protection circuits which resulted in the RWST level instrument lines freezing. The licensee failed to properly translate the design of the freeze protection circuits to the drawings used in the clearances, unintentionally causing the RWST level sensing line freeze protection to be unavailable.

Description: On January 11, 2010 during the placement of the clearance for work on the “A” RHR pump, the clearance order de-energized Freeze Protection Circuit FPP-29

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circuit 11. Approximately five hours following placement of this clearance RWST level indications failed high. The sensing lines for LI-969 and LI-948 (RWST level instrumentation) were determined to be frozen. The licensee removed the clearance, restored freeze protection, and thawed the sensing lines restoring RWST level indications. During trouble-shooting of this event it was determined that the clearance was placed on FPP-29 Circuit 11 due to a drawing error. Drawings HBR2-07005 and HBR2-0737 show that FPP-29 Circuit 11 protects the RHR pump flush lines and seal water lines from freezing, therefore it was cleared for personnel safety for the work on "A" RHR pump. Drawing HBR2-07005 showed that the sensing lines for LI-969 and LI-948 were protected by Freeze Protection Circuit FPP-29 circuit 5. This error in the drawing led operations to believe it was safe to clear FPP-29 circuit 11. This and the unusually cold weather that morning led to the sensing line freezing and LI-969 and LI-948 being rendered inoperable.

Analysis: The disabling of the RWST level instrument freeze protection during the RHR pump work is a performance deficiency. The finding is more than minor because it affected the mitigating systems cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events. Specifically, the RWST level instrument line freezing caused the required post accident instrumentation of the RWST to be inoperable. Using Appendix A of the Significance Process (SDP) described in IMC 0609, Mitigating System Cornerstone, this finding was determined to have very low safety significance (Green) because no loss of operability or functionality of the RWST resulted from the level sensing line freezing. There is no cross-cutting aspect of this NCV since the incorrect drawing that resulted in the inaccurate clearance was last revised in 1986 and is not indicative of current licensee performance.

Enforcement: Technical Specification 5.4.1(a), "Procedure", requires that written procedures be implemented as recommended in Appendix 'A' of Regulatory Guide 1.33, Section 9, "Procedures for Performing Maintenance" which states in part that maintenance that can affect the performance of safety-related equipment should be properly performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above the licensee used inappropriate drawings for the clearance for the work on the RHR system in that the drawings were not representative of the actual plant configuration. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program (AR 374561), this violation is being treated as a non-cited violation (NCV), consistent with the NRC Enforcement Policy. This violation is therefore designated as NCV 05000261/2010002-01, Inaccurate Drawings Result In Loss of RWST Level Indication Due to Freezing.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following two temporary modifications to verify that the modification did not affect the risk significant or safety functions of the affected system, and to verify that the modification satisfied the requirements of Procedure EGR-NGGC-005, Engineering Change. Documents reviewed are listed in the Attachment.

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- EC 75708, Temporary Removal of “C” Main Transformer Group 6 Oil Pump from circuit and temporary removal of related alarm function; and
- EC 76315, CVC-121D Charging Line Drain Valve temporary support installation.

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

- 292657, Process screening errors on the mounting of metal storage boxes on site; and
- 356913, Temporary Modification scope differences between sites

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the eight work orders (WO's) listed below, the inspectors witnessed the post maintenance test and/or reviewed the test data to verify that test results adequately demonstrated restoration of the affected safety functions described in the UFSAR and TS. Documents reviewed are listed in the Attachment.

