UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

January 28, 2011

EA-11-003

Mr. Robert J. Duncan, II
Vice President
Carolina Power and Light Company
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 05000261/2010005 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Duncan:

On December 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 January 27, 2010, 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.

The report documents one NRC-identified finding of very low safety significance (Green). This finding was determined to not involve a violation of NRC requirements. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is documented in this report. The licensee identified violation is characterized as a non-cited violation (NCV), in accordance with the NRC's Enforcement Policy because of its very low safety significance and because it is entered into your corrective action program (CAP). If you contest the finding or NCV, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report 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.

This report also documents an electrical breaker issue which resulted in a violation of Technical Specification 3.8.1.B. Specifically, the “B” Emergency Diesel Generator (EDG) was inoperable in excess of the TS allowed outage time. Although the issue constitutes a violation of NRC requirements, we have concluded that the violation resulted from matters not within Carolina Power and Light’s ability to control. As such, I have been authorized, after consultation with the Director, NRC Office of Enforcement and the Region II Regional Administrator, to exercise enforcement discretion in accordance with Section 3.5 of the Enforcement Policy and refrain from issuing enforcement action for the violation.

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 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 by William B. Jones Acting For/

Richard Croteau, Director
Division of Reactor Projects

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

Enclosure: Inspection Report 05000261/2010005
w/Attachment: Supplemental Information

cc w/encls: (See page 3)

This report also documents an electrical breaker issue which resulted in a violation of Technical Specification 3.8.1.B. Specifically, the “B” Emergency Diesel Generator (EDG) was inoperable in excess of the TS allowed outage time. Although the issue constitutes a violation of NRC requirements, we have concluded that the violation resulted from matters not within Carolina Power and Light’s ability to control. As such, I have been authorized, after consultation with the Director, NRC Office of Enforcement and the Region II Regional Administrator, to exercise enforcement discretion in accordance with Section 3.5 of the Enforcement Policy and refrain from issuing enforcement action for the violation.

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Letter to Robert Duncan from Richard Croteau dated January 28, 2011

SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION REPORT 05000261/2010005 AND EXERCISE OF ENFORCEMENT DISCRETION

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	50-261
License No:	DPR-23
Report No:	005000261/2010005
Facility:	H. B. Robinson Steam Electric Plant, Unit 2
Location:	3581 West Entrance Road Hartsville, SC 29550
Dates:	October 1, 2010 – December 31, 2010
Inspectors:	J. Hickey, Senior Resident Inspector D. Bollock, Resident Inspector W. Deschaine, Acting Resident Inspector C. Welch, Senior Resident Inspector, Surry M. Bates, Senior Operations Engineer (Section 1R11) R. Williams, Reactor Inspector (Section 4OA5)
Approved by:	Randall A. Musser, Chief Reactor Projects Branch 4 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000261/2010-005; Carolina Power and Light Company; on 10/01/2010–12/31/2010; H.B. Robinson Steam Electric Plant, Unit 2; Problem Identification and Resolution.

The report covered a three month period of inspection by resident inspectors, senior operations engineer, and a reactor inspector. One NRC identified finding was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross cutting aspects were determined using IMC 0310, "Components within the Cross Cutting Areas". 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: Initiating Events

- Green. The inspectors identified a Green finding for failure to perform vendor recommended inspections of the reactor coolant pump (RCP) motors. Visual inspections of the RCP stator assemblies were not performed at five year intervals in accordance with the vendor technical manual preventive maintenance instructions. Adequate justification for exceeding the five year interval was not provided. Inspection of the stator assembly in accordance with the vendor recommendations at a five year interval is expected to have identified any significant degradation requiring repairs. The licensee failed to conduct these inspections and a motor failure occurred on October 7, 2010. The licensee replaced the failed "C" RCP motor and will evaluate the preventive maintenance inspection interval. The licensee has entered this issue into the CAP as Nuclear Condition Report (NCR) 438509.

  The failure to partially disassemble the RCP motors and perform visual inspections of the rotor and stator assemblies was a performance deficiency that was within the licensee's ability to foresee and correct, and therefore should have been prevented. The finding is more than minor because it adversely impacted the equipment performance attribute of the initiating event cornerstone and its objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the "C" RCP motor failed causing a reactor trip. The finding, screened per Appendix A of IMC 0609, Significance Determination Process, was determined to have very low safety significance (Green) because although the stator failure damaged the number two and number three RCP seals, no damage to number one RCP seal occurred. The number one RCP seal is the primary reactor coolant system pressure boundary. A cross-cutting aspect was not assigned to the finding because the performance deficiency does not represent current performance. (Section 4OA2)

B. Licensee-Identified Violation

One violation of very low safety significance which was identified by the licensee was reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program (CAP). This violation and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status: The unit began the inspection period at rated thermal power. On October 7, 2010, a reactor trip occurred due to a motor fault on the "C" Reactor Coolant Pump. The Unit was returned to service on November 18, 2010, and operated at full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

Impending Weather

On November 22, 2010, a Tornado Watch was issued for the Robinson area. The inspectors walked down the site and reviewed actions taken by the licensee in accordance with Procedure OMM-021, Operation During Adverse Weather Conditions.

Cold Weather Seasonal Readiness

After the licensee completed preparations for seasonal low temperature, the inspectors walked down areas for the turbine first stage and main steam pressure transmitters, hotwell level control, electro-hydraulic skid area, instrument air compressors and the Emergency Operating Facility/Technical Support Center security diesel. These systems were selected because a majority of them have safety-related/risk-significant functions that could be affected by adverse weather. The inspectors reviewed documents listed in the attachment, observed plant conditions, and evaluated those conditions using criteria documented in Procedure AP-008, "Cold Weather Preparations".

