



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

October 24, 2008

Carolina Power and Light Company
ATTN: Mr. Tom Walt
Vice President - Robinson Plant
H. B. Robinson Steam Electric Plant
Unit 2
3851 West Entrance Road
Hartsville, SC 29550

**SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT - NRC INTEGRATED
INSPECTION REPORT 05000261/2008004**

Dear Mr. Walt:

On September 30, 2008, the US 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 September 25, 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.

Based on the results of this inspection, the inspectors identified two issues of very low safety significance (Green). Both of these issues 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 issues as non-cited violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you contest these non-cited violations, 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.

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-room/adams.html> <http://www.nrc.gov/NRC/ADAMS/index.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 05000261/2008004
w/Attachment: Supplemental Information

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cc w/encl:

Brian C. McCabe
Manager
Nuclear Regulatory Affairs
Progress Energy
Electronic Mail Distribution

Eric McCartney
Director Site Operations
Carolina Power & Light Company
Electronic Mail Distribution

R. J. Duncan, II
Vice President
Nuclear Operations
Carolina Power & Light Company
Electronic Mail Distribution

Ernest J. Kapopoulos, Jr.
Plant General Manager
Carolina Power & Light Company
Electronic Mail Distribution

Paul Fulford
Manager
Performance Evaluation and Regulatory
Affairs PEB5
Carolina Power & Light Company
Electronic Mail Distribution

Curt A. Castell
Supervisor
Licensing/Regulatory Programs
Carolina Power & Light Company
H. B. Robinson Steam Electric Plant
3581 West Entrance Road
Hartsville, SC 29550

C. T. Baucom
Manager
Support Services - Nuclear
Carolina Power & Light Company
Electronic Mail Distribution

Susan E. Jenkins
Director, Division of Waste Management
Bureau of Land and Waste Management
S.C. Department of Health and
Environmental Control
Electronic Mail Distribution

R. Mike Gandy
Division of Radioactive Waste Mgmt.
S.C. Department of Health and
Environmental Control
Electronic Mail Distribution

Beverly O. Hall
Chief, Radiation Protection Section
Department of Environmental Health
N.C. Department of Environmental
Commerce & Natural Resources
Electronic Mail Distribution

David T. Conley
Associate General Counsel
Legal Dept.
Progress Energy Service Company, LLC
Electronic Mail Distribution

John H. O'Neill, Jr.
Shaw, Pittman, Potts & Trowbridge
2300 N. Street, NW
Washington, DC 20037-1128

Chairman
North Carolina Utilities Commission
Electronic Mail Distribution

Robert P. Gruber
Executive Director
Public Staff - NCUC
4326 Mail Service Center
Raleigh, NC 27699-4326

Public Service Commission
State of South Carolina
P.O. Box 11649
Columbia, SC 29211

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S. D. West
Superintendent Security
H. B. Robinson Steam Electric Plant
Progress Energy
Electronic Mail Distribution

Senior Resident Inspector
Carolina Power and Light Company
H. B. Robinson Steam Electric Plant
U.S. NRC
2112 Old Camden Rd
Hartsville, SC 29550

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Letter to Thomas D. Walt from Randall A. Musser dated October 24, 2008

SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT - NRC INTEGRATED
INSPECTION REPORT 05000261/2008004

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C. Evans, RII EICS

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-261

License No: DPR-23

Report No: 005000261/2008004

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

Location: 3581 West Entrance Road
Hartsville, SC 29550

Dates: July 1, 2008 – September 30, 2008

Inspectors: R. Hagar, Senior Resident Inspector
E. Morris, Resident Inspector

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

Enclosure

SUMMARY OF FINDINGS

IR 05000261/2008-004; Carolina Power and Light Company; on 7/1/2008-9/30/2008; H.B. Robinson Steam Electric Plant, Unit 2; Maintenance Risk Assessment and Emergent Work, Post Maintenance Testing.

The report covered a three-month period of inspection by resident inspectors. Two violations were 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). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.65(a)(4) for the failure on August 14 to adequately assess plant risk as Yellow after post-maintenance valve lineups failed to restore service water cooling to the B emergency diesel generator (EDG). As a result, the licensee incorrectly assumed that the B EDG was available to perform its safety function prior to performing a post maintenance test, and thereby performed an inadequate risk assessment which lowered plant risk from Yellow to Green status. As an immediate corrective action, the licensee implemented Operations Night Order 08-10 which required interim measures be performed to ensure that plant risk will not be downgraded until the component being returned to service has been proven to be available by performing a functional verification. The licensee also plans to proceduralize this interim measure into procedure OMM-048, Work Coordination and Risk Assessment. This issue was entered into the licensee's corrective action (CA) program for resolution.

This finding was more than minor and affected the Mitigating Systems Cornerstone, because it is similar to example 7.f of Inspection Manual Chapter (IMC) 0612, Appendix E, "Examples of Minor Issues". In example 7.f this finding meets the "Not minor if" criteria because if the licensee had correctly assessed the risk that may result from performing the maintenance activity of post-maintenance testing, that risk assessment would have placed the plant into a higher risk category (i.e. from Green to Yellow risk). The finding has a cross-cutting aspect in the area of Human Performance because the licensee did not ensure that complete and accurate procedures were available and adequate to assure nuclear safety, in that the licensee failed to provide clear guidance in procedure OMM-048, Work Coordination and Risk Assessment, for declaring equipment available as it relates to performing plant risk assessments. (H.2(c)) (Section 1R13)

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- Green. The inspectors identified a Green NCV of Technical Specification 5.4.1 for the failure on August 11 to maintain configuration control of the service water system for the B emergency diesel generator (EDG) when a service-water isolation valve to the EDG was closed outside of an approved process. The failure to maintain equipment configuration control of the closed service water isolation valve is contrary to Regulatory Guide 1.33 which requires the licensee to implement procedures affecting quality, which includes procedures maintaining equipment configuration control. This failure directly led to this valve remaining closed after the licensee electrically aligned the EDG for automatic start and declared it available on August 14. With this valve closed and the EDG aligned for auto-start, the EDG would have started without cooling water, rendering the EDG incapable of meeting its designed safety functions. As immediate corrective actions, the licensee performed a comprehensive valve and switch line-up on the EDG and issued an operations night order which required operators to perform certain interim measures when operating components without procedural guidance or clearance order control, to ensure that a positive means of control has been established. The licensee also plans to revise appropriate operating procedures to clarify requirements for performing valve and switch line-ups after maintenance activities. This issue was entered into the licensee CA program for resolution.

