



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
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ATLANTA, GEORGIA 30303-8931

April 12, 2010

Carolina Power and Light Company  
ATTN: Mr. Eric McCartney  
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 POST-APPROVAL SITE  
INSPECTION FOR LICENSE RENEWAL INSPECTION REPORT  
05000261/2010008

Dear Mr. McCartney:

On February 26, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed a Post-Approval Site Inspection for License Renewal at your H.B. Robinson Steam Electric Plant, Unit 2. The enclosed report documents the inspection findings, which were discussed on February 26, 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.

Based on the results of this inspection, no findings of significance were identified. In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any), will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Mark Franke, Chief  
Engineering Branch 3  
Division of Reactor Safety

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

Enclosure: Inspection Report 05000261/2010008  
w/Attachment: Supplemental Information

cc w/encl: see Page 2

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H. B. Robinson Steam Electric Plant

2112 Old Camden Rd

Hartsville, SC 29550

Letter to Eric McCartney from Mark Franke dated April 12, 2010.

SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT – NRC POST-APPROVAL SITE  
INSPECTION FOR LICENSE RENEWAL INSPECTION REPORT  
05000261/2010008

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket No: 50-261

License No: DPR-23

Report No: 05000261/2010008

Licensee: Carolina Power & Light Company

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

Location: 3581 West Entrance Road  
Hartsville, SC 29550

Dates: February 2, 2010 – February 26, 2010

Inspectors: Joel Rivera-Ortiz, Senior Reactor Inspector (Lead)  
Caudle Julian, Senior Construction Inspector  
Eric Michel, Senior Reactor Inspector  
Louis Lake, Senior Reactor Inspector  
Gregory Kolcum, Resident Inspector – Brunswick  
Robert Williams, Reactor Inspector

Accompanying Staff: Jonathan Kent, Construction Inspector Trainee

Approved by: Mark Franke, Chief  
Engineering Branch 3  
Division of Reactor Safety

Enclosure

## SUMMARY OF FINDINGS

IR 05000261/2010008; 02/08/2010 – 02/26/2010; H.B. Robinson Steam Electric Plant, Unit 2; Post Approval Site Inspection for License Renewal.

The report covers a team inspection conducted by six regional inspectors in accordance with NRC Manual Chapter 2516 and NRC Inspection Procedure 71003.

The inspectors determined that commitments, license conditions, and regulatory requirements associated with the issuance of the renewed operating license were either being met or, where commitment actions had not been completed, that the licensee had generated tasks in their Action Request system to track their completion before the period of extended operation.

The team identified one Unresolved Item and eight observations, for which corrective actions were initiated.

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-Revealed Findings

None

B. Licensee-Identified Violations

None

## REPORT DETAILS

### 4. OTHER ACTIVITIES

#### 4OA5 Other Activities

##### .1 Post-Approval Site Inspection for License Renewal – IP 71003

###### a. Inspection Scope

###### (1) Implementation of License Conditions and Commitments, including Aging Management Programs and Time-Limited Aging Analyses

The inspectors reviewed supporting documents including implementing procedures, work orders, inspection reports, engineering evaluations, condition reports, and completed surveillance records; conducted interviews with licensee staff; performed visual inspection of structures, systems, and components (SSCs); and observed a sample of licensee activities related to license renewal commitments to verify the licensee completed the necessary actions to comply with the license conditions stipulated in the renewed facility operating license. The inspectors verified that the licensee met the commitments associated with the Aging Management Programs (AMPs) and time-limited aging analyses (TLAAs) described in NUREG-1785, "Safety Evaluation Report (SER) Related to the License Renewal of H.B. Robinson Steam Electric Plant, Unit 2," in accordance with Title 10 of the Code of Federal Regulations (CFR) Part 54, "Requirements for the Renewal of Operating Licenses for Nuclear Power Plants." For each AMP and TLAA, the inspectors verified that future activities due prior to the period of extended operation (i.e. July 31<sup>st</sup>, 2010) were implemented as described in the Updated Final Safety Analysis Report (UFSAR) supplement submitted pursuant to 10 CFR 54.21(d). For those license renewal action items that were not completed at the time of this inspection, the team verified that there was reasonable assurance that such action items were on track for completion prior to the period of extended operation.

The inspectors reviewed licensee actions that were completed (or scheduled) to meet the commitment items discussed below, which are referenced to Appendix A of the SER. Specific documents reviewed are listed in the report attachment.

###### Item 1 – Quality Assurance Program

Commitment Item 1 specified that the existing Quality Assurance Program will be credited for license renewal. The inspectors reviewed a copy of the current NRC approved Quality Assurance Program and verified that it contained adequate information to meet this license renewal commitment.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 1.

###### Item 2 – 10 CFR 54.37(b) Requirements

Commitment Item 2 specified that upon issuance of the renewed license guidance will be incorporated into the administrative control procedures that manage the Robinson

Nuclear Plant's (RNP's) configuration control process to ensure that the requirements of 10 CFR 54.37(b) are met.

The inspectors reviewed the licensing basis and procedures for configuration control to verify that the licensee implemented the guidance described in the commitment. The inspectors also reviewed three licensee evaluations performed to identify new in-scope SSCs since the renewed operating license was issued. The inspectors interviewed the responsible plant personnel regarding these documents, especially on the methodology used to identify any new SSCs in scope of license renewal. Additionally, the inspectors reviewed scheduled tasks in the licensee Action Request (AR) system to verify that the licensee continuously conduct a review of "newly identified SSCs" concurrent with the FSAR update required by 10 CFR 50.71(e).

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 2.

#### Item 3 – NUREG-1801 GALL Report

Commitment Item 3 specified that prior to the period of extended operation a statement will be incorporated into the UFSAR license renewal supplement to document consistency of RNP's AMPs with programs defined in NUREG-1801, "Generic Aging Lessons Learned (GALL) Report." For RNP's programs that are consistent with NUREG-1801, the program description will be revised to state "This program is consistent with the corresponding program described in the GALL Report."