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

- AR 434604, Cold weather preparations not completed due to equipment deficiencies
- AR 430300, Arcing from Freeze Protection on circuit FH-23
- AR 422623, Freeze Protection Panel 30 not checked under preventive maintenance

b. Findings

No findings 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:

- "C" Component Cooling Water (CCW) Pump after maintenance was complete and the pump returned to service
- "B" Charging Pump after maintenance was complete and the pump returned to service
- Motor Driven Fire Pump (MDFP) while the Engine Driven Fire Pump (EDFP) was out-of-service for surveillance testing

In order 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 listed in the Attachment.

b. Findings

No findings 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 Updated Final Safety Analysis Report (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:

- Safety Injection Pump Room, Fire Zone 3
- Charging Pump Room, Fire Zone 4
- "B" Emergency Diesel Generator Room, Fire Zone 1
- Auxiliary Building Hallway 1st Level, Fire Zones 7, 11,12,13
- Boron Injection Tank Room, Fire Zone 8

b. Findings

No findings were identified.

1R06 Flood Protection Measures

a. Inspection Scope

Underground Cable Inspection

The inspectors walked down two underground cable manholes/bunkers to verify the following:

- The cable was not submerged in water;
- The condition of any cable splices;
- The condition of any cable support structures; and
- The condition of any dewatering devices, if applicable.

The following cable/locations were inspected:

- "A" EDG fuel oil transfer pump
- North Service Water Header Cable Vault

Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification

.1 Quarterly Review

a. Inspection Scope

The inspectors observed licensed-operator performance during simulator training to verify that operator performance was consistent with expected operator performance, as described in Transient Monitoring Lesson Number LOC0015R. 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 the Startup Transformer, a Component Cooling Water system leak and failure of the "B" Battery Charger. 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-exercise critique to verify that the licensee identified deficiencies and discrepancies that occurred during the simulator training.

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

- AR 412113, Condenser backpressure differences noted between simulator and plant response during load reduction to remove a condenser waterbox from service.
- AR 397100, Training instructor qualifications not documented correctly.

b. Findings

No findings were identified.

.2 Annual Review of Licensee Requalification Examination Results

a. Inspection Scope

On March 31, 2010, the licensee completed the annual requalification operating tests required to be administered to all licensed operators in accordance with 10 CFR 55.59(a)(2). The inspectors performed an in-office review of the overall pass/fail results of the individual operating tests and the crew simulator operating tests. These results were compared to the thresholds established in Manual Chapter 609 Appendix I, Operator Requalification Human Performance Significance Determination Process.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two degraded SSC/functional 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.

The problems/conditions and their corresponding ARs were:

- AR 420957, Pressurizer Relief Valve PCV-455C was found to be leaking
- AR 425433, “C” RCP motor and seal replacement

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).

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

- AR 420957, PCV-455C Leaking by Post Trip on 9/9/10
- AR 425433, Reactor Trip on One Loop Low Flow

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

For the four samples 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:

- October 7-11, 2010, shutdown and cool down operations following a reactor trip.
- October 18-23, 2010, “C” RCP motor and seal replacement.
- November 3-5, 2010, “A” Emergency Diesel Generator (EDG) unavailable during the performance of SP-1553 “A” Train Safeguards Feedwater Isolation Testing
- November 15-18, 2010, Reactor Startup and placing the unit on-line.

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the two 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 if applicable, the operability

determinations were made as specified by Procedure OPS-NGGC-1305, Operability Determinations.

- AR 427310, Reactor head vent path isolated during clearance activity
- AR 437411, Unexpected annunciator actuated while starting “B” Residual Heat Removal (RHR) Pump

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 422229, Leading Edge Feedflow Meter experiencing high rejects
- AR 420668, Particulate noted in “C” CCW pump bearing oil sample

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the six work orders (WO) listed below, the inspectors witnessed the post-maintenance test (PMT) 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.

The following tests were witnessed or reviewed:

- WO 1839148, Feedwater Isolation Circuitry modification
  - PMT in accordance with SP-1553, Testing Safeguards “A” Train Feedwater Isolation Circuitry, Rev. 2
  - PMT in accordance with SP-1554, Testing Safeguards “B” Train Feedwater Isolation Circuitry, Rev. 0
- WO 1770341, Oil sample from Spent Fuel Pool Cooling Pump “B”
  - PMT in accordance with WO 1770341
- WO 1754677, Perform checks and Scoop Tube adjustment on ‘B’ Charging Pump
  - PMT in accordance with OST-101-2, Chemical Volume Control System (CVCS) Component Test Charging Pump B, Rev. 39
- WO 1764133, Lube oil sample from “C” Safety Injection Pump
  - PMT in accordance with WO 1764133
- WO 1851117, Maintenance on Freeze Protection Circuit for the Steam Driven Auxiliary Feedwater (AFW) Pump Cooling Water
  - PMT in accordance with WO 1851117
- WO 1859537, Maintenance on Freeze Protection Circuit for AFW Recirculation Flow Sensing Line

- PMT in accordance with WO 1859537

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

- AR 427526, Engineering Change (EC) 78766, Feedwater Isolation Reset Logic Change Rev 0
- AR 435944, Freeze Protection not working following modification

b. Findings

No findings were identified.

1R20 Refueling and Outage Activities

For the outage that began on October 7, 2010 and ended on November 18, 2010, 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 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 from the main control room to verify that technical specification cooldown restrictions were followed.

b. Findings

No findings 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 (RCS) Instrumentation
- Electrical Power
- Decay Heat Removal (DHR)
- Inventory Control
- Reactivity Control
- Containment Closure

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 were identified.