This finding was more than minor and affects the Mitigating Systems Cornerstone because it is similar to example 5.c of IMC 0612 Appendix E, "Examples of Minor Issues". In example 5.c, this finding meets the "Not minor if" criteria because although work was still in progress when the finding was identified, the licensee had already returned the EDG to service, in that the licensee had considered the EDG available and had electrically aligned the EDG to auto-start. The finding has a cross-cutting aspect in the area of Human Performance because the licensee did not appropriately coordinate work activities by incorporating actions to address the operational impact of work activities, in that the licensee did not coordinate the closure of SW-90 in a manner to track or restore this valve to its safety related position after maintenance activities were completed. (H.3(b)) (Section 1R19)

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status The unit began the inspection period at rated thermal power. On July 25, the licensee reduced reactor power to 99.5% to compensate for an intermittent problem involving main turbine controls. The unit operated at 99.5% until September 24, when power was reduced to 75 percent of full power in preparation to shutdown for refueling outage 25. On September 25, power was further reduced to shutdown the unit at 0000 on September 26 to begin the outage. The unit remained shutdown at the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

.1 Readiness for Impending Adverse Weather Condition – Extreme Heat

a. Inspection Scope

The inspectors performed a detailed review of the licensee's procedures and preparations for operating the facility during the periods of time when ambient outside temperature was high and the ultimate heat sink was experiencing elevated temperatures. The inspectors focused on plant-specific design features and implementation of the procedures for responding to or mitigating the effects of these conditions on the operation of the facility's service water system. Inspection activities included a review of the licensee's adverse weather procedures, daily monitoring of the off-normal environmental conditions, and that operator actions specified by plant specific procedures were appropriate to ensure operability of the facility's normal and emergency cooling systems. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Readiness for Impending Adverse Weather Condition – High Winds

a. Inspection Scope

When Hurricane Hanna's path of travel predicted potential high winds for the site on September 6, the inspectors reviewed actions taken by the licensee in accordance with procedure OMM-021, Operation During Adverse Weather, prior to the onset of that weather, 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 operator actions to verify that the desired results could be achieved. Documents reviewed are listed in the Attachment.

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b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope

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:

<u>System Walked Down</u>	<u>SSC Out of Service</u>	<u>Date Inspected</u>
A & C charging trains	B charging pump	July 1
C safety injection pump	A safety injection pump	July 29
A emergency diesel generator	B emergency diesel generator	August 14

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.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors conducted a detailed review of the alignment and condition of the auxiliary feedwater 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.

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, adverse conditions, and other system-related issues tracked by the engineering department.

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:

<u>Fire Zone</u>	<u>Description</u>
2	emergency diesel generator "A" room
26	main transformers
20	emergency switchgear room and electrical equipment area
8	boron injection tank room
19	cable spreading room

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

- 249398, Nuclear condition report (NCR) not immediately initiated for improperly performed fire protection surveillance test OST-611-10
- 262758, Fire protection post-maintenance testing documentation issue

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

Internal Flooding

The inspectors walked down the component cooling water pump room and the A emergency diesel generator room to verify that each area configuration, features, and equipment functions were consistent with the descriptions and assumptions used in Calculation RNP-F/PSA-0009, Assessment of Internally Initiated Flooding Events. Those rooms were selected because they contain risk-significant SSCs which are susceptible to flooding from postulated pipe breaks. The inspectors also reviewed the operator actions credited in the analysis to verify that the desired results could be achieved using the plant procedures listed in the Attachment.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors conducted a walkdown and reviewed operations data to verify that the residual heat removal (RHR) heat exchangers could perform their safety related functions. The inspectors reviewed documentation of licensee testing and Maintenance Rule data, and inspected the RHR heat exchangers for evidence of leaks. The inspectors also verified the RHR heat exchangers were oriented as depicted in plant drawings. Documents reviewed are listed in the Attachment.

To verify that the licensee identified and implemented appropriate corrective actions, the inspectors reviewed AR 188462, performance monitoring of some safety related heat exchangers is insufficient to detect some potential degradation mechanisms.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification

a. Inspection Scope

On August 6, the inspectors observed licensed-operator performance during regualification simulator training for operations crew one, to verify that operator performance was consistent with expected operator performance as described in full scope scenario LOCT-Outage-3. 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 the failure of

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radiation monitor R-18 and reactor coolant system leakage resulting in a loss of coolant accident. 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.

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 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 action requests (ARs) were:

<u>Performance Problem/Condition</u>	<u>AR</u>
Trend in diaphragm leakage in valves in the chemical and volume control system	259032
Actuator for a hot-leg safety injection shutoff valve (SI-869) would not operate the valve	231092

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).

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To verify that the licensee identified and implemented appropriate corrective actions, the inspectors reviewed AR 266844, diaphragm to body leak preventive maintenance run to failure class improvement.

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:

- July 11 – July 17, including emergent work involving the C charging pump and the B AFW pump, which resulted in a Yellow risk condition
- July 28 – August 1, including emergent troubleshooting turbine governor valves, routine maintenance on safety injection pump A breaker, corrective maintenance on B coolant charging pump, and surveillance testing of reactor protection logic train A
- August 4 – August 8, including scheduled maintenance on the steam driven auxiliary feedwater pump which resulted in a Yellow risk condition
- August 11 – August 15, including scheduled maintenance on the B emergency diesel generator which resulted in a Yellow risk condition
- August 31 – September 6, including the approach of Tropical Storm Hanna and scheduled maintenance on the fire suppression water system which together resulted in a Yellow risk condition

b. Findings

Introduction: The inspectors identified a Green non-cited violation of 10 CFR 50.65(a)(4) for the failure on August 14 to adequately assess plant risk as Yellow after post-maintenance valve lineups failed to restore service water cooling to the B EDG. As a result, the licensee incorrectly assumed that the B EDG was available to perform its safety function, and thereby performed an inadequate risk assessment which lowered plant risk from Yellow to Green status.