- WO 1699869, V6-34D Service Water Return from Containment Cooler HVH-4 return isolation valve failed to close repair;
- WO 1512476, SI-876A Boron Injection Tank Inlet Valve inspection;
- WO 1329707, AFW-V2-20A Auxiliary Feedwater Sectionalizing Valve Limitorque operator inspection;
- WO 1537516-01, Online GEMCO Switch Refurbishment CS/AFW-Pump-B;
- WO 1663926, Replace LC-478B, Steam generator (SG) “A” Valve Control/ SG Level Program;
- WO 1714728, “B” EDG output breaker replacement;
- WO 1391103, SW-932 Isolation Valve Seal Water supply check valve repair; and
- WO 1398843, AFW-V2-20B Auxiliary Feedwater Sectionalizing Valve Limitorque operator inspection

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

For the forced outage that began on March 28, the inspectors evaluated licensee outage activities as described below to verify that the licensee considered risk in developing outage schedules, adhered to administrative risk reduction methodologies they developed to control plant configuration, and adhered to operating license and technical

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specification requirements that maintained defense-in-depth. The inspectors also verified that the licensee developed mitigation strategies for losses of the following key safety functions:

- decay heat removal
- inventory control
- power availability
- reactivity control
- containment

Documents reviewed are listed in the Attachment.

.1 Monitoring of Shutdown Activities

a. Inspection Scope

The inspectors observed portions of the cooldown process to verify that technical specification cooldown restrictions were followed.

b. Findings

No findings of significance were identified.

.2 Licensee Control of Outage Activities

a. Inspection Scope

During the outage, the inspectors observed the items or activities described below to verify that the licensee maintained defense-in-depth commensurate with the outage risk-control plan for key safety functions and applicable technical specifications when taking equipment out of service.

- Reactor Coolant System Instrumentation
- Electrical Power
- Decay Heat Removal (DHR)
- Inventory Control
- Reactivity Control

The inspectors also reviewed responses to emergent work and unexpected conditions to verify that resulting configuration changes were controlled in accordance with the outage risk control plan, and to verify that control-room operators were kept cognizant of the plant configuration.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testinga. Inspection Scope

For the six surveillance tests listed below, the inspectors witnessed testing and/or reviewed the test data to verify that the systems, structures, and components involved in these tests satisfied the requirements described in the TS, the UFSAR, and applicable licensee procedures, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions. Documents reviewed are listed in the Attachment.

- OST-303-2, Service Water Booster Pump "B" Test
- OST-010, Power Range Calorimetric During Power Operation Daily
- OP-604, "A" EDG operability test for common cause due to "B" EDG inoperability
- OST-918, Dedicated Shutdown Equipment and Instrumentation Check (Monthly)

Inservice Testing Surveillance

- OST-352-4, Stroke test of SI-844B Containment Spray Pump "B" inlet isolation Containment Isolation Valve Surveillance

Reactor Coolant System Leakage Surveillance

- OST-051, Reactor Coolant Leakage Evaluation (Every 72 Hours During Steady State Operation and Within 12 Hours of Reaching Steady State Operation)

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

- 377076, No work request or NCR documenting an unsatisfactory test.
- 356102, "B" Charging Pump inoperable due to high discharge pressure

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluationa. Inspection Scope

On February 16 the inspectors observed an emergency preparedness drill to verify licensee self-assessment of classification, notification, and protective action recommendation development in accordance with 10 CFR 50, Appendix E. The inspectors also attended the post-drill critique to verify that the licensee properly identified failures in classification, notification and protective action recommendation development activities. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors verified the PIs identified below. For each PI, the inspectors verified the accuracy of the PI data that had been previously reported to the NRC by comparing those data to the actual data, as described below. The inspectors also compared the licensee's basis in reporting each data element to the PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline". In addition, the inspectors interviewed licensee personnel associated with collecting, evaluating, and distributing these data.

Mitigating Systems Cornerstone

- Mitigating Systems, Residual Heat Removal
- Mitigating Systems, Cooling Water Systems

For the period from the first quarter of 2009 through the fourth quarter of 2009 the inspectors reviewed Licensee Event Reports (LERs), records of inoperable equipment, and Maintenance Rule records to verify that the licensee had accurately accounted for unavailability hours that the subject systems had experienced during the subject period. The inspectors also reviewed the number of hours those systems were required to be available and the licensee's basis for identifying unavailability hours.