The inspectors reviewed the current version of the UFSAR to verify that this commitment was implemented in accordance with the license renewal application (LRA) and the corresponding SER. At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation. The inspectors conducted interviews with plant personnel in charge of the UFSAR and reviewed the licensee's AR system to verify that this commitment item was adequately tracked to completion.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 3.

#### Item 4 – ASME Section XI, Subsection IWB, IWC, and IWD Program

Commitment Item 4 specified that the existing American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME BPVC), Section XI Inservice Inspection, Subsections IWB, IWC, and IWD aging management program will be part of the Inservice Inspection (ISI) program. The program provides identification of signs of degradation, and establishment of corrective actions for condition monitoring of reactor coolant pressure retaining piping and components within the scope of license renewal. The inspections will be implemented in accordance with 10 CFR 50.55(a).

The inspectors reviewed the program basis documents, implementing procedures, non-destructive examination (NDE) records, and related AR records; and interviewed the



responsible plant personnel regarding these documents to verify that the program was implemented as stated in the commitment. The inspectors verified that the licensee incorporated the statement "This program is consistent with the corresponding program described in the GALL Report" into the UFSAR, as required with the clarifications described in request for additional information (RAI) B.1-1 (d).

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 4.

#### Item 5 – Water Chemistry Program

Commitment Item 5 specified that the existing Water Chemistry Program will be credited for license renewal. The inspectors reviewed four current procedures implementing the Water Chemistry Program and verified that they contained adequate information to meet this license renewal commitment.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 5.

#### Item 6 – Reactor Head Closure Studs Program

Commitment Item 6 specified that the existing Reactor Head Closure Studs aging management program will provide for condition monitoring and preventive activities to manage stud cracking. The program is implemented through station procedures based on the examination and inspection requirements specified in ASME Section XI, Table IWB-2500-1. While RNP is not committed to Regulatory Guide 1.65, "Materials and Inspection for Reactor Vessel Closure Studs," the preventive measures are consistent with the regulatory guide. The program is consistent with the ten elements of aging management program XI.M3, "Reactor Head Closure Studs" specified in NUREG-1801.

The inspectors reviewed the program basis documents, implementing procedures, NDE records, and related AR records; and interviewed the responsible plant personnel regarding these documents to verify that the program was implemented as stated in the commitment. The inspectors also verified that the licensee incorporated the statement "This program is consistent with the corresponding program described in the GALL Report" into the UFSAR, as required with the clarifications described in RAI B.1-1.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 6.

#### Item 7 – Steam Generator Tube Integrity Program

Commitment Item 7 specified that the existing Steam Generator (SG) Tube Integrity aging management program will be credited for aging management of the steam generator tube bundle, tube plugs, tube support plate and anti-vibration bars in the steam generators at RNP.

The program is implemented through station procedures based on the examination and inspection requirements specified in the SG Tube Integrity Program. The program specifies inspection scope, frequency, and acceptance criteria for the plugging and repair of flawed SG tubes in accordance with plant technical specifications and the guidance of Nuclear Energy Institute (NEI) 97-06, "Steam Generator Program Guidelines." In response to RAI B.2.4-3, RNP will continue to evaluate and implement new guidance provided by future revisions of NEI 97-06. The program is continually updated based on industry experience and self-assessment programs.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, NDE records, and related AR records; and interviewed the responsible plant personnel regarding these documents to verify that the program was implemented as stated in the commitment. The inspectors also verified that the licensee incorporated the statement "This program is consistent with the corresponding program described in the GALL Report" into the UFSAR, as required with the clarifications described in RAI B.1-1 (d).

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 7.

#### Item 8 – Closed-Cycle Cooling Water System Program

Commitment Item 8 specified that the existing Closed-Cycle Cooling Water System will be credited for license renewal and that no changes are required.

The inspectors reviewed the licensing basis, Closed-Cycle Cooling Water System program basis document, implementing procedures, chemistry results, and related AR records; and interviewed the responsible plant personnel regarding these documents to verify that the program was implemented as stated in the commitment.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 8.

#### Item 9 – ASME Section XI, Subsection IWF Program

Commitment Item 9 specified that the existing ASME BPVC, Section XI, Subsection IWF Program will be credited for aging management of Class 1, 2, and 3 component supports (including piping supports) for loss of material due to general corrosion. The existing program is a condition monitoring program that provides for the implementation of ASME Code Section XI, Subsection IWF, in accordance with the provisions of 10 CFR 50.55a.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, and related AR records to verify that the program was implemented as stated in the commitment. The inspectors verified that program documents were administratively updated to reflect their applicability to license renewal commitments. Additionally, the inspectors interviewed the responsible plant personnel regarding these documents and verified that no outstanding tasks remained open for this commitment.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 9.

#### Item 10 – 10 CFR 50, Appendix J Program

Commitment Item 10 specified that the existing 10 CFR 50, Appendix J Program will be credited for license renewal with no planned changes. The existing program detects degradation of the containment pressure boundary through inspections of accessible surfaces of the containment and monitoring of leakage rates through containment liner/welds, penetrations, fittings and access openings. This program directs the performance of Type A, B and C leak rate tests and meets the requirements of Option A of 10 CFR 50, Appendix J, Section III for Type B and C tests and Option B of 10 CFR 50, Appendix J, Section III for Type A tests. This program is implemented in accordance with 10 CFR 50, Appendix J, Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program" and NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," Revision 0.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, and related AR records to verify that the program was implemented as stated in the commitment. The inspectors verified that program documents were administratively updated to reflect their applicability to license renewal commitments. Additionally, the inspectors interviewed the responsible plant personnel regarding these documents, verified that no outstanding tasks remained open for this commitment and reviewed recent local leak rate test (LLRT) results.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 10.

#### Item 11 – Flux Thimble Eddy Current Inspection Program

Commitment Item 11 specified that the existing Flux Thimble Eddy Current Inspection Program will be credited for license renewal with no planned changes. The existing Flux Thimble Eddy Current Inspection Program determines the amount of wear on the flux thimbles and whether the amount of wear expected to occur during the next inspection interval will cause the total amount of wear to exceed the ASME standards specified for the examination. The Flux Thimble Eddy Current Inspection Program was implemented to satisfy NRC Bulletin 88-09 requirements that a thimble tube wear inspection procedure be established and maintained for Westinghouse-supplied reactors that use bottom mounted flux thimble tube instrumentation.