Description: On August 14, after maintenance had been performed on the B EDG, the licensee removed the clearance and performed certain valve lineups to restore the diesel

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to service. At 1205, the licensee declared the B EDG available and performed a risk assessment that reduced plant risk from Yellow to Green. This assessment was based on the assumption that the EDG was able to perform its safety functions and no longer out-of-service. However, at 1236, as a result of inspector questioning, the licensee determined that the B EDG was in fact not available to perform its safety function because a service water isolation valve had not been returned to its required open position during the post-maintenance valve lineups. With this service water valve closed, all cooling water was isolated to the EDG and the EDG would have failed to provide its designed safety functions. Therefore, during the time between 1205 and 1236, as a result of the licensee's incorrect assumption that the B EDG was available, the licensee assessed plant risk as Green when the actual plant risk remained Yellow. This inadequate risk assessment constituted a performance deficiency with respect to 10 CFR 50.65(a)(4), which requires that before performing maintenance activities, including post maintenance testing, the licensee shall assess the increase to plant risk that may result from the proposed maintenance activities.

Analysis: This finding was more than minor and affects the Mitigating Systems Cornerstone, because it is similar to example 7.f of IMC 0612, Appendix E, "Examples of Minor Issues". In example 7.f this finding meets the "Not minor if" criteria because if the licensee had correctly assessed the risk that may result from performing the maintenance activity of post-maintenance testing of the B EDG, that risk assessment would have placed the plant into a higher risk category (i.e. from Green to Yellow risk). The finding was screened for significance using IMC 0609, Attachment 4. Using that attachment, since this finding was an issue with the assessment and management of risk associated with maintenance activities and affects the Mitigating Systems Cornerstone, Table 3b - SDP Phase1 screening worksheet for Initiating Events, Mitigating Systems, and Barriers Cornerstones, question 5 directs evaluating this finding using IMC 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process. In Appendix K, using Flowchart 1, this finding screened as Green because it was not related to Risk Management Actions only and the calculated Risk Deficit (1.3E-9) was less than 1.0E-6.

The finding has a cross-cutting aspect in the area of Human Performance because the licensee did not ensure that complete and accurate procedures were available and adequate to assure nuclear safety, in that the licensee failed to provide clear guidance in procedure OMM-048, Work Coordination and Risk Assessment, for declaring equipment available as it relates to performing plant risk assessments. (H.2(c))

Enforcement: 10 CFR 50.65(a)(4) requires, in part, that before performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to the above, on August 14 and before performing the maintenance activity of post-maintenance testing of the B EDG, the licensee failed to assess the increase in risk that resulted from that proposed maintenance activity, in that the licensee failed to perform an adequate risk assessment by verifying the availability of the EDG prior to reducing plant risk from Yellow to Green. Because this finding was of very low safety significance and has been entered into the licensee's corrective action program as AR 291888, consistent with Section VI.A of the NRC Enforcement Policy, this violation is being treated as a non-cited violation, and is

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designated as NCV 05000261/2008004-01, "Failure to adequately assess risk when assuming availability prior to performing post maintenance testing."

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the five operability determinations associated with the documents 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, and 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:

- Work order 1288237, motor driven auxiliary feedwater pump "A" discharge flow indicator and controller capacitor replacement
- Work order 1387868, chemical volume control tank high/low level alarm requires replacement
- NCR 291412, failed service water liner at B emergency diesel generator cooler inlet
- NCR 293061, B emergency diesel generator room fire detectors failed to actuate during surveillance testing
- NCR 296027, B auxiliary feedwater pump flow controller, AFW-FIC-1425, ears to "D" clip are missing and "D" clip appears to have reduced effectiveness

Documents reviewed are listed in the Attachment.

To verify that the licensee identified and implemented appropriate corrective actions, the inspectors reviewed AR 276134, failure to enter technical specification limiting condition for operation action statement during motor-driven auxiliary feedwater maintenance.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary modification described in Engineering Change 70590, reactor coolant pump B oil reservoir high level alarm setpoint change, to verify that the modification did not affect the safety functions of important safety systems, and

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to verify that the modification satisfied the requirements of Procedure EGR-NGGC-005, Engineering Change, and 10 CFR 50, Appendix B, Criterion III, Design Control.

Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the six post-maintenance tests listed below, the inspectors witnessed the 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.

The following tests were witnessed/reviewed:

<u>Test Procedure</u>	<u>Title</u>	<u>Related Maintenance Activity</u>	<u>Date Inspected</u>
PIC-002	D/P Electronic Transmitter (4-20 mA Output)	B train containment spray flow meter, FT-958B, power supply replacement.	July 1
PIC-033	Auxiliary Feedwater Flow Indicating Controllers FIC-1424, FIC-1425, and FIC-6416	B auxiliary feedwater pump flow indicator and controller, FIC-1425, repair	July 18
OST-101-3	[Chemical and Volume Control System] Component Test Charging Pump C	C charging pump valve and fluid head assembly replacement	July 22
OST-202	Steam Driven Auxiliary Feedwater System Component Test	Steam driven auxiliary feedwater pump gauge calibration, check valve inspection, and valves inspections	August 6

OP-604	Diesel Generators "A" and "B"	Service water heat exchanger and pipe replacement, two year preventative maintenance inspections	August 15
OST-401-2	[Emergency Diesel Generator] A Diesel Fuel Oil System Flow Test	Emergency diesel generator A fuel oil transfer pump control switch relocated to the reactor/turbine gauge board	August 25

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

- 280747, radiation monitor R-31 voltage not set per work order instructions during power supply replacement.
- 293177, engineering change 64319 post maintenance testing not scheduled in plan of the week

b. Findings

Introduction: The inspectors identified a Green NCV of technical specification (TS) 5.4.1 for the failure on August 11 to maintain configuration control of the service water system for the B EDG when a service water isolation valve to the EDG was closed outside of an approved procedure. The failure to maintain equipment configuration control of the subject valve was contrary to Regulatory Guide 1.33 which requires the licensee to implement procedures affecting quality, which includes procedures maintaining equipment control. This failure directly resulted in this valve remaining closed after the licensee electrically aligned the EDG for automatic start and declared the EDG available on August 14. With this valve closed and the EDG aligned for auto-start, the EDG would have started without cooling water, rendering the EDG incapable of meeting its designed safety functions.