Barrier Integrity Cornerstone

- For the Reactor Coolant System Activity PI, the inspectors observed sampling and analysis of reactor coolant system samples, and compared the reported performance indicator data with records developed by the licensee while analyzing previous samples, for the period from the first quarter of 2009 through the fourth quarter of 2009.
- For the Reactor Coolant System Leakage PI, the inspectors reviewed records of daily measures of RCS identified leakage, for the period from the first quarter of 2009 through the fourth quarter of 2009.

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

- 383298 "Component cooling water (CCW) Mitigating Systems Performance Index (MSPI) Data Correction for 6/2009 and 7/2009"

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Routine Review of ARs

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 CAP. The review was accomplished by reviewing daily AR reports.

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected AR 364853, Automatic Reactor Trip due to low level in the "A" S/G for detailed review. The inspectors selected this AR because it relates specifically to the Initiating Events Cornerstone. The inspectors reviewed this report to verify:

- complete and accurate identification of the problem in a timely manner;
- evaluation and disposition of performance issues;
- evaluation and disposition of operability and reportability issues;
- consideration of extent of condition, generic implications, common cause, and previous occurrences;
- appropriate classification and prioritization of the problem;
- identification of root and contributing causes of the problem;
- identification of corrective actions which were appropriately focused to correct the problem; and
- completion of corrective actions in a timely manner.

The inspectors also reviewed this AR to verify compliance with the requirements of the CAP as delineated in Procedure CAP-NGGC-0200, Corrective Action Program, and 10 CFR 50, Appendix B. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings of significance were identified.

4OA3 Event Follow-up

.1 Low flow reactor trip due to fire in 4kV buses #4 and #5 resulted in a Alert declaration.

a. Inspection Scope

Following the reactor trip that occurred on March 28 the inspectors reviewed the status of mitigating systems and fission product barriers, equipment and personnel performance, and related plant management decisions to assist NRC management in

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making an informed evaluation of plant conditions. The inspectors also reviewed post-trip activities to verify that the licensee identified and resolved event-related issues. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified. Region II dispatched a Special Inspection Team on March 30, 2010 to perform additional follow-up for this event.

.2 (Closed) LER 2009-003-00, "Manual Reactor Trip Due to Failure of 'A' Steam Generator Level Module".

On November 6, 2009, with the unit at 100 percent power, the "A" feedwater regulating valve (FRV) failed closed. The operators manually tripped the reactor as the "A" steam generator water level approached the automatic trip setpoint. The cause of the FRV failure was a power supply failure in the control circuit. The LER was reviewed by the inspectors and no findings of significance were identified and no violation of NRC requirements occurred. The licensee documented the failed equipment in AR 364853. This LER is closed.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors observed 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.

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 review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On April 21, 2010, the resident inspectors presented the inspection results to Mr. Eric McCartney and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

W. Farmer, Engineering Manager
K. Jensen, Maintenance Manager
K. Jones, Operations Manager
J. Lucas, Nuclear Assurance Manager
E. McCartney, Vice President
J. Rhodes, Radiation Protection Superintendent
S. Saunders, Plant General Manager
K. Smith, Training Manager
S. Wheeler, Outage & Scheduling Manager
B. White, Manager, Support Services - Nuclear

NRC personnel

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

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

05000261/2009005-01 URI "A" EDG Fuel Oil Transfer Pump Power Supply Cable Submerged in Water (Section 1R06)

05000261/2009003-00 LER Manual Reactor Trip Due to Failure of 'A' Steam Generator Level Module (Section 4OA3.2)

Opened & Closed

05000261/2010002-01 NCV Inaccurate Drawings Result In Loss of RWST Level Indication Due to Freezing (Section 1R15)

05000261/2010002-02 NCV "A" Emergency Diesel Generator Fuel Oil Transfer Pump Power Supply Cable Subjected to Continuous Submersion in Water Design Deficiency (Section 1R06)

Previous Items Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Partial System Walkdown