The inspectors reviewed program implementing procedure EST-108, "Flux Thimble Eddy Current Inspection (Specified Refueling Outages)," Revision 8 and verified that it contained adequate information to meet this license renewal commitment. Additionally, the inspectors examined records of the last thimble tube eddy current inspection conducted in September 2005. Based on past positive results, RNP has currently extended the frequency of inspection to every third refueling outage.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 11.

#### Item 12 – Fire Protection Program

Commitment Item 12 specified that prior to the period of extended operation the existing Fire Protection Program will be credited and will be enhanced to note that concrete surface inspections performed under structures monitoring procedures are credited for inspection of fire barrier walls, ceilings, and floors. The required enhancement was originally added to the System Walkdown Procedure, TMM-104. The inspectors found that the enhancement was being moved to the Structural Inspection Procedure, EGR-NGGC-0351. The licensee was tracking this action through Procedure Revision Request (PRR) 353128 and AR item 365673-09.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation. The inspectors reviewed the existing procedures and draft proposed procedures to verify that the program was implemented as stated in the commitment.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 12.

#### Item 13 – Boric Acid Corrosion Program

Commitment Item 13 specified that prior to the period of extended operation the scope of the Boric Acid Corrosion Control Program (BACCP) will be expanded to ensure that the mechanical, structural and electrical components in scope for license renewal are addressed and to identify additional areas in which components are susceptible to exposure from boric acid. The existing BACCP manages the aging effects for susceptible materials of structures and components exposed to the effects of borated water leaks. The program consists of visual inspections of external surfaces potentially exposed to borated water leakage, timely discovery of leak path and removal of boric acid residues, damage assessment, and follow-up inspections for adequacy of corrective actions. This program is implemented in response to NRC Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants."

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, program assessments, and related AR records to verify that the program was implemented as stated in the commitment. The inspectors verified that program documents were administratively updated to reflect their applicability to license renewal commitments, interviewed the responsible plant personnel regarding these documents, and verified that no outstanding tasks remained open for this commitment and that the required procedural updates listed in the commitment were implemented.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 13.

#### Item 14 – Flow-Accelerated Corrosion Program

Commitment Item 14 specified that prior to the period of extended operation the Flow-Accelerated Corrosion (FAC) Program will be modified to: (1) include additional components potentially susceptible to flow-accelerated corrosion and/or erosion, and (2) clarify when condition reports shall be initiated. In its response to RAI B.3.3-2b, the licensee stated that the components to be added to the program as a result of the aging management review (AMR) were the steam nozzles, feedwater nozzles, SG nozzle thermal sleeves, and temperature elements (thermowells). The licensee also stated that the program will be enhanced to inspect for erosion wear in locations deemed to be susceptible by the system engineer. In addition, the licensee stated that the FAC program will be revised to add a section dedicated specifically to valves. An additional requirement will be added to program procedures to require material alloy analysis for potentially susceptible valves. For corrective actions, the FAC Program procedure will be revised to state that a condition report “shall” be initiated in accordance with the Corrective Action Program for through-wall failures, or when actual wall thickness is found to be substantially less than the expected value.

The inspectors reviewed the licensing basis, program basis documents, AR records, and implementing procedures; and interviewed the responsible plant personnel regarding these documents to verify that the program was implemented as stated in the commitment. The inspectors verified that the licensee implemented the program changes in accordance the LRA and the corresponding SER.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 14.

#### Item 15 – Bolting Integrity Program

Commitment Item 15 specified that prior to the period of extended operation the administrative controls of the Bolting Integrity Program will be modified to prohibit the use of molybdenum disulfide compounds in high-strength bolting applications. In addition, the commitment stated that an inspection and evaluation will be performed on high-strength bolting used on CVC-381, reactor coolant pump seal water return isolation valve, to address susceptibility to cracking. The existing Bolting Integrity Program will be credited for license renewal and consists of the preventive and condition monitoring of pressure retaining bolted joints for piping and components for age-related degradation to discover and correct conditions that could lead to a loss of intended function. The existing program activities consist of visual inspections for degradation and leakage that are implemented through various station procedures, preventive maintenance and routine observation activities.

The inspectors reviewed the licensing basis, the Bolting Integrity Program basis documentation, implementing procedures, planned and completed work orders, related corrective action documents, and interviewed responsible program personnel regarding

these documents to verify that the program was implemented as stated in the commitment.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 15.

#### Item 16 – Open Cycle Cooling Water System Program

Commitment Item 16 specified that prior to the period of extended operation the existing Open-Cycle Cooling Water System program will be credited for license renewal and the program will be enhanced by scheduling an activity in the site Preventive Maintenance Program to replace cooling coils in the emergency core cooling system room coolers with a material resistant to erosion/corrosion on a prescribed frequency.

The inspectors reviewed the licensing basis, the Open-Cycle Cooling Water System program basis document, planned and completed work orders, AR records, and inspection procedures to verify that the program was implemented as stated in the commitment.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 16.

#### Item 17 – Inspection of Overhead Heavy Load and Light Load Handling

Commitment Item 17 specified that prior to the period of extended operation the administrative controls for the inspection of overhead heavy load and light load handling will be enhanced to: (1) include requirements for inspecting the turbine gantry crane in addition to other cranes that require inspection, (2) note that cranes are to be inspected using the attribute inspection checklist for structures, and (3) revise the attribute inspection checklist for structures to include GALL terminology such as wear. The existing program manages the effects wear on the rail systems and the effects of general corrosion on the following cranes: the polar crane, the spent fuel cask crane, the spent fuel bridge crane and the turbine gantry crane. The listed cranes are inspected using guidance from NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants" and to satisfy American National Standard Institute (ANSI) B30.2, "Overhead and Gantry Cranes" requirements for inspection attributes such as steel member corrosion, damaged members or connections, and missing parts amongst others.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, previous inspection reports, and related AR records to verify that the program was implemented as stated in the commitment. The inspectors verified that program documents were administratively updated to reflect their applicability to license renewal commitments. Additionally, the inspectors interviewed the responsible plant personnel regarding this program, verified that the above listed license renewal cranes

were properly scoped to comply with the maintenance rule requirements provided in 10 CFR 50.65, verified that the inspection frequencies were properly translated into procedures and that the required procedural updates were implemented.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 17.