.3 Monitoring of Heatup and Startup Activities

a. Inspection Scope

Prior to mode changes and on a sampling basis, the inspectors reviewed system lineups and/or control board indications to verify that TSs, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant configurations. Prior to reactor startup, the inspectors walked down containment to verify that debris had not been left which could affect performance of the containment sumps.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the five surveillance tests listed below, the inspectors witnessed testing and/or reviewed the test data to verify that the SSCs 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-052, RCS Leakage Test And Examination Prior to Startup Following an Opening of the Primary System (Refueling and/or Startup Interval), Rev. 24
- OST-646, Fire Suppression Water System Engine Driven Fire Pump Test (Annual), Rev. 27
- OST-011, Rod Cluster Control Exercise & Rod Position Indication Monthly Interval, Rev. 32
- OST-551-2 Turbine Trip Functional Test, Rev. 4

Inservice Testing Surveillance
- OST-101-2, CVCS Component Test Charging Pump "B", Rev. 39

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors verified the PIs listed 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 for 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 Performance Index (MSPI), Emergency AC Power
- MSPI, High Pressure Injection System
- MSPI, Heat Removal System

For the period from the 1st quarter of 2009 through the 3rd quarter of 2010, 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.

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

- AR 335824, Correction to MSPI Data Report for March 2009

Documents reviewed are listed in the Attachment.

b. Findings

No findings 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 followup, the inspectors performed frequent screenings of items entered into the CAP. The review was accomplished by reviewing daily AR reports.

.2 Annual Sample Review

Unresolved Item (URI) 05000261/2010012-02, "C" RCP Motor Failure and Seal Damage

a. Inspection Scope

The inspectors selected AR 425433, Reactor Trip on One Loop Low Flow, for detailed review.

The inspectors performed further review and evaluation of the licensee's refurbishment plans for the RCP motors as specified in the URI opened following the October 7, 2010, reactor trip. The reactor trip occurred when the "C" RCP motor failed due to an over current condition. The licensee, with vendor support, conducted a root cause evaluation (RCE) of the RCP motor failure. The licensee and vendor concluded that the most probable cause of the stator failure was the synergistic effect of excessive end winding vibration, due to inadequate end winding bracing, coupled with the normal aging and operating conditions which caused the turn-to-turn insulation to fail. Failure of the inter-turn insulation ultimately propagated into a phase-to-phase fault which resulted in an instantaneous over current trip of the RCP power supply breaker. The fault resulted in current arcing across the pump shaft and across the RCP seals. As the fault current traveled to ground, damage to the number two and number three seals occurred and number two seal leakage increased to 5 gpm. During initial review of the event, the inspectors also identified that the licensee had previously postponed rewinding this motor.

The inspectors reviewed the following documents: the associated root cause evaluation, completed preventive maintenance work packages, the vendor technical manual, reports for prior 10 year refurbishment of the RCP motors, the stator rewind modification, engineering documents, the licensee's equipment reliability template for medium and low

voltage electric motors, the RCP preventive maintenance and rewind schedules, and available operating experience information. The inspectors also reviewed numerous photographs taken of the RCP stators during prior refurbishments and the root cause evaluation of the failed stator. The inspectors also interviewed engineering personnel.

The inspectors also reviewed these ARs 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. Additional documents reviewed are listed in the Attachment.

- 423758, Condition Report investigation assignment not performed in a timely manner
- 409984, Priority 3 corrective actions not reviewed by Corrective Action Review Board

b. Findings

Introduction: The inspectors identified a Green finding of very low safety significance for the licensee's failure to perform visual inspections of the RCP stator assemblies at five year intervals as specified in the vendor technical manual's preventative maintenance (NCR 438509). Failure to visually inspect the stator assembly at the five year interval, constituted a missed opportunity to identify whether the end winding insulation had degraded prior to the "C" RCP motor failure on October 7, 2010.

Description: Robinson is a 3-loop pressurized water reactor with one reactor coolant pump in each loop; each pump is powered by a 4kV electric motor. A fourth "spare" motor is normally available for use on any the three RCP pumps. The four motors are identified and tracked by serial numbers 1S-75P342, 2S-75P342, 3S-75P342, and 1S-88P976.

The original technical manual for the reactor coolant pump motors did not include recommended inspection intervals; however, in November 1991, Westinghouse issued Product Update M-001-1, which specified recommended inspection and maintenance activities for domestic plants with Westinghouse reactor coolant pump motors based on 1, 5, and 10-year intervals. Product update M-001-1 was incorporated into the licensee's technical manual in October 1992. In March 2004, Westinghouse provided updated inspection and maintenance recommendations in Technical Bulletin TB-04-5, which superseded M-001-1. Both M-001-1 and TB-04-5 specified the inspection of the rotor and stator during the 5th year inspection and maintenance interval.

Maintenance and inspection intervals for the RCP motors are listed in the licensee's preventive maintenance (PM) program as follows:

- 1R, every refueling outage (RFO), or 18 months
- 2R, every other RFO, or 36 months
- 6R, every 6th RFO or 108 months

A fourth interval, (4R every 4th RFO or 72 months), was deleted from the licensee's PM schedule in September 1999, in accordance with preventive maintenance revision request (PMR) 99-0070. The licensee's basis for the frequency change was that the 5

year inspections had never been performed because the 10 year inspections encompassed all the inspection activities delineated in the 5 year inspection activities. The licensee incorporated Westinghouse TB-04-5, which specified inspection of the rotor and stator during the 5th year inspection and maintenance interval, to the technical manual in August 2004; however, this updated information did not prompt the licensee to re-visit their previous 1999 PM program change, which had deleted the 5 year inspection.