Procedures: OP-604 Diesel Generators "A" and "B", Rev. 79
OP-202, Safety Injection and Containment Vessel Spray System, Rev. 82
OP-903, Service Water System, Rev 114
Drawings: G-190204-A, "Emergency Diesel Generator System Flow Diagram", sheet 1 Rev. 32
Sheet 2 Rev. 18, Sheet 3 Rev. 19

Complete System Walkdown

Procedure OP-602 "Dedicated Shutdown System", Rev 50
Drawing No. HBR2-8679, "(Dedicated Shutdown) Emergency Diesel Generator System Flow Diagram", sheet 1&2, Rev. 5
Drawing No. G-190204D, "Fuel Oil System Flow Diagram", sheet 4, Rev. 1
UFSAR section 8.3.1, "AC Power Systems"

Action Requests:

AR 355163 "OST-910 DSDG Monthly Surveillance Unsat"

Section 1R05: Fire Protection

Drawings

HBR2-11937, "Fire Pre-Plan Auxiliary Building- Second Level (General Layout)", sheet 21, Rev.1
HBR2-11937, "Fire Pre-Plan 4:60 V Switchgear Room", sheet 59, Rev. 0
HBR2-11937, "Fire Pre-Plan D.S. Diesel Enclosure", sheet 52, Rev. 0
HBR2-11937, "Fire Pre-Plan Auxiliary Feedwater Pump Room", sheet 47, Rev. 1
HBR2-11937, "Fire Pre-Plan Waste Holdup Tank, RHR Heat Exchangers", sheet 18, Rev. 0

Other documents

OST-610, "Unit 2 Portable Fire Extinguishers, Fire Hose Stations & Houses (Monthly)", Rev. 51
OMM-002, "Fire Protection Manual", Rev. 41
OMM-003, "Fire Protection Pre-Plans/Unit 2", Rev 55

Section 1R06: Flood Protection Measures

Drawings

SK-51005-E-3002, Per 51005
G-190673, Rev. 17

Action Requests

370343, A EDG Fuel Transfer Pump power supply cable submerged in water

Other

Rockbestos Firewall III cable specification sheet Spec. RSS-3.021

Section 1R11: Licensed Operator Requalification

AOP-014, Component Cooling Water System Malfunction, Rev 26
 AOP-016, Excessive Primary Plant Leakage, Rev 17
 AOP-020, Loss of Residual Heat Removal (Shutdown Cooling), Rev 31
 AOP-033, Shutdown LOCA, Rev 13

Section 1R12: Maintenance Effectiveness**Action Requests:**

378615, System 2045 (RHR) Health Report change from white to yellow
 284471, Revise Diagnostic Test Frequency for RHR 752A/B
 301360, RHR-759A/B Yoke modification
 308239, RHR pump repair lessons learned
 301365, RHR pump seal heat exchanger clean and inspect
 319768, Extend PM frequency of RHR-751
 358163, Retarget RHR-783 inspection to R227
 327982, 480 volt Bus 2B ground detection fuse size discrepancy

Other

System 2045 (RHR) Health Report, dated January 28, 2010
 System 2045, Scoping and Performance Criteria
 System 5175, 480 volt Distribution Systems Health Report, dated January 27, 2010
 System 5175, Scoping and Performance Criteria

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation

Procedure OMM-048, Work Coordination and Risk Assessment, Rev. 44

Section 1R15: Operability Evaluations**Procedures:**

PLP-111, Leak Reduction Program, Rev. 12
 OST-902-2, Containment Fan Coolers Component Test "B" Train, Rev. 0
 PM-163, Inspection and Testing of Circuit Breakers for 480 Volt Bus E2, Rev. 27

Condition Reports:

373926, "A" RHR Pump leakage repair
 387229, Flaw evaluation of 4-CH-151R-47

Other:

WO 1687332, "A" RHR Pump leakage repair
 WO 1716090, DB-100 breaker failure investigation
 Certificate of Conformance for DB-100 breaker dated 8/7/1996