#### Item 18 – Fire Water System Program

Commitment Item 18 specified that the existing Fire Water System Program will be credited and will be enhanced for license renewal. The Fire Protection Sprinkler Systems will be modified to include the following: (1) for sprinkler heads in service for 50 years either sprinkler head replacement or sampling field service testing of heads in accordance with National Fire Protection requirements and, (2) prior to the period of extended operation, either full flow testing of portions of fire protection wet pipe sprinkler systems through the system cross mains, which are not routinely subject to flow, at the greatest flow and pressure allowed by the design of the systems or alternatively inspections or ultrasonic (UT) testing of a representative sample of these systems. Results from initial tests or inspections, reflecting 40 years of service, will be used to determine the scope and subsequent test/inspection intervals. The intervals are not expected to exceed 10 years.

Commitment Item 18 also specified that prior to the period of extended operation UT inspections will be performed on a representative sampling of the above ground fire protection piping (Fire Protection Suppression Piping) normally containing water. Each sampling will include different sections of piping. Alternatively, internal inspections may be conducted on a representative sampling of these piping systems. Results from initial tests or inspections, reflecting 40 years of service, will be used to determine the scope and subsequent test/inspection intervals. The intervals are not expected to exceed 10 years.

Furthermore, Commitment Item 18 specified that for Halon/Carbon Dioxide Fire Suppression Systems, the NRC staff guidance with respect to Halon/Carbon Dioxide fire suppression systems will be implemented prior to the period of extended operation. The guidance is documented in a letter from C. Grimes (NRC) to A. Nelson (NEI) and D. Lochbaum (Union of Concerned Scientists): Proposed Staff Guidance on Management of Fire Protection Systems for License Renewal, dated January 28, 2002.

The inspectors found that the licensee has performed various inspections and additional inspections are scheduled to be completed prior to the period of extended operation. Among the completed inspections, Work Order (WO) 1120123 previously cut into the main piping to the component cooling water (CCW) sprinkler system to allow a new branch line to be installed. Licensee engineering staff performed an internal inspection of the removed piping and the condition was documented as satisfactory. In addition, an internal inspection of the Fuel Handling Building piping has already been completed under WO 706919-02.

The inspectors also noted that the following inspection activities were scheduled to meet this commitment: (a) Work Order 1549734 will replace the sprinkler heads in the CCW Pump Room which are the oldest set of inservice sprinkler heads. Other WOs have

been prepared to replace newer sprinkler heads as they approach the 50 year age, (b) WO 1519261 will perform an UT thickness examination on various piping segments based on the inservice date of the affected systems. The UT inspections of the above ground segments of Fire Water piping include a sampling at five locations within the power block, (c) WO 1605254 will perform UT inspections on a section of the Auxiliary Building supply piping and hose station supply piping near hose station FH-78 on pipe line 2-FP-18, and (d) Turbine Building piping and Auxiliary Building/CV piping will be inspected under the Transformer Replacement Project during refueling outage (RO)-26. The transformer deluge piping represents original plant piping and will be inspected and replaced. Periodic inspections will be established under Preventive Maintenance Requests (PMRs) 348790 and 348792.

The proposed Staff guidance of January 28, 2002 gave the Staff's position that a valve lineup inspection, charging pressure inspection, and automatic mode of operation verification are operational activities and are not aging management related. NUREG-1801, GALL Report, was revised by the NRC in September of 2005 to remove the Halon/Carbon Dioxide system inspections for charging pressure, valve lineups, and automatic mode of operation. The inspectors found that RNP's practices conform to that guidance.

The licensee has numerous fire water piping inspections to be completed prior to the period of extended operation. These items appeared to be identified and scheduled to be accomplished in the remaining time period before the start of the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 18.

#### Item 19 – Buried Piping and Tanks Surveillance Program

Commitment Item 19 specified that prior to the period of extended operation a review will be conducted to determine the need to update administrative controls for the Buried Piping and Surveillance program to ensure consistency with National Association of Corrosion Engineers (NACE) Standard RP-0169-96. In particular, the cathodic protection program and additional leak testing measures for underground piping are to be evaluated.

The inspectors reviewed the licensing basis, implementing procedures, related work orders, contractor surveys, associated engineering change package, and related ARs; and interviewed the responsible plant personnel regarding these documents. The inspectors verified that the licensee's cathodic protection program incorporated the requirements of NACE Standard SP-0169-2007. The inspectors also verified the licensee had conducted an adequate evaluation to ensure consistency between RP-0169-96, and the most recently published version, SP-0169-2007.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.



Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 19.

#### Item 20 – Above Ground Carbon Steel Tanks Program

Commitment Item 20 specified that the existing Above-Ground Carbon Steel Tanks program will be credited for license renewal with enhancements. Prior to the period of extended operation administrative controls for the Above Ground Carbon Steel Tanks Program will be revised to indicate that the external surfaces of the fuel oil tanks are to be inspected periodically and to incorporate corrective action requirements.

The inspectors reviewed the licensing basis, the Above-Ground Carbon Steel Tanks program basis documentation, implementing procedures, scheduled and completed work orders, related ARs, engineering changes, and evaluations to verify that the program was implemented as stated in the commitment. The inspectors also conducted a plant walkdown to observe the present condition of the above ground tanks. The inspectors identified a discrepancy associated with the operating procedure for the Alternate Fuel Oil Storage Tank. This issue is discussed in details in the Findings and Observation section of this inspection report.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, the administrative controls in place to track pending actions, and the corrective actions initiated for the inspectors' observations, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 20.