In 2002, RCP motor 1S-88P976 was removed from "C" reactor coolant pump during RFO 21, for its planned 10-year refurbishment. During refurbishment it was discovered two stator coils had significant damage to the ground-wall insulation in the end-winding section at the knuckle about 2 inches from the stator iron. Inspection of the rotor identified evidence of arcing on the rotor's shorting rings. During the decision making process whether to rewind the motor, engineering acknowledged that even though the stator had successfully passed DC high potential and surge testing, the possibility exists that a defect cannot be detected by testing. It was further noted that the motors were originally purchased as 40 year machines, had between 20 to 30 years of operation, and would require a rewind for life extension. Based on the above, the licensee decided to rewind the 1S-88P976 motor. A definitive cause for the damaged end-winding insulation was not established. However, the opinion of the vendor was that something had fallen into the area allowing an electrical discharge between the rotor and stator to occur. The stator was sent to AREVA and rewound using a new design which eliminated the earlier design flaw for the inadequate support of the stator end-windings. The rewound motor (1S-88P976) was installed on the "B" RCP during RFO 22, in May 2004.

RCP motor 1S-75P342 was removed from the "B" loop in May 2004 and sent out for its 10-year refurbishment in January 2005. Electrical testing performed by the vendor at this time, including Hi Pot and Surge testing, was acceptable; however, based on the electrical test results, the licensee decided in 2009 to send the motor to AREVA to be rewound. The as-found inspections performed by AREVA identified that the stator had an unacceptable hot spot and the stator insulation resistance readings were below AREVA's acceptance criteria. The motor was rewound in similar fashion to 1S-88P976, eliminating the design flaw for the inadequate support of the end-windings. The motor (1S-75P342) was installed on the "A" RCP during RFO 26, in May 2010.

The vendor's report for motor 2S-75P342, refurbished in 2000, indicated only 19 of 108 end-windings on the connection end were secured to the support ring with lashing, 4 end-windings on the non-connection end exhibited areas of insulation damage, and several coils exhibited areas where Mica glass insulation was exposed. After the damage was repaired, the motor was installed on the "A" RCP during RFO 20, in May 2001. The motor, scheduled to be rewound during its next 10-year refurbishment in 2010, was subsequently removed in May 2010 during RFO 26, however; due to failure of the "C" RCP motor, 3S-75P342, in October 2010, the motor 2S-75P342 was reinstalled in place of the failed "C" RCP motor. Motor 2S-75P342 is scheduled to be rewound following RFO 27, in late 2011.

On October 7, 2010, an over-current trip occurred on the "C" RCP motor 3S-75P342, and a subsequent reactor trip occurred as a result of the low flow condition, which is

expected when a single RCP trips. The licensee concluded that the number two and number three seals on the "C" RCP sustained damage during the event, consistent with high voltage arcing across the seal components. Therefore, the "C" RCP seals were damaged after a motor fault developed when the fault current traveled through the seals. The licensee concluded the most probable cause of the failure was the synergistic effect of excessive end winding vibration due to inadequate bracing coupled with the normal aging and operating conditions which caused the turn-to-turn insulation to fail and ultimately propagate into a phase-to-phase fault within the stator winding. The 1991 10-year motor refurbishment report for 3S-75P342 identified significant dusting on the non-connection end of the stator, the presence of numerous cracks between coils and Dacron spacers on the non-connection end, and the presence of a light layer of oily substance, all of which were repaired. The 2001 10-year refurbishment report for 3S-75P342 identified the presence of minor damage to the end-winding insulation, slight unsticking of the Dacron spacers and the support ring and end-turn windings, and traces of dusting. The deficiencies had been repaired before the refurbished 3S-75P342 motor was installed on the "C" RCP during the Fall 2002 RFO. The motor, originally scheduled to be rewound in 2011, has been shipped to AREVA where it will be repaired and rewound before the 2011 RFO. After it is rewound and installed in 2011, all three installed RCP motors will be rewound motors with the improved end-winding support design.

Analysis: The inspectors determined the failure to partially disassemble the RCP motors and perform visual inspections of the rotor and stator assemblies, as specified in accordance with the vendor manual's five year PM was a performance deficiency. Visual inspections of the RCP stator assemblies were not performed at five year intervals in accordance with the vendor technical manual preventive maintenance instructions. Adequate justification for exceeding the five year interval was not provided. Inspection of the stator assembly in accordance with the vendor recommendations at a five year interval is expected to have identified any significant degradation requiring repairs. The licensee failed to conduct these inspections and a motor failure occurred on October 7, 2010.

The finding is more than minor because it adversely impacted the equipment performance attribute of the initiating event cornerstone and the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the "C" RCP motor failed causing a reactor trip. The finding, screened per MC-0609 Attachment 4, was determined to be Green because the motor failure did not affect the "C" RCP number one seal, which is the primary RCS pressure boundary. A cross-cutting aspect was not assigned to the finding because the performance deficiency occurred many years ago and does not represent current licensee performance.

Enforcement: This finding does not involve enforcement action because no violation of regulatory requirements was identified. The licensee entered the issue into the CAP as NCR 438905. Because this finding does not involve a violation and has very low safety significance, it is identified as FIN 05000261/2010005-01, Failure to perform 5-year vendor manual specified Reactor Coolant Pump motor inspections. URI 05000261/2010012-02 "C" RCP Motor Failure and Seal Damage, is closed.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors review focused on repetitive equipment issues, but also considered the results of inspectors' daily CAP item screening discussed in Section 4OA2.1, licensee trending efforts, and licensee human performance results. The inspectors review nominally considered the six month period of July, 2010 through December, 2010, although some examples may expand beyond those dates when the scope of the trend warranted. The review included issues documented outside the normal CAP, in major equipment problem lists, repetitive and/or reworks maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the latest monthly and quarterly trend reports. Corrective actions associated with a sample of the issues identified in the trend reports were reviewed for adequacy. The specific documents reviewed are listed in the Attachment.