Description: On August 11, while placing a clearance to enable scheduled maintenance to begin on the B EDG, the licensee discovered that the clearance boundaries did not provide adequate isolation of service water to that component. In response to this discovery, operations personnel verbally directed the closure of isolation valve SW-90 to provide an additional boundary to service water flow. In this situation, since the scheduled maintenance was expected to require several days, procedure OMM-001-11, Logkeeping, required, in part, that operations personnel enter SW-90 into the control-room log as an out-of-position component and install a corresponding caution tag on the valve. However, operations personnel did neither; as a result, SW-90 was closed but no corresponding control-room log entry was made, and no corresponding caution tag was

installed. Consequently, on August 14, after the licensee completed the scheduled maintenance on the EDG and removed the associated clearance, the licensee electrically aligned the EDG for autostart and declared the EDG available while SW-90 remained closed. (With SW-90 closed, service water flow to the EDG was isolated.) After this alignment and declaration and before the licensee completed the post-maintenance test of starting the B EDG using OP-604, the inspectors identified that SW-90 was closed and discussed that identification with involved operations personnel. As a result, operations personnel suspended their plans to complete the post-maintenance test until after they had completed a comprehensive verification of valve lineups.

The inspectors considered that operations personnel failure to comply with the configuration-control requirements of procedure OMM-001-11 after they closed SW-90 was a performance deficiency. To address this issue, the licensee initiated NCR 291863.

Analysis: This finding is more than minor and affects the Mitigating Systems Cornerstone because it is similar to example 5.c of IMC 0612 Appendix E, "Examples of Minor Issues". In example 5.c, this finding meets the "Not minor if" criteria because although work was in progress, the licensee had returned the EDG to service, in that the licensee had declared the EDG available and had electrically aligned the EDG for auto-start when the finding was identified. The significance of the finding was evaluated using IMC 0609 Attachment 4. In accordance with Table 4a of Attachment 4, this finding screened as GREEN, because the finding was not a design or qualification deficiency confirmed to result in a loss of operability or functionality, did not represent a loss of system safety function, did not result in a loss of safety function for a single train for greater than the TS allowed outage time, did not result in a loss of safety function of one or more non-TS trains of equipment designated as risk-significant for greater than 24 hours, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

The finding has a cross-cutting aspect in the area of Human Performance because the licensee did not appropriately coordinate work activities by incorporating actions to address the operational impact of work activities, in that the licensee did not coordinate the closure of SW-90 in a manner to track or restore this valve to its safety-related position after maintenance activities were completed. (H.3(b))

Enforcement: TS 5.4.1 requires that written procedures shall be established, implemented, and maintained covering applicable procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978, which includes administrative procedures covering equipment control. Site Procedure OMM-001-11, Log keeping, requires that component manipulations that are not part of an approved procedure shall be entered as a component out of position entry in the component out of position log and if that component will remain out of its normal position past shift turnover, then a caution tag shall be installed. Contrary to the above, on August 11, when the licensee closed a service water isolation valve to the B EDG outside of an approved procedure, the licensee failed to enter the valve into the component out-of-position log. Furthermore, when the service water valve remained out of its normal position past shift turnover, the licensee failed to install a caution tag on the valve. This resulted in failure to properly

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align the EDG for start-up on August 14, in that service water remained isolated to the EDG after the licensee aligned the diesel for automatic start and declared the EDG available for use. Because this finding was of very low safety significance and has been entered into the CAP as AR 291863 and consistent with Section VI.A.1 of the NRC Enforcement Policy, this violation is being treated as a non-cited violation, NCV 05000261/2008004-02, Failure to maintain emergency diesel generator service water valve configuration control.

1R20 Refueling and Outage Activities

For the outage that began on September 26, the inspectors evaluated licensee outage activities as described below to verify that licensees 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 Review of Outage Plan

a. Inspection Scope

Prior to the outage, the inspectors reviewed the outage risk control plan to verify that the licensee had performed adequate risk assessments, and had implemented appropriate risk-management strategies when required by 10 CFR 50.65(a)(4).

b. Findings

No findings of significance were identified.

.2 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.

.3 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.

- Clearance Activities
- Reactor Coolant System Instrumentation
- Electrical Power
- Decay Heat Removal (DHR)
- Spent Fuel Pool Cooling
- 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 of significance were identified.

.4 Identification and Resolution of Problems

a. Inspection Scope

Periodically, the inspectors reviewed the items that had been entered into the CAP to verify that the licensee had identified problems related to outage activities at an appropriate threshold and had entered them into the corrective action program.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. 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.

<u>Test Procedure</u>	<u>Title</u>	<u>Date Inspected</u>
OST-051*	Reactor Coolant System Leakage Evaluation	July 11
OST-201-2	[Motor Driven Auxiliary Feedwater Pump] System Component Train Test – Train B	July 18
MST-020	Reactor Protection Logic Train “A” At Power	July 30
EST-002	Power Distribution Measurement (Monthly Interval)	August 5
OST-908	Component Cooling System Component Test	August 21
OST-302-1**	Service Water Pumps A & B Inservice Test	August 28

* This procedure was a Reactor Coolant System leakage detection surveillance.

**This procedure included inservice testing requirements.

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

- 286999, wrong gauge installed - discovered during surveillance testing
- 293061, B emergency diesel generator room fire detectors failed to actuate during surveillance testing

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

On July 15, the inspectors observed an emergency preparedness training evolution 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.

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b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors verified the two 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," Rev. 4. In addition, the inspectors interviewed licensee personnel associated with collecting, evaluating, and distributing these data.

Mitigating Systems Cornerstone

- Mitigating Systems Performance Index, Emergency AC Power
- Mitigating Systems Performance Index, High Pressure Safety Injection

For the period from the second quarter of 2007 through the second quarter of 2008, 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.

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 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

a. Inspection Scope

The inspectors selected the following AR's for detailed review.