#### Item 21 – Fuel Oil Chemistry Program

Commitment Item 21 specified that prior to the period of extended operation the administrative controls for the fuel oil chemistry program will be enhanced to improve sampling and de-watering of selected storage tanks, formalize existing practices for periodically draining and filling the diesel fuel oil storage tank (FOST), formalize bacteria testing for fuel oil samples from various tanks, and incorporate quarterly trending of fuel oil chemistry parameters.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, and related AR records; and interviewed the responsible plant personnel regarding these documents. The inspectors verified that the licensee appropriately modified their procedures to improve the sampling and de-watering of identified fuel oil storage tanks in their monthly surveillance procedure; formalized existing practices for draining and filling the diesel FOST at an interval not to exceed 10 years; initiated actions to formalize bacteria testing; and ensured fuel oil chemistry will be trended quarterly by the appropriate system engineer.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 21.

#### Item 22 – Reactor Vessel Surveillance Program

Commitment Item 22 specified that prior to the period of extended operation the administrative controls for the Reactor Vessel Surveillance Program will be revised to require surveillance test samples to be stored in lieu of optional disposal. The Reactor Vessel Surveillance Program administrative controls are implemented through Section 5.3.1.6 of the UFSAR, “Material Surveillance.”

The inspectors reviewed the licensing basis, program basis documents, AR records, and implementing procedures; and interviewed the responsible plant personnel regarding these documents. The inspectors verified that the licensee implemented the commitment in the applicable section of the UFSAR in accordance the LRA and the corresponding SER.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 22.

#### Item 23 – Buried Piping and Tanks Inspection Program

Commitment Item 23 specified that prior to the period of extended operation the Buried Piping and Tanks Inspection program will be enhanced to: (1) require that an appropriate as-found pipe coating and material condition inspection is performed whenever buried piping within the scope of this program is exposed, (2) add precautions to ensure backfill with material that is free of gravel or other sharp or hard material that can damage the coating, (3) require that the coating inspection be performed by qualified personnel to assess its condition, and (4) require that a coating engineer assist in evaluation of any coating degradation noted during the inspection.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures; and interviewed the responsible plant personnel regarding these documents. The inspectors verified that the licensee modified their excavation and backfill procedure (MNT-NGGC-0024) to inspect buried piping as the piping is exposed, ensured that backfill material selection does not include gravel or other hard material, verified qualified personnel perform coating inspections, and that a coating engineer will assist in evaluating coating degradation.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 23.

Item 24 – ASME Section XI, Subsection IWE Program

Commitment Item 24 specified that prior to the period of extended operation the administrative controls for the ASME BPVC, Section XI, Subsection IWE Program will be enhanced to specify the requirements for conducting reexaminations and to document that repairs meet the specified acceptance standards. The existing program conducts periodic visual, surface and volumetric inspections of the steel containment components to detect signs of degradation, assess any damage and correct deficiencies. The program provides for the implementation of ASME Code Section XI, Subsection IWE, in accordance with the provisions of 10 CFR 50.55a. Containment pressure retaining seals and gaskets were excluded from this program based upon a relief request granted by the NRC. This request states that VT-3 examinations of seals and gaskets required by Table IWE-2500-1, Category E-D, Items E5.10 and E5.20 are not required to be performed. Instead, 10 CFR 50, Appendix J, Type B testing is used for the seals and gaskets. The licensee also identified One-time Inspection Programs for completing the inspection of inaccessible portions of the containment liner and the moisture barrier inside the containment at the liner plate/floor concrete interface.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, and related AR records to verify that the program was implemented as stated in the commitment. The inspectors verified that program documents were administratively updated to reflect their applicability to license renewal commitments. The inspectors reviewed a sample of engineering evaluations for the metal containment liner thickness and ensured that any areas of less than the minimum required thickness were properly dispositioned and repaired, if necessary. Additionally, the inspectors interviewed the responsible plant personnel regarding this program and verified that no outstanding tasks remained open for this commitment.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 24.

Item 25 – ASME Section XI, Subsection IWL Program

Commitment Item 25 specified that the ASME BPVC, Section XI, Subsection IWL Program will be enhanced to: (1) require supervisors to notify civil/structural design engineering of the location and extent of proposed excavations of foundation concrete, (2) require inspection of below-grade concrete when excavated for any reason to monitor for potential effects, and (3) inspect above-grade accessible concrete and include trending requirements for structures based on aggressive ground water. The existing program is a condition monitoring program that provides for the implementation of the ASME Code Section XI, Subsection IWL, in accordance with the provisions of 10 CFR 50.55a with the exception that the grouted tendon system used in the RNP's containment is outside the scope of Subsection IWL.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, and related AR records to verify that the program was implemented as stated in the commitment. The inspectors verified that program documents were administratively updated to reflect their applicability to license renewal commitments, interviewed the responsible plant personnel regarding this program and verified that the required procedural updates listed in the commitment were implemented.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 25.

#### Item 26 – Structures Monitoring Program

Commitment Item 26 specified that prior to the period of extended operation the administrative controls for the Structures Monitoring Program will be enhanced to: (1) include buildings, structures and their associated acceptance criteria, in scope for license renewal but outside the scope of Maintenance Rule, (2) identify interfaces between structures monitoring inspections of concrete surfaces and the Fire Protection Program requirements for barriers, (3) state clearly the boundary definition between systems and structures, (4) revise administrative controls to provide inspection criteria for portions of systems covered by structures monitoring and require a condition report be initiated for all inspection attributes found to be unacceptable, (5) expand system walkdown inspection criteria to include observation of adjacent components, (6) inspect above-grade accessible concrete, (7) revise personnel responsibilities to include: (a) providing assistance in evaluating structural deficiencies when requested by the Responsible Engineer, (b) inspecting excavated concrete, and (c) notifying civil/structural design engineering of the location and extent of proposed excavations, and (8) to include trending requirements for structures based on aggressive ground water and lake water. The existing program consists of periodic inspection and monitoring of the condition of structures and structure component supports to ensure that aging degradation leading to the loss of intended functions will be detected and that the extent of degradation will be determined. The inspection criteria are based on American Concrete Institute (ACI) 349.3R-96, American Society of Civil Engineers (ASCE) 11-90, Institute of Nuclear Power Operations (INPO) Good Practice Document 85-033, NEI 96-03 and Nuclear Management and Resources Council (NUMARC) 93-01.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, and related AR records. The inspectors verified that program documents were administratively updated to reflect their applicability to license renewal commitments, interviewed the responsible plant personnel regarding this program and verified that the required procedural updates listed in the commitment were implemented. Additionally, the inspectors accompanied plant personnel during a structures monitoring walkdown of sections of the auxiliary feedwater (AFW) system.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 26.