The inspectors also evaluated the trend reports against the requirements of the CAP as specified in 10 CFR 50, Appendix B, Criterion XVI, and in Procedures CAP-NGGC-0200, Corrective Action Program, and CAP-NGGC-0206, Corrective Action Program Trending and Analysis.

b. Assessment and Observations

No findings were identified. The inspectors evaluated trending methodology and observed that the licensee had performed a detailed review. The licensee routinely reviewed cause codes, involved organizations, key words, and system links to identify potential trends in their CAP data. The inspectors compared the licensee process results with the results of the inspectors' daily screening, and did not identify any discrepancies or potential trends in the CAP data that the licensee had failed to identify.

4OA3 Event Follow-up

.1 Reactor Trip Due to an Electrical Fault in the "C" Reactor Coolant Pump

a. Inspection Scope

Following the reactor trip that occurred on October 7, 2010, 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 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 prior to restarting the plant. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2 Pre-Startup Readiness Inspections

a. Inspection Scope

The inspectors witnessed or reviewed the following items prior to performing a reactor startup on November 16, 2010.

- Licensed operator Just-In-Time Training which included removing the Residual Heat Removal System from service, taking the reactor critical to the point of adding heat, and placing the main turbine on-line. Additional scenarios which highlighted critical parameter monitoring, were also observed. Classroom instruction on safety feature logic, interlocks, and overrides were also observed. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.3 (Closed) LER 2009-001-01 "Emergency Diesel Generator Inoperable in Excess of Technical Specifications Allowed Completion Time".

On April 20, 2009, the output breaker of the "B" Emergency Diesel failed to close. The cause of the failure was determined to be the result of a vendor initiated change to the breaker lift linkage assembly which prevented the output breaker from closing. This resulted in inoperability duration in excess of the technical specification allowed outage time. Revision 1 of the LER corrected technical inaccuracies and updated the status of corrective actions from the original LER Revision 0, for which enforcement discretion was exercised. The inspectors reviewed the corrective actions and determined they were adequate. The enforcement aspects of this LER are discussed in Inspection Report 05000261/2010006. Two violations were issued, 05000261/2010006-02 "Failure to Correct a Condition Adverse to Quality in "B" Emergency Diesel Generator Output Breaker 52/27B" and 05000261/2010006-03, "Materially Inaccurate Information Provided to NRC in LER 2009-001 which impacted the Regulatory Process". This LER is closed.

.4 (Closed) LER 2010-001-00 and 01 "Emergency Diesel Generator Inoperable in Excess of Technical Specifications Completion Time Due to Output Breaker Failure".

Description: A violation of TS 3.8.1.B was identified when the "B" EDG was inoperable in excess of the TS allowed outage time. Enforcement discretion was exercised for this violation. No performance deficiency was identified.

On February 22, 2010, the "B" EDG was removed from service for planned maintenance. During post maintenance testing the output breaker for the "B" EDG failed to close. The breaker's failure to close was unrelated to the maintenance activity. The

licensee entered the issue into the corrective action program as AR 382604 and initiated a root cause and extent of condition review. A new output breaker was installed and tested on February 24, 2010. The licensee determined the cause of the breaker failure was due to a vendor workmanship error, which included a defective Shunt Trip Attachment (STA) movable core in the breaker control circuit.

Based on the failure mechanism, the licensee, using engineering judgment, concluded the "B" EDG had been inoperable for greater than the 7 days allowed by TS 3.8.1.B.4 and Condition C. The last successful breaker closure was January 28, 2010. This corresponded to approximately a 27 day period of inoperability.

As discussed in the licensee's root cause report, an inspection of the STA movable core revealed that the leading edge of the core was not chamfered to 1/32" as required by design specifications. Additionally, the leading edge of the moveable core exceeded the maximum outside diameter (OD) design specification by 0.004" in one area. The moving core slides within a brass sleeve on the STA. The brass sleeve inside diameter (ID) has a tolerance of 0.008". The moveable core must be free to rotate within the brass sleeve during STA operation. The investigation revealed the internal binding of the movable core occurred when the maximum OD region of the moveable core aligned with the minimum ID of the brass sleeve. Because the STA is procured from the vendor as part of a complete breaker or replaced as a complete assembly, the cause was not reasonably within the licensee's ability to foresee and correct.

An assessment of the significance of the event was performed by the inspectors. This review resulted in the matter being assigned a risk assessment of low to moderate significance. In addition, the licensee's risk evaluation determined that the increase in core damage probability was also low to moderate significance. The event was mitigated by the redundant "A" EDG and Dedicated Shutdown Diesel Generator being available to respond to an event. The licensee concluded that actions to recover the "B" EDG, such as the discovery that the STA had positioned the trip bar in such a way which would not allow the breaker to close or replacing the affected breaker with a spare, could be accomplished in an estimated time frame which ranged from one to four hours. The inspectors reviewed the licensee's assessment and corrective actions for the event, and determined they were appropriate to the circumstances. All similar breakers at the Robinson Plant which are susceptible to this failure have been inspected with no deficiencies noted. Prior to implementation of these inspections, satisfactory compensatory actions were put in place which ensured successful operation of similar breakers.

The inspectors determined a violation of TS 3.8.1.B occurred since the "B" EDG was inoperable in excess of the TS allowed outage time (7 days). The inspectors determined that this violation was more than minor because it affected the equipment performance attribute of the Mitigating System cornerstone and because it affects the cornerstone objective of ensuring mitigating system availability. The inspectors determined that the breaker failure was not a performance deficiency because the cause of the failure was not reasonably within the licensee's ability to foresee and correct to prevent the failure. Because a performance deficiency was not associated with this issue, it was not subject

to evaluation under the formal Significance Determination Process (SDP) using Inspection Manual Chapter 0609.