Section 1R18: Plant Modifications

WO 1700564, Installation of Temporary Modification EC 58499

EC 58499, Temporary Removal of C Main Xfrmr Group 6 Oil Pump from circuit.
 EC 76315, Temporary Support for CVC-121D

Section 1R19: Post Maintenance Testing

Procedures:

OST-902-2, Containment Fan Coolers Component Test "B" Train, Rev. 0
 OST-925, Containment Fan Coolers Valve Position Indicator Verification, Rev. 8
 OST-151-4, Comprehensive Flow Test for Safety Injection Pump "A", Rev. 13
 OST-207, Comprehensive Flow Test for the Motor Driven Auxiliary Feedwater Pumps, Rev. 52
 PM-414, Limatorque Motor Operated Valve Electrical Corrective and Preventive Maintenance,
 Rev. 1
 OST-201-2, MDAFW System Component Test- Train-B, Rev 26
 OST-401-2, EDG B Slow Speed Start, Rev. 39
 PM-322, Velan Lift Check Valve Inspection, Rev. 10
 CM-131, Velan Check Valve Maintenance, Rev.19
 OST-303-1, Service Water Booster Pump – Train A Test, Rev. 11

Section 1R20: Refueling and Outage Activities

Procedures:

GP-007, Plant Cooldown from Hot Shutdown to Cold Shutdown, Rev. 81

Section 1R22: Surveillance Testing

Procedures:

OST-303-2, "Service Water Booster Pump B Test", Rev. 12
 OST-010, Power Range Calorimetric During Power Operation Daily, Rev. 39
 OP-604, Diesel Generators "A" and "B", Rev. 79
 OST-918, Dedicated Shutdown Equipment and Instrumentation Check (Monthly), Rev. 15
 OST-352-4, Comprehensive Flow Test for Containment Spray Pump B, Rev. 17

Section 1EP6: Drill Evaluation

Emergency Response Organization Exercise, ERO 00-0401, dated February 16, 2010

Section 4OA1: Performance Indicator Verification

Procedures

REG-NGGC-0009, NRC Performance Indicators and Monthly Operating Report Data, Rev. 10
 ADM-NGGC-0101, Maintenance Rile Program, Rev 20

Other Documents

NEI-99-02, Regulatory Assessment Performance Indicator Guidance
 USAR 5.2.5, Detection of Leakage Through Reactor Coolant Pressure Boundary
 OST-051, Reactor Coolant System Leakage Evaluation, Rev 40
 Operator logs, leakage entry data entered for 2009
 RNP-F/PSA-057, NRC Mitigating System Performance Index (MSPI) Basis Document, Rev. 10

Consolidated Date Entry 3.0 MSPI Derivation Report, MSPI Cooling Water System
Unavailability Index

Consolidated Date Entry 3.0 MSPI Derivation Report, MSPI Residual Heat Removal System
Unreliability Index

Consolidated Date Entry 3.0 MSPI Derivation Report, MSPI Residual Heat Removal System
Unavailability Index

Section 4OA2: Identification and Resolution of Problems

Procedures

CAP-NGGC-0200, Corrective Action Program, Rev. 32

CAP-NGGC-0206, Corrective Action Program Trending and Analysis, Rev. 5

Action Requests:

AR 364853, Unit Trip due to "A" S/G Level control failure

Section 4OA3: Event Follow-up

Procedures

CAP-NGGC-0200, Corrective Action Program, Rev. 32

EPP-4, Reactor Trip Response, Rev. 23

AOP-018, Reactor Coolant Pump Abnormal Conditions, Rev. 18

EPP-7, SI Termination, Rev. 27

Emergency Action Level Matrix All Conditions, Rev. 2

Action Requests:

364853, Automatic Reactor Trip due to "A" S/G low level

390198, Automatic Reactor Trip on 3/28/2010

390072, Safety Injection on 3/28/2010

390063, Qualified Off-Site power circuit inoperable

390017, Loss of normal power to E2 bus