#### Item 27 – Dam Inspection Program

Commitment Item 27 specified that prior to the period of extended operation the administrative controls for the Dam Inspection Program system monitoring will be

enhanced to: (1) identify the “Recommended Guidelines for Safety Inspection of Dams” as the required management program document for the dam, (2) require the responsible system engineer to review the inspection report and initiate corrective actions for any unacceptable attributes, (3) include “Recommended Guidelines for Safety Inspections of Dams” as the applicable inspection guidance in the inspection procedure for RNP, (4) inspect above-grade accessible concrete, (5) inspect submerged spillway concrete on a frequency not to exceed ten years, and (6) include trending requirements for structures based on aggressive ground and lake water. The existing Dam Inspection Program manages aging effects for the Lake Robinson Dam and its associated concrete and steel structures. This program is currently implemented by an independent inspection using the Federal Energy Regulatory Commission (FERC)/U.S. Army Corps of Engineers “Recommended Guidelines for Safety Inspection of Dams.”

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, prior inspection results, and related AR records. The inspectors verified that program documents were administratively updated to reflect their applicability to license renewal commitments, interviewed the responsible plant personnel regarding this program and verified that the required procedural updates listed in the commitment were implemented.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 27.

#### Item 28 – Systems Monitoring Program

Commitment Item 28 specified that prior to the period of extended operation the administrative controls of the existing Systems Monitoring Program will be enhanced to: (1) include aging effects identified in the AMRs, (2) identify inspection criteria in checklist form, (3) include guidance for inspecting connected piping/components, (4) require that the extent of degradation be recorded and that appropriate corrective action(s) be taken, (5) add a section specifically addressing corrective actions, and (6) ensure “Loss of Material due to Wear” is specifically included as an aging effect/mechanism identified in the system walkdown checklist. The first five items were included in the LRA while the sixth item was a commitment included in the licensee’s response to RAI B.3.17-1.

The inspectors reviewed the licensing basis, current program procedures, reviewed a sample of documented results of system walkdowns, and discussed the program with licensee representatives to verify that the program was implemented as stated in the commitment. The inspectors identified three examples where the licensee did not fully implement certain attributes of the commitment. These issues are discussed in the Findings and Observations section of this inspection report.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and corrective actions generated for the observations identified by the team, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 28.

### Item 29 – Preventive Maintenance Program

Commitment Item 29 specified that prior to the period of extended operation the existing Preventive Maintenance (PM) Program will be enhanced to: (1) include aging effects/mechanisms identified in the AMRs, and (2) incorporate specific aging management activities identified in the AMRs into the program.

The inspectors reviewed the licensing basis and implementing procedures to verify that the program was implemented as stated in the commitment. The inspectors verified that the program procedures contained adequate information to meet this commitment item.

In 2008 the licensee performed a self assessment of license renewal implementation and concluded that the preventive maintenance program needed enhancement. Corrective action document NCR 365671 was initiated to document that PM and model work orders were not specific enough for the aging mechanism to be inspected. Action tasks have been identified to enhance various PMs and all have due dates in July 2010 before the period of extended operation. The inspectors counted 22 open work items to be completed for enhancement of procedures and PM activities.

The inspectors noted that the licensee has numerous procedure revisions pending completion to implement enhancements related to this license renewal commitment. These items appeared to be identified and scheduled to be accomplished in the remaining time period before the start of the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 29.

### Item 30 – Metal Fatigue of Reactor Coolant Pressure Boundary (Fatigue Monitoring Program) and Item 43 – TLAA: Metal Fatigue

Commitment Items 30 and 43 specified that prior to the period of extended operation the Fatigue Monitoring Program (FMP) load/unload transient limit will be reduced to provide the margin needed for consideration of reactor water environmental effects. In its response to RAI B.3.19-3, the licensee stated that the FMP will account for environmental effects prior to the period of extended operation. As stated in section 3.0.3.1 of the SER, environmental fatigue calculations were performed for the seven locations specified in NUREG/CR-6260 and for the seven locations inside the pressurizer using the  $F_{en}$  methodology contained in NUREG/CR-6583 for carbon/low-alloy steel material and in NUREG/CR-5704 for stainless steel material. The number of load/unload cycles used as an input to one of the environmental fatigue calculations was reduced from 29,000 to 19,000, and the licensee planned to reduce the FMP limit for load/unload cycles accordingly, thereby incorporating the environmental fatigue calculations into the FMP.

Commitment Item 43 also specified that based upon the most recent fatigue analysis performed for the three AFW-to-feedwater (FW) line connections downstream of the steam-driven pump, transient limits have been reduced in the RNP's FMP. These reduced limits are based upon inputs used in the analysis and are more conservative

than the original limits. The reduced limits will remain in effect until the connections are further analyzed, repaired, or replaced to assure the connections remain within their design basis through the period of extended operation.

Section 4.3.2.3 of the SER, "Environmentally Assisted Fatigue Evaluation" and Commitment Item 43 also states that the pressurizer surge line components for which the environmentally assisted fatigue (EAF)-adjusted cumulative usage factor (CUF) would exceed 1.0 during the period of extended operation will be managed using one or more of the following options: (1) further refinement of the fatigue analyses to maintain the EAF-adjusted CUF below 1.0, (2) repair of the affected locations, (3) replacement of the affected locations, or (4) management of the effects of fatigue through the use of an augmented ISI program that has been reviewed and approved by the NRC.

The inspectors reviewed the licensing basis, program basis documents, AR records, implementing procedures and environmental fatigue evaluations for the pressurizer; and interviewed the responsible plant personnel regarding these documents. The inspectors verified that the licensee implemented the load/unload transient limits in the implementing procedures; including the transient limits for the AFW-to-FW line connections, in accordance the LRA and the corresponding SER. In addition, the inspectors verified which option the licensee selected to manage environmentally assisted fatigue in the pressurizer surge line. The inspectors noted that the licensee opted for further refinement of the pressurizer surge line fatigue analysis to maintain the EAF-adjusted CUF below 1.0.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Items 30 and 43.