Enforcement: The NRC concluded that a violation of TS 3.8.1.B occurred because the "B" EDG was inoperable in excess of the TS allowed outage time (7 days). The NRC staff reviewed this violation considering the guidance provided in the Enforcement Policy, Section 3.5, Violations Involving Special Circumstances. In this case the NRC determined that this violation resulted from matters not within the licensee's control; that is, an equipment failure that was not avoidable by reasonable QA measures or licensee management controls. Therefore, in accordance with the Enforcement Policy, and after consultation with the Director of the Office of Enforcement and the Region II Regional Administrator, the NRC will not issue enforcement actions for the violation of TS 3.8.1.3. In accordance with the NRC's Reactor Oversight Process, this condition will not be considered in the assessment process or the NRC's Action Matrix.

.5 (Closed) LER 2010-004-00 "Clearance Error Results in the "A" Emergency Diesel Generator Becoming Inoperable".

On April 26, 2010, with the unit in Mode 6, Refueling, it was discovered the "A" Emergency Diesel Generator (EDG) was inadvertently rendered inoperable due to an equipment clearance error. The clearance error disabled the automatic loading feature of the blackout sequence loads even though at least one EDG was required to be operable in Mode 6. For a period of 3 hours and 22 minutes both emergency diesel generators were inoperable while the "B" EDG was undergoing surveillance testing and the "A" EDG was under the clearance. Upon discovery, the licensee removed the clearance and restored the "A" EDG to operable status. The inspectors reviewed the corrective actions and determined they were adequate. The enforcement aspects of this finding are discussed in Section 4OA7. This LER is closed.

.6 (Closed) LER 2010-007-00 "Reactor Trip due to a Degraded Connection on a Circuit Board in the Electro-Hydraulic Control Cabinet".

On September 9, 2010, an automatic reactor trip occurred due to an Over-temperature/Differential-temperature (OTΔT) reactor protection function. The cause of the transient was determined to be a degraded electrical circuit board connection in the main turbine governor valve control system. The degraded connection resulted in the closure of all governor valves resulting in a full load rejection event. The degraded circuit card connection was replaced and tested satisfactorily. The inspectors reviewed the corrective actions and determined they were adequate. The LER was reviewed and no findings were identified and no violation of NRC requirements occurred. This LER is closed.

.7 (Closed) LER 2010-009-00 "Reactor Trip due to Motor Fault on the "C" Reactor Coolant Pump, and Actuation of Auxiliary Feedwater Signal an Override of Feedwater Isolation Function due to Inadequate Post-trip Procedure Guidance".

On October 7, 2010, an automatic reactor trip occurred due to a Single Loop Low Flow reactor protection function. The "C" Reactor Coolant Pump motor failed due to an

internal electrical fault and tripped, resulting in a loss of forced reactor coolant circulation in the 'C' loop. During the post-trip stabilization approximately four hours after the trip, an inadvertent Auxiliary Feedwater actuation occurred due to not properly resetting a Feedwater Isolation Signal. Approximately ten hours after the trip, an inadvertent entry into TS 3.0.3 occurred because the required feedwater isolation logic had been manually defeated. The inspectors reviewed the corrective actions and determined they were adequate. The enforcement aspects of this finding are discussed in Inspection Report 05000261/2010012, Section 4OA2.2 and Inspection Finding 05000261/2010012-01, "Procedure Violation for Overriding Feedwater Isolation Safety Function in Mode 3". 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 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. 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 were indentified.

.2 (Closed) Reactor Coolant System Dissimilar Metal Butt Welds (TI 2515/172, Revision 1)

a. Inspection Scope

The inspectors conducted a review of the licensee's activities regarding licensee dissimilar metal butt weld (DMBW) mitigation and inspection implemented in accordance with the industry self imposed mandatory requirements of Materials Reliability Program (MRP) 139, "Primary System Piping Butt Weld Inspection and Evaluation Guidelines." Temporary Instruction (TI) 2515/172, "Reactor Coolant System Dissimilar Metal Butt Welds," Revision 1 was issued May 27, 2010, to support the evaluation of the licensees' implementation of MRP-139.

On December 8, 2010, the inspectors performed a review in accordance with TI 2515/172, Revision 1 as described in the Observation Section below:

b. Observations

The licensee met the MRP-139 deadlines for baseline examinations of all welds scoped into the MRP-139 program. TI 2515/172, Revision 1 is considered closed. In

accordance with requirements of TI 2515/172, Revision 1, the inspectors evaluated the following areas:

(1) Implementation of the MRP-139 Baseline Inspections

This portion of the TI was not inspected during the period of this inspection report, but was previously covered in NRC Inspection Report 05000261/2008005.

(2) Volumetric Examinations

This portion of the TI was not inspected during the period of this inspection report, but was previously covered in NRC Inspection Report 05000261/2008005.

(3) Weld Overlays

There were no weld overlay activities performed or planned by this licensee to comply with their MRP-139 commitments.

(4) Mechanical Stress Improvement (SI)

There were no stress improvement activities performed or planned by this licensee to comply with their MRP-139 commitments.

(5) Application of Weld Cladding and Inlays

There were no weld cladding nor inlay activities performed or planned by this licensee to comply with their MRP-139 commitments.

(6) Inservice Inspection Program

This portion of the TI was not inspected during the period of this inspection report, but was previously covered in NRC Inspection Report 05000261/2008005.

c. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On January 27, 2011, the resident inspectors presented the inspection results to Mr. Duncan and other members of his staff. The inspectors confirmed that proprietary information which was examined during the inspection was returned to the licensee.