- 270087, battery charger engineering change and work order not followed as written. The inspectors selected this AR because it relates generally to the Mitigating Systems Cornerstone.
- 203620, pressure control valve for seal water to feedwater pump does not operate properly at low power requiring manual action to control seal water pressure. The inspectors selected this AR because it relates specifically to an operator workaround.

The inspectors reviewed these AR's 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 these AR's 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 Unexpected Repositioning of Turbine Control Valves

a. Inspection Scope

On July 24, turbine control valve GV2 unexpectedly repositioned open, causing steam flow and reactor power to increase. Before a significant plant transient occurred, control-room operators took manual control of turbine control valve positions to restore steam flow and reactor power to appropriate values. The inspectors reviewed the circumstances associated with that event to:

- determine whether the event posed an actual or potential hazard to public health and safety, property, or the environment, as defined in NRC Management Directive 8.3, NRC Incident Investigation Program;
- verify that the control-room operators' response to the event was appropriate and in accordance with procedures and training; and
- verify that the licensee determined and adequately addressed the cause of the event.

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Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted the following 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 of significance were identified.

.2 Periodic Resident Inspector Review of INPO Evaluations

The inspectors reviewed the interim report of the Institute of Nuclear Power Operations (INPO) 2008 evaluation that was completed on April 18, 2008. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspective of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

.3 (Open) Temporary Instruction (TI) 2515/176, Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing

a. Inspection Scope

The objective of this TI was to gather information to assess the adequacy of nuclear power plant EDG endurance and margin testing as prescribed by plant-specific TS. The inspector interfaced with the appropriate station staff to obtain the information specified in Attachment 1 of the TI-176 Worksheet. The TI applies to all operating nuclear power reactor licensees that use EDGs as the onsite standby power supply. The inspector verified the accuracy of the information by review of TS, EDG Design Basis Event (DBE) loading calculations, EDG endurance run test procedures, test data from the last three endurance tests performed on each EDG, EDG ratings, and EDG operating history. The information gathered will be forwarded to Nuclear Reactor Regulation/Division of

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Engineering/Electrical Engineering Branch (NRR/DE/EEEB) for further review to assess the adequacy and consistency of EDG testing at nuclear stations.

b. Findings and Observations

The TI is presently scheduled to be open until August 31, 2009, pending completion of the NRR/DE/EEEB review.

.4 (Closed) Operator Experience Smart Sample (OpEss) FY 2007-03, Crane and Heavy Lift Inspection, Supplemental Guidance

The inspectors completed their review of Operator Experience Smart Sample OpEss FY2007-03, Crane and Heavy Lift Inspection. The licensee has completed their load drop analysis and it is documented in calculation RNP-C/STRIU-1260. The load drop analysis does bound the maximum lifting heights and weights. The licensee has submitted a licensing document change request to update their FSAR with the summary description of the safety basis used for heavy load movements. The licensee plans to submit the change with the NRC within six months after the end of their fall outage.

4OA6 Meetings, Including Exit

On September 25, the resident inspectors presented the inspection results to Mr. T. Walt and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

Attachment: Supplemental Information

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

C. Baucom, Manager, Support Services - Nuclear
W. Farmer, Engineering Manager
J. Huegel, Maintenance Manager
E. Kapopoulos, Plant General Manager
J. Lucas, Nuclear Assurance Manager
J. Rhodes, Acting Radiation Protection Superintendent
K. Jones, Operations Manager
T. Walt, Vice President
S. Wheeler, Supervisor, Emergency Preparedness

NRC personnel

R. Musser, Chief, Reactor Projects Branch 4

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

2515/176	TI	Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing
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Closed

None

Opened & Closed

05000261/2008004-01	NCV	Failure to adequately assess risk when assuming availability prior to performing post maintenance testing. (1R13)
05000261/2008004-02	NCV	Failure to maintain emergency diesel generator service water valve configuration control. (1R19)

Previous Items Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

1R01 Adverse Weather Protection

Procedures

OMM-021, Operations During Adverse Weather Conditions, Rev. 33

EPP-28, Loss of Ultimate Heat Sink, Rev. 7

PLP-118, Hot Weather Operations, Rev. 10

SPP-038, Installation, Operation, and Removal of Supplemental Cooling for HVH-1, 2, 3, & 4, Rev. 6

OST-021, Daily Surveillances, Rev. 22

PPP-114, Service Water Temperature Measurement to HVH 1-4, Rev. 7

Other documents

TS 3.7.8, Ultimate Heat Sink

TS 3.7.7, Service Water System

UFSAR section 9.2.1, Service Water

System Description SD-004, Service Water, Rev. 11

System Description SD-037, Containment [Heating Ventilation Air Conditioning], Rev. 9

1R04 Equipment Alignment

Partial System Walkdown

Chemical & volume control:

OP-301, Chemical and Volume Control System, Rev. 90

Drawing 5379-685, Chemical and Volume Control System Purification and Make-Up Flow Diagram, Sheet 1 of 3, Rev. 52

Drawing 5379-685, Chemical and Volume Control System Purification and Make-Up Flow Diagram, Sheet 2 of 3, Rev. 57

Work Order 1029758, Perform lubrication of B charging pump speed control linkage

Clearance Order 170409, B charging pump speed control lubrication and calibration

Safety injection train B – safety injection pump C:

Procedure OP-202, Safety Injection and Containment Vessel Spray System, Rev. 75

Drawing 5379-1082, Safety Injection System Flow Diagram, sheet 2 of 5, Rev. 47

Work Order 1085410, inspection and testing of safety injection pump A breaker, 52/21C

System Description SD-002, Safety Injection System, Rev. 14

UFSAR section 6.3, Emergency Core Cooling System

Emergency diesel generator A system:

OP-604, Diesel Generators “A” and “B”, Rev. 72

G-190204-A, Emergency Diesel Generator System Flow Diagram, Rev. 31

SD-005, Emergency Diesel Generators, Rev. 11

UFSAR section 8.3.1.1.5, Emergency Power Sources

Complete System Walkdown

Auxiliary feedwater system:

Procedure OP-402, Auxiliary Feedwater System, Rev. 70

Procedure OWP-001, Auxiliary Feedwater, Rev. 43

System Description SD-042, Auxiliary Feedwater System, Rev. 11

Drawing G-190197, Feedwater Condensate and Air Evacuation System Flow Diagram, sheet 4 of 4, Rev. 55

UFSAR section 10.4.8, Auxiliary Feedwater System

1R05 Fire ProtectionUFSAR Sections of Appendix 9.5.1A

3.1.2 Diesel Generator "A" Room

3.7.8 Fire Zone 26 – Yard Transformers

3.1.8.1 Boron Injection Tank Room

3.1.5.4 Unit 2 Cable Spreading Room

Procedures

FP-003, Control of Transient Combustibles, Rev. 24

results from OST-611-1, Low Voltage Fire Detection and Actuation System Zones 1 & 2 (Semi-Annual), Rev. 6, dated 2/23/08

results from OST-621, Diesel Generator CO2 System Cylinder Weight Test (Semi-Annual), Rev. 23, dated 3/5/08

results from OST-642, Main Transformer Deluge System Flow Test (Annually), Rev. 16, dated 6/3/08

results from OST-643, Startup/Auxiliary Transformer Deluge System Flow Test (Annually), Rev. 19, dated 4/4/08

results from OST-611-11, Low Voltage Fire Detection and Actuation System Zones 19 & 20 (Semi-Annual), Rev. 6, dated 6/10/08

results from OST-620, Carbon Dioxide Suppression System Weight Test (Semi-Annual), Rev. 26, dated 6/11/08

results from OST-624, Fire Damper Inspection (18-Month), Rev. 21, dated 6/3/07

results from OST-628, Function Test of the Halon 1301 System (Annual), Rev. 21, dated 10/23/07

results from OST-630, Halon 1301 Suppression System Weight Test (Semi-Annual), Rev. 28, dated 7/11/08

results from OST-611-4, Low Voltage Fire Detection and Actuation System Zones 8 & 28 (Semi-Annual), Rev. 3, dated 7/11/08

results from OST-611-11, Low Voltage Fire Detection and Actuation System Zones 19 & 20 (Semi-Annual), Rev. 6, dated 6/10/08

Drawings

UFSAR figure 9.5.1-4, Fire Zone Sections Auxiliary Building, Rev. 19

Other documents

Transient & Permanent Combustibles Database

Calculation, CPL025.0200.0001, Combustible Loading Calculation, Rev. 26

1R06 Flood Protection Measures

UFSAR Sections

3.4 Water Level (Flood) Design

Calculations

RNP-F-PSA-0009, Assessment of Internally Initiated Flood Events, Rev. 0

Procedures

AOP-014, Component Cooling Water System Malfunction, Rev. 24

AOP-14-BD, Basis Document Component Cooling Water System Malfunction, Rev. 24

AOP-22, Loss of Service Water, Rev. 31

AOP-22-BD, Basis Document Loss of Service Water, Rev. 31

AOP-32, Response to Flooding from Fire Protection, Rev. 6

AOP-32-BD, Basis Document Response to Flooding from Fire Protection, Rev. 6

1R07 Heat Sink Performance

Procedures

TMM-044, Heat Exchanger [Non-Destructive Examination] Inspection Process, Rev. 1

EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines

CM-201, Safety Related and Non-Safety Related Heat Exchanger Maintenance, Rev. 42

Drawings

5379-1484, Residual Heat Removal System Flow Diagram, sheet 1 of 1, Rev. 40

G-190267, Residual Heat Removal System Piping

5379-0413, Residual Heat Exchanger, Rev. 5

Other Documents

Maintenance Rule documents for System 2045 residual heat removal system:

- Scoping and Performance Criteria
- Performance Summary since 8/05-7/07
- Expert Panel Meeting Minutes 8/95 – 7/08

Maintenance Rule documents for System 4080 component cooling water system:

- Scoping and Performance Criteria
- Performance Summary since 8/05-7/07
- Expert Panel Meeting Minutes 9/97 – 5/08

NCR 188462, performance monitoring of some safety related heat exchangers is insufficient to detect some potential degradation mechanisms.

WCAP-12432, RHRS Design Summary Document

WCAP-12070, SIS Design Summary Document

UFSAR Sections

5.4.4, Residual Heat Removal System

6.3, Emergency Core Cooling System

3.11, Environmental Design of Mechanical and Electrical Equipment

1.8, Conformance To NRC Regulatory Guides

1R11 Licensed Operator Requalification

Simulator option form SOF-LOCT-Outage-3, Rev. 3, dated 7/30/08
 Full scope scenario LOCT-Outage-3, Rev. 3, dated 7/30/08
 Procedure APP-036, Auxiliary Annunciator, Rev. 62
 Procedure AOP-016, Excessive Primary Plant Leakage, Rev. 39
 Procedure AOP-033, Shutdown [Loss of Coolant Accident], Rev. 12
 Procedure PLP-007, Robinson Emergency Plan, Rev. 68
 H.B. Robinson Technical Specifications and Basis
 H.B. Robinson Technical Requirements Manual

1R12 Maintenance EffectivenessNuclear Condition Reports

231092, Actuator for SI-869 would not operate valve
 232987, Active boric acid leakage from FCV-113B
 247502, Rework on CVC-336
 255385, Boric acid leakage at LCV-115C
 257206, Rework on CVC-340 and CVC-341
 259032, Trend on diaphragm valve external leakage
 269531, FCV-113A leakage

Work Orders

1090923, Perform torque check on CVC-332, CVC-340, CVC-341, CVC-348
 0566650, Remove and replace diaphragm on CVC-336
 1043914, Leak on suction line of "B" boric acid transfer pump
 0774392, Disconnect/reconnect SI-869 for mechanics
 0774435, Disassemble & repair SI-869

Procedures

CM-113, SMB-000, SMB-00 AND SB-00 Motor Operator Overhaul, Rev. 28

Drawings

5379-685, Chemical and Volume Control System Purification & Make-Up Flow Diagram, sheet 2 of 3, Rev. 57
 5379-685, Chemical and Volume Control System Purification & Make-Up Flow Diagram, sheet 3 of 3, Rev. 32
 HBR2-11198, 2.00 Nuclear Bonnet Assembly, Rev. B
 HBR 5379-401, 2" Diaphragm Valve Sealed Bonnet, Rev. 2