#### Item 31 – Nickel-Alloy Nozzles and Penetrations Program

Commitment Item 31 specified that the Nickel-Alloy Nozzles and Penetrations Program is a new program that will incorporate the following: (1) evaluations of indications will be performed under the ASME BPVC, Section XI program, (2) corrective actions for augmented inspections will be performed in accordance with repair and replacement procedures equivalent to those requirements in ASME BPVC, Section XI, (3) RNP will maintain its involvement in industry initiatives and will systematically assess for implementation applicable programmatic enhancements, that are agreed upon between the NRC and the nuclear power industry to monitor for, detect, evaluate, and correct cracking in the vessel head penetration (VHP) nozzles, specifically as the actions relate to ensuring the integrity of VHP nozzles in the RNP upper reactor vessel head during the extended period of operation, and (4) RNP will submit, for review and approval, its inspection plan for the Nickel-Alloy Nozzles and Penetrations Program, as it will be implemented from the licensee's participation in industry initiatives, prior to July 31, 2009.

The inspectors reviewed the licensing basis, program basis documents, AR records, implementing procedures; and interviewed the responsible plant personnel regarding these documents. The inspectors verified that the licensee implemented the commitment items related to the evaluation of indications, the corrective actions for augmented inspections, and continuous involvement in industry initiatives into the implementing procedures. In addition, the inspectors verified that the licensee submitted

the inspection plan for NRC review and approval in accordance with the LRA and the corresponding SER. The inspectors identified a discrepancy in the aforementioned inspection plan with regard the schedule of non-visual examinations for the VHP nozzles. The inspectors also noted a discrepancy with regard the referenced regulatory requirements for the inspection of upper VHP nozzles. Both issues are discussed in details in the Findings and Observations section of this inspection report.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and corrective actions initiated to address the inspectors' observations, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 31.

#### Item 32 – Thermal Aging Embrittlement and Cast Austenitic Stainless Steel Program

Commitment Item 32 specified that prior to the period of extended operation the licensee will implement the Thermal Aging Embrittlement and Cast Austenitic Stainless Steel (CASS) Program, which is applied to CASS components within Class 1 boundaries of the reactor coolant system (RCS) and connected systems where operating temperature exceeds the threshold criterion. This program will be credited for managing loss of fracture toughness due to thermal embrittlement of the CASS materials. Specifically, the program covers primary coolant loop piping, valves, and pump casings. This program is implemented through the examination requirements in Table IWB-2500-1 of the ASME BPVC, Section XI.

The inspectors reviewed the licensing basis, program basis documents, AR records, implementing procedures; and interviewed the responsible plant personnel regarding these documents. The inspectors verified that the licensee implemented the examination requirements of Table IWB-2500-1 in the implementing procedures, including the ISI Inspection Plan for the current Interval in accordance the LRA and the corresponding SER. The inspectors found a discrepancy in the implementing procedures for this commitment with regard the description of components within the scope of the program. This issue is discussed in details in the Findings and Observations section of this inspection report.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the corrective actions initiated for the inspectors' observations, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 32.

#### Item 33 – Pressurized Water Reactor Vessel Internals Program

Commitment Item 33 specified that the Pressurized Water Reactor Vessel Internals Program (PWR VIP) will be instituted as a new program which will require the licensee



to: (1) continue participation in industry programs to investigate aging effects and determine the appropriate AMP activities to address baffle and former assembly issues, and to address change in dimensions due to void swelling; (2) as appropriate, evaluate and implement the results of Westinghouse Owners Group (WOG) and Electric Power Research Institute/Materials Reliability Program (EPRI/MRP) research projects as they are completed; and (3) implement an augmented inspection during the license renewal term. Augmented inspections, based on required program enhancements resulting from industry programs, will become part of the ASME Code, Section XI program. Corrective actions for augmented inspections will be developed using repair and replacement procedures equivalent to those requirements in ASME Code, Section XI. The licensee will submit, for review and approval, its inspection plan for the PWR VIP, as it will be implemented from the licensee's participation in industry initiatives, 24 months prior to the augmented inspection.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, and related AR records; and interviewed the responsible plant personnel regarding these documents to verify that the program was implemented as stated in the commitment. Specifically, the inspectors reviewed ADM-NGGC-0012, "Reactor Coolant System Material Integrity Management Program," Revision 2 and verified the commitment to continue participation in industry programs, as well as the commitment to implement appropriate results of WOG and EPRI/MRP research projects. The inspectors also reviewed documentation and interviewed responsible personnel to evaluate the licensee's plans to implement an augmented inspection program as part of the ASME Section XI program, including the requirement to conduct repair and replacement activities in accordance with Section XI repair/replacement activities. The inspectors also verified the PWR VIP inspection plan, based on documents MRP-227 and MRP-228, was submitted to the NRC 24 months prior to this inspection.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 33.

#### Item 34 – One-Time Inspection Program

Commitment 34 specified that prior to the period of extended operation the One Time Inspection Program AMP will require one-time inspections of selected plant equipment to be performed to verify that current plant AMPs are effective in managing the effects of aging prior to the period of extended operation. The One-Time inspection program provides for examinations of representative materials in environments that are not expected to experience aging effects. The licensee established separate one-time inspection programs covering the following specific SSCs listed in the SER for this commitment.

- (a) CCW heat exchanger tubing – Inspection of CCW heat exchanger tubing will be performed to assure that potential degradation due to erosion is managed. During RO-25, the B CCW heat exchanger was re-tubed. A population of the

existing tubes were pulled and measured to obtain the as-found condition of the tube wall. From this inspection, the licensee determined that the remaining CCW heat exchanger "A" will be re-tubed in RO-26. In addition preventative maintenance activities have been established to perform eddy current testing for both heat exchangers on a maximum of 6 year frequency.