4OA7 Licensee-Identified Violation

The following violation of very low significance was identified by the licensee, is a violation of NRC requirements, and, consistent with the NRC's Enforcement Policy, is being dispositioned as a NCV.

- TS 3.8.2, AC Sources – Shutdown, required immediate actions to restore an EDG to operable status when the required EDG was inoperable. Contrary to this on April 24, 2010, the “B” EDG was made inoperable for 3 hours and 22 minutes due to surveillance testing while the “A” EDG was inadvertently made inoperable due to an equipment clearance from April 18, 2010 to April 26, 2010. The cause of the violation was that the licensee did not understand the equipment clearance’s impact on the “A” EDG operability. Specifically, the automatic equipment loading feature in response to a station blackout had been defeated. Manual loading of the required equipment remained functional during the event. The licensee entered the issue into the CAP as NCR 395800 and removed the clearance to restore the “B” EDG to operable status. The event was determined to be of very low safety significance because when the “B” EDG was inoperable, manual loading of the required equipment on the “A” EDG was available, the refueling cavity was flooded and the dedicated shutdown diesel was also available.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

T. Cosgrove, Plant General Manager
R. Duncan, Vice President
W. Farmer, Engineering Manager
B. Houston, Radiation Protection Superintendent
S. Howard, Operations Manager
C. Kamilaris, Manager, Support Services - Nuclear
J. Lucas, Nuclear Assurance Manager
C. Morris, Maintenance Manager
K. Smith, Training Manager
S. Wheeler, Outage & Scheduling Manager

NRC personnel

R. Musser, Chief, Reactor Projects Branch 4

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

05000261/2010012-02	URI	"C" RCP Motor Failure and Seal Damage (Section 4OA2.2)
2515/172	TI	Reactor Coolant System Dissimilar Metal Butt Welds (Section 4OA5.2)
05000261/2009-001-01	LER	Emergency Diesel Generator Inoperable in Excess of Technical Specifications Allowed Completion Time (Section 4OA3.3)
05000261/2010-001-00	LER	Emergency Diesel Generator Inoperable in Excess of Technical Specifications Completion Time Due to Output Breaker Failure (Section 4OA3.4)
05000261/2010-001-01	LER	Emergency Diesel Generator Inoperable in Excess of Technical Specifications Completion Time Due to Output Breaker Failure (Section 4OA3.4)
05000261/2010-004-00	LER	Clearance Error Results in the 'A' Emergency Diesel Generator Becoming Inoperable (Section 4OA3.5)
05000261/2010-007-00	LER	Reactor Trip due to a Degraded Connection on a Circuit Board in the Electro-Hydraulic Control Cabinet (Section 4OA3.6)
05000261/2010-009-00	LER	Reactor Trip due to Motor Fault on the 'C' Reactor Coolant Pump, and Actuation of Auxiliary Feedwater Signal an Override of Feedwater Isolation Function due to Inadequate Post-trip Procedure Guidance (Section 4OA3.7)

Opened & Closed

05000261/2010005-01	FIN	Failure to Perform 5-year Vendor Manual Specified Reactor Coolant Pump Motor Inspections (Section 4OA2.2)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
AP-008, Cold Weather Preparations, Rev. 19
AP-015, Portable Heaters/Heating Devices, Rev.17
OP-925, Cold Weather Operation, Rev. 46
OMM-021, Operation During Adverse Weather Conditions, Rev. 39

Work Orders
1843053, Arcing from Freeze Protection on FH-23

Action Requests
AR 430300, Arcing from Freeze Protection on FH-23

Section 1R04: Equipment Alignment

Partial System Walkdown

Procedures

OP-301, CHEMICAL AND VOLUME CONTROL SYSTEM (CVCS), Rev 99
OP-306, COMPONENT COOLING WATER SYSTEM, Rev 65
SD-013, COMPONENT COOLING WATER SYSTEM, Revision 10
SD-021, CHEMICAL AND VOLUME CONTROL SYSTEM, Revision 11
SD-041, FIRE WATER SYSTEM, Revision 6

Action Requests

AR 335339, "C" CCW PUMP OUTBOARD SEAL
AR 339614, TREND - 'C' CCW PUMP SEAL LEAKAGE
AR 342283, "C" CCW PUMP OUTBOARD SEAL LEAK
AR 342283, "C" CCW PUMP OUTBOARD SEAL LEAK
AR 358885, INCREASED CCW PUMP SEAL LEAKAGE
AR 420304, 'C' CCW PUMP INBOARD SEAL LEAKAGE ~60-70 DPM
AR 420668, CCW PUMP 'C' INBOARD AND OUTBOARD OIL PARTICLE COUNTS
AR 421161, CCW PUMP 'C' EXCESSIVE SEAL LEAKAGE
AR 429271, 'C' CCW PUMP OUTBOARD BEARING SEAL LEAKAGE

AR 404507, THE BI-ENNIAL COMPREHENSIVE PUMP TEST (CPT) OF CHARGING PUMP
AR 358344, 'B' CHARGING PUMP HEAD LEAKAGE
AR 355071, BORIC ACID LEAK FROM "B" CHARGING PUMP
AR 321072, CONTINUED CHARGING PUMP B COVER LEAK
AR 220717, ACTIVE LEAKAGE ON "B" CHARGING PUMP
AR 211269, ACTIVE BORIC ACID LEAK ON 'B' CHARGING PUMP DISCH MANIFOLD

Section 1R05: Fire Protection

UFSAR Sections of Appendix 9.5.1A
Section 3.1.1, Diesel Generator "B" Room
Section 3.1.3, Subset of General Auxiliary Building Area
Section 3.1.8.1, Boron Injection Room
Section 3.1.9, Safety Injection Pump Room
Section 3.2 Charging Pump Room