Maintenance Rule Documents

For system 2060 chemical and volume control system:

- Event Log Report for 1/07 – 6/08
- Scoping and Performance Criteria
- Performance Monitoring Group Trend 1/07 – 6/08
- Expert Panel Meeting Minutes 7/95 – 5/08

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

Procedure OMM-048, Work Coordination and Risk Assessment, Rev. 36
 Procedure ADM-NGGC-0006, Online [Equipment Out of Service] Models for Risk Assessment, Rev. 6
 Robinson Nuclear Plant Risk Profile for work week 7/25-8/1
 Robinson Nuclear Plant Risk Profile for work week 8/1-8/8
 Robinson Nuclear Plant Risk Profile for work week 8/11-8/15

1R15 Operability Evaluations

H. B. Robinson Steam Electric Plant Unit No. 2 Technical Specifications
 Procedure OPS-NGGC-1305, Operability Determinations, Rev. 1
 Work Order 1388237, motor driven auxiliary feedwater pump "A" discharge flow indicator and controller capacitor replacement
 Work Order 1387868, chemical volume control tank high/low level alarm requires replacement
 NCR 287525, unanticipated unavailability of auxiliary feedwater pump B
 NCR 291412, failed service water liner at B emergency diesel generator cooler inlet
 Work Order 1398783, plastic lining in line 6-CW-86A has turned loose
 Work Order 1399160, inspect service water piping to emergency diesel generator A aftercooler
 Procedure TMM-015, Inservice Repair and Replacement, Rev. 33
 Drawing G-190199, Service and Cooling Water System Flow Diagram, sheet 6 of 13, Rev. 47
 NCR 293061, B emergency diesel generator room fire detectors failed to actuate during surveillance testing
 Procedure OST-611-11, Low Voltage Fire Detection and Actuation System Zones 19 & 20 (Semi-Annual), Rev. 6
 NCR 296027, B auxiliary feedwater pump flow controller, AFW-FIC-1425, ears to "D" clip are missing and "D" clip appears to have reduced effectiveness

1R18 Plant Modifications

Engineering Change 70590, reactor coolant pump B lower oil reservoir alarm setpoint change
 Engineering Change 51485, [Reactor Coolant Pump] Oil Level Indication, Rev. 11
 Engineering Change 63072, [Reactor Coolant Pump] Oil Level Calibration Change, Rev. 1
 Technical Manual, VTMA-728-621-13, Instruction & Operating Book/Controlled Leakage Seal Reactor Coolant Pump, Rev. 58
 White Paper, [Reactor Coolant Pump] "B" Oil Level Alarm, Cycle 25 Update 6/9/08
 NCR, 282518, [Reactor Coolant Pump] "B" oil reservoir HI/LO level repeated alarms
 Procedure, EGR-NGGC-0005, Engineering Change, Rev. 27
 Drawing, B-190628 SH01769, [Reactor Coolant Pump] Oil Level Indication, Rev. 0
 Procedure, PIC-819, [Reactor Coolant Pump] Upper/Lower Oil Alarm Setpoint Verification, Rev. 9
 System Description, SC-001, Reactor Coolant System, Rev. 11
 Updated Final Safety Analysis Report

1R19 Post Maintenance Testing

Procedures

PIC-002, D/P Electronic Transmitter (4-20 mA Output), Rev. 13
 MMM-006 Appendix B-5, Calibration Data Sheets, Rev. 17
 PIC-033, Auxiliary Feedwater Flow Indicating Controllers FIC-1424, FIC-1425, FIC-6416, Rev. 7
 MMM-042, Documentation of Temporary Lead Lifts and Jumpers, Valve Manipulators, and Switch Manipulations or Thermocouple Polarity Test, Rev. 13
 OST-101-3, [Chemical and Volume Control System] Component Test Charging Pump C, Rev. 36
 OST-202, Steam Driven Auxiliary Feedwater System Component Test, Rev. 71
 OP-604, Diesel Generators "A" and "B", Rev. 72
 OST-402-1, [Emergency Diesel Generator] A Diesel Fuel Oil System Flow Test, Rev. 25

Other Documents

Work Order 1378028, FT-958B power supply failure
 Clearance Order 171261, clearance on power supply FQ-985B
 Work Order 1385202, calibrate auxiliary feedwater pump B flow indicator and controller
 Work Order 1385200, FIC-1425 not operating properly failed to control in manual
 Clearance Order 173226, steam driven auxiliary feedwater pump
 Work Order 997194, SW-272 check valve inspection steam driven auxiliary feedwater pump emergency cooling return check
 Work Order 1129340, valve, AFW-V2-14B motor operator limitorque inspection
 Work Order 1316356, calibrate steam driven auxiliary pump discharge pressure gauge
 Fragnet Project: "B" emergency diesel generator 2 year outage
 Engineering Change 64319, appendix R isolation switches for emergency operating procedure safe shutdown
 Work Order 1116889, engineering change 64319 appendix R isolation switches for emergency operating procedure safe shutdown

1R20 Refueling and Outage Activities

Procedures

OMP-003, Shutdown Safety Function Guidelines, Rev. 31
 OMP-004, Outage Risk Assessment, Rev. 24

Other Documents

AR 257263, R225 Preoutage Risk Assessment

1R22 Surveillance Testing

Procedures

OST-051, Reactor Coolant System Leakage Evaluation (Every 72 Hours During Steady State Operation and Within 12 Hours After Reaching Steady State Operation), Rev. 39
 OST-201-2, [Motor Driven Auxiliary Feedwater Pump] System Component Test – Train B, Rev. 24
 OST-908, Component Cooling System Component Test, Rev. 64
 MST-020, Reactor Protection Logic Train "A" At Power, Rev. 27

EST-002, Power Distribution Measurement (Monthly Interval), Rev. 21
 FMP-008, Flux Mapping, Rev. 25
 FMP-009, Power Distribution Control, Rev. 17
 FMP-001, Core Operating Limits Report (COLR), Rev. 23
 EST-003, Incore/Excore Detector Calibration (Quarterly Interval), Rev. 14
 OST-302-1, Service Water Pumps A & B Inservice Test, Rev. 49
 TMM-004, Inservice Testing Program, Rev. 71

Other Documents

H. B. Robinson Steam Electric Plant Unit No. 2 Technical Specifications

1EP6 Drill Evaluation

Procedures

EPCLA-04, Emergency Action Level Technical Basis Document, Rev. 0
 EPLCA-01, Emergency Control, Rev. 25
 EPEOF-00, Activation and Operation of the Emergency Operations Facility, Rev. 12
 PLP-007, Emergency Plan, Rev. 67

Other Documents

Drill Guide, LSTT 01-0006, Emergency Response Organization Limited Scope Table-top
 Emergency Action Level Matrix All Conditions
 Emergency Action Level Matrix Hot Conditions

4OA1 Performance Indicator Verification

Calculation, RNP-F-PSA-0057, NRC Mitigating System Performance Indicator Basis Document, Rev. 7
 Procedure REG-NGGC-0009, NRC Performance Indicators and Monthly Operating Report Data, Rev. 5
 Procedure ADM-NGGC-0101, Maintenance Rule Program, Rev. 20
 Maintenance Rule event reports that cover the previous 18 months, for the following systems:
 2080 (Safety Injection)
 5095 (Emergency Diesel Generator)
 [Mitigating System Performance Indicator] Derivation Report High Pressure Injection System Unreliability Index dated 7/3/08
 [Mitigating System Performance Indicator] Derivation Report High Pressure Injection System Unavailability Index dated 7/3/08
 [Mitigating System Performance Indicator] Derivation Report Emergency AC Power System Unreliability Index dated 7/2/08
 [Mitigating System Performance Indicator] Derivation Report Emergency AC Power System Unavailability Index dated 7/2/08

4OA2 Identification and Resolution of Problems

Nuclear Condition Reports

270087, Engineering change and work order for battery charger capacitor replacement not followed as written

- 293064, Compensatory action greater than 90 days old – record reactor coolant drain tank level every 4 hours
- 293066, Compensatory action greater than 90 days old – close and re-open B containment vessel sump pump breaker once a week
- 293067, Compensatory action greater than 90 days old – check C feedwater regulating valve air leak daily
- 293068, Compensatory action greater than 90 days old – control room to manually turn off and on switchyard lighting
- 293069, Compensatory action greater than 90 days old – additional monitoring requirements when ambient temperature <35F
- 293070, Compensatory action greater than 90 days old – monitor fan suction damper 2-HA-D-51 when fan is secured
- 293071, Compensatory action greater than 90 days old – monitor turbine bearing #8 once per shift
- 293072, Compensatory action greater than 90 days old – verify flow instrument FI-1064 reads <11 gallons per minute when no release in progress
- 293073, Compensatory action greater than 90 days old – perform leak rate determination of isophase bus duct cooler leakage once per shift
- 293081, Compensatory action greater than 90 days old – manual control turbine gland seal pressure
- 203620, Caution Tag 06-036 has been in effect for > 3 months for failure of DPCV-1443A to operate properly when plant is at low power levels requiring manual actions to control feedwater pump seal pressure

Other Documents

- Work Order 1024761, Battery charger A & B replace C1 as required by Engineering Change 47091
- Procedure, CAP-NGGC-0200, Corrective Action Program, Rev. 22
- Engineering Change 47091, Replacement filter capacitor for battery chargers
- Procedure Revision Request 276849, Revise OMM-048 step 8.7.2
- Procedure, OMM-048, Work Coordination and Risk Assessment, Rev. 34

4OA3 Event Follow-up

Procedures

- TMM-113, Control of the Calorimetric, Rev. 13
- OMM-001-6, Operations Assessments, Rev. 23
- OMM-001-8, Control of Equipment and System Status, Rev. 39

Other Documents

- NCR 288850, Plant transient from increased steam flow to turbine
- NCR 288847, Crew transient response evaluation for power excursion
- Control Room Logs dated 7/24/2008
- UFSAR section 15.1.3, Increase in Steam Flow (Excess Load)
- Level 1 Operational Decision Making Process, Turbine Valve Swings Causing Power Level Increases
- Robinson Nuclear Plant Operations Night Order 08-08, Operation of Turbine EH Control

4OA5 Other Activities

Licensing Documents

H.B. Robinson Steam Electric Plant Unit No. 2 Technical Specification

H.B. Robinson Updated Final Safety Analysis Report

Procedures

OP-604, Diesel Generators "A" and "B", Rev. 72

OST-410, Emergency Diesel Generator "A" (Twenty-Four Hour Load Test), Rev. 36

OST-411, Emergency Diesel Generator "B" (Twenty-Four Hour Load Test), Rev. 37

Results from OST-410, Emergency Diesel Generator "A" (Twenty-Four Hour Load Test), dated 4/9/07, Rev. 31

Results from OST-410, Emergency Diesel Generator "A" (Twenty-Four Hour Load Test), dated 9/19/05, Rev. 27

Results from OST-410, Emergency Diesel Generator "A" (Twenty-Four Hour Load Test), dated 4/22/04, Rev. 26

Results from OST-411, Emergency Diesel Generator "B" (Twenty-Four Hour Load Test), dated 4/29/07, Rev. 33

Results from OST-411, Emergency Diesel Generator "B" (Twenty-Four Hour Load Test), dated 10/12/05, Rev. 29

Results from OST-411, Emergency Diesel Generator "B" (Twenty-Four Hour Load Test), dated 5/11/04, Rev. 28

Other Documents

System Description, SD-005, Emergency Diesel Generators, Rev. 12

Design Basis Document, DBD/R87038/SD05, EDG System

Technical Manual, Fairbanks-Morse Model 38TD 8-1/8 Engine (729-063-16)

Technical Manual, Woodward Governor Model UG-8 (728-820-61)

Calculation RNP-E-8.016, Emergency Diesel Generator Static and Dynamic Analysis for H.B. Robinson Unit No. 2, Rev. 7a

Technical Manual, Louis Allis Instruction Manual 3360M (729-063-16)

Technical Manual, Louis Allis Instruction Manual 3359M (729-063-16)