Procedures
FP-001, "Fire Emergency", Rev. 59
FP-003, "Control of Transient Combustibles", Rev. 25
FP-004, "Duties of a Fire Watch", Rev. 14
FP-012, "Fire Protection Systems Minimum Equipment and Compensatory Actions", Rev. 13
OMM-003, "Fire Protection Pre-Plans/Unit 2", Rev. 55
OMM-002, "Fire Protection Manual", Rev. 41

Drawings
HBR2 11937 Sheet 1 "Fire Pre-Plan Auxiliary Building-First Level General Layout", Rev. 1
HBR2 11937 Sheet 39 "Fire Pre-Plan Boron injection Tank Room", Rev. 0
HBR2 11937 Sheet 7 "Fire Pre-Plan Charging Pump Room", Rev. 1

HBR2 11937 Sheet 11 "Fire Pre-Plan 'B' Diesel Generator Room", Rev. 2
HBR2 11937 Sheet 19 "Fire Pre-Plan Safety Injection Pump Room", Rev. 0

Section 1R06: Flood Protection Measures

Work Orders
WO 01826181

Section 1R12: Maintenance Effectiveness

Procedures
CM-101 Quick Change Trim Air Operated Control Valve Maintenance, Rev. 29
MNT-NGGC-1000, Conduct of Maintenance, Rev. 3
CM-001, Reactor Coolant Pump Seal Assembly Maintenance, Rev. 52
MNT-NGGC-0005, Control of Rigging and Temporary Loads, Rev. 4
PLP-037, Conduct of Infrequently Performed Tests or Evolutions and Pre-job Briefs, Rev. 4
PM-024, Reactor Coolant Pump Motor, Rev. 35
PM-479, Motor Testing, Rev. 6

Work Orders
WO 1823412
WO 1833598
WO 1797040

Action Requests
AR 425433 Reactor Trip on One Loop Low Flow
AR 420957 PCV-455C Leaking by following the reactor trip on 9/9/10

Other documents
EC 78676
For system LATER:
Event Log Report for LATER - LATER
Scoping and Performance Criteria

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation

Procedure OMM-048, Work Coordination and Risk Assessment, Rev. 47
Procedure OMP-003, Shutdown Safety Function Guidelines, Rev. 43

Section 1R15: Operability Evaluations

Procedures
OPS-NGGC-1308, Plant Status Control, Rev. 8
GP-008, Draining the Reactor Coolant System, Rev. 71
OPS-NGGC-1301, Equipment Clearance, Rev. 24

Work Orders

Action Requests
AR 30657, Head vent isolated during reactor disassembly in 2001
AR 437411, APP-002-B1 came in while starting B RHR Pump

Other documents
Human Performance Review Board for the loss of the reactor head vent path.
Generic Letter 88-17, Loss of Decay Heat Removal

Section 1R19: Post Maintenance Testing Procedures

Work Orders
WO 1839148
WO 1770341
WO 1754677
WO 1764133
WO 1851117
WO 1859537

Action Requests
AR 427526, EC 78766, Rev 0
AR 435944, Freeze Protection not working following EC-modification

Other documents
SP-1553, Testing Safeguards A Train Feedwater Isolation Circuitry, Rev. 2
SP-1554, Testing Safeguards B Train Feedwater Isolation Circuitry, Rev. 0
EC 78766, Feed water Isolation Reset Logic Change, Rev 0
PDM-001, Equipment Lube Oil Sampling, Rev. 72
OST-101-2, CVCS Component Test Charging Pump B, Rev. 39
CM-036, Charging Pump Gyrol Fluid Drive Maintenance, Rev. 12

Section 1R20: Refueling and Outage Activities

Procedures
GP-001, Fill and Vent of the Reactor Coolant System, Rev. 55
GP-002, Cold Shutdown to Hot Subcritical at No Load Tavg, Rev.118
GP-003, Normal Plant Startup from Hot Shutdown to Critical, Rev. 90
GP-005, Power Operation, Rev. 99

Section 1R22: Surveillance Testing

Procedures
OST-052, RCS Leakage Test And Examination Prior to Startup Following an Opening of the Primary System (Refueling and/or Startup Interval), Rev. 24
OST-646, Fire Suppression Water System Engine Driven Fire Pump Test (Annual), Rev. 27
OST-101-2, CVCS Component Test Charging Pump B, Rev. 39
OST-011, Rod Cluster Control Exercise & Rod Position Indication Monthly Interval, Rev. 32
OST-551-2, Turbine Trip Functional Test (Quarterly During Power Operation), Rev. 4

Section 4OA1: Performance Indicator Verification

Procedures
Raw submittal data from the 1st quarter 2009 through the 4th quarter 2009
Operating Logs from the 1st quarter 2009 through the 4th quarter 2009
Equipment out of service logs from the 1st quarter 2009 through the 4th quarter 2009
REG-NGGC-0009, “NRC Performance Indicators and Monthly Operating Report Data”, Rev. 10

Action Requests
AR 335824, Correction to MSPI Data Report for March 2009

Section 4OA2: Identification and Resolution of Problems

Procedures
CAP-NGGC-0200, “Corrective Action Program”, Rev. 33
CAP-NGGC-0206, “Corrective Action Program Trending and Analysis”, Rev. 5
NGG Fleet KPI Report, dated 12/17/2010
Robinson KPI, dated November 2010

Section 4OA3: Event Follow-up

Procedures
GP-004, Post Trip Stabilization, Rev. 16
GP-006, Normal Plant Shutdown From Power Operation to Hot Shutdown, Rev. 68
PRO-NGGC-0200

Other documents
Operations Training PowerPoint Presentation, Just-in-Time Training for ESFAS, RPS, and Misc. Interlocks and Overrides, Rev. 0