- (b) Steam and Power Conversion Systems – Representative locations in miscellaneous piping in steam and power conversion systems protected by the Water Chemistry Program will be inspected. The licensee performed 21 inspections of steam and power conversion systems in 2004 during RO-22. An additional 13 inspections are scheduled for RO-26. The inspection locations were selected based on material and environments that would represent leading indicators of aged related degradation.
- (c) Small Bore RCS piping – The small bore RCS and connected piping will be inspected to verify the effectiveness of the water chemistry system. The licensee selected the components based on accessibility exposure levels, nondestructive examination techniques, and locations identified in NRC Information Notice 97-46, "Unisolable Crack in High-Pressure Injection Piping." A total of 131 welds are within the inspection scope. Seven welds were ultrasonically examined during RO-25 and an additional 20 examinations are planned for RO-26 in 2010.
- (d) Emergency Diesel Generator (EDG) Exhaust Silencers – EDG exhaust silencers were inspected and cleaned in 2006. The results of the inspection were satisfactory. In lieu of performing periodic inspections, the licensee established a plan for preventive maintenance and replacement of the silencers in RO-26.
- (e) Inaccessible Areas of Containment Liner Plate and Moisture Barrier – Inaccessible areas of the containment liner plate and moisture barrier were inspected during RO-22. Although only a portion of the moisture barrier was degraded, the moisture barrier was removed and replaced. Inspection of the moisture barrier is routinely examined as part of the Section XI IWE Program.
- (f) Diesel Fire Pump Fuel Oil Tank – Internal inspections and ultrasonic examinations were satisfactorily completed in November of 2006.
- (g) Steam generator feed ring/J-nozzles – The steam generator feed water ring and J nozzles were satisfactorily examined as follows: SG-A in September 1999, SG-B in 2007, and SG-C in October 2002. The SG feed water rings and J nozzles are routinely examined as part of the SG Tube Integrity Program.

The inspectors reviewed the program basis document, implementing procedures, inspection results, and related AR records; and interviewed the responsible plant personnel regarding these documents to verify that the program was implemented as stated in the commitment. The inspectors verified that the licensee had documented the results of the one-time inspections and had followed up appropriately when aging effects were identified.

The inspectors determined that the licensee had performed a substantial portion of the inspections, and the remaining inspections, required by this commitment, were scheduled to be completed prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 34.

#### Item 35 – Selective Leaching of Materials Program

Commitment Item 35 specified that prior to the period of extended operation the Selective Leaching of Materials Program will be a new program to determine the properties of selected components that may be susceptible to selective leaching. The program will ascertain whether loss of material is occurring and whether the process will affect the ability of the components to perform their intended function for the period of extended operation.

The inspectors found that this program was being implemented by conducting one-time visual inspections of a sample of materials susceptible to selective leaching of materials prior to the period of extended operation. The scope of the visual inspections included susceptible components that are exposed to chemically treated water, demineralized water, raw water, ground water, and moist ventilation and gas environments. The inspectors observed the licensee perform an inspection of the interior of a fire water control valve FR 412 for selective leaching. The inspection was performed adequately and no indication of selective leaching was observed.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 35.

#### Item 36 – Non-Environmentally Qualified Insulated Cables and Connections Program

Commitment Item 36 specified that the Non-Environmentally Qualified (Non-EQ) Insulated Cables and Connections Program will be a new program and involves inspecting accessible power and instrument and control cables at least once every 10 years. This Commitment Item also states that prior to the period of extended operation the licensee will define the technical basis for selecting a sample of cables to be inspected. The sample locations consider cables inside and outside containment, as well as any known adverse localized environments. The licensee defined an “adverse localized environment” as a condition in a limited plant area that is significantly more severe than the specified service condition for the electrical cable or connection. The Non-EQ Insulated Cables and Connections Program will be credited for aging management of cables and connections that are not included in the RNP’s EQ Program. The Non-EQ insulated cables and connections managed by this program include those used for power, instrumentation, control, and communication, including cables sensitive to reduction in insulation resistance such as radiation monitoring and nuclear instrumentation. The program involves periodic visual inspections of accessible cables and connections installed in adverse localized environments to detect embrittlement,

cracking, melting, discoloration, or swelling that could lead to reduced insulation resistance or electrical failure.

The inspectors reviewed the licensing basis, the program basis document for the Non-EQ Insulated Cables and Connections AMP, implementing procedures and records of walkdowns for determining adverse localized environments, and visual inspections for cables to verify that the program was implemented as stated in the commitment. The inspectors also reviewed corrective action documents, which addressed and identified cable issues and their corresponding corrective actions.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 36.

#### Item 37 – Aging Management Program for Non-EQ Electrical Cables Used in Instrumentation Circuits

Commitment Item 37 specified that prior to the period of extended operation the AMP for Non-EQ Electrical Cables Used in Instrumentation Circuits will be a new program to manage aging of cables used in the containment vessel high-range radiation monitoring instrumentation circuits at least once every 10 years. In this aging management program, calibration results or findings of surveillance testing programs are used to identify the potential existence of aging degradation. Exposure of electrical cables to adverse localized environments caused by heat, radiation, or moisture can result in reduced insulation resistance.

The inspectors reviewed the licensing basis, the program basis document for the Non-EQ Electrical Cables Used in Instrumentation Circuits AMP, implementing procedures, planned and completed work orders, and related AR records to verify that the program was implemented as stated in the commitment. The inspectors verified that all the above programmatic activities were satisfactory implemented.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 37.

#### Item 38 – Aging Management Program for Neutron Flux Instrumentation Circuits

Commitment Item 38 specified that prior to the period of extended operation the AMP for Neutron Flux Instrumentation Circuits will be a new program that will employ insulation resistance or other testing to identify the potential existence of aging degradation of cables in neutron monitoring circuits at least once every 10 years. This program applies to the cables used for the Source Range, Intermediate Range, Power Range, and Gamma-Metrics circuits of the Excore Nuclear Instrumentation System. In this aging management program, an appropriate test, such as insulation resistance tests, time

domain reflectometry tests, or I/V (current/voltage) testing will be used to identify the potential existence of a reduction in cable insulation resistance.

The inspectors reviewed the licensing basis, the program basis document for Neutron Flux Instrumentation Circuits AMP, implementing procedures, planned and completed work orders, and related AR records to verify that the program was implemented as stated in the commitment.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 38.

#### Item 39 – Aging Management Program for Fuse Holders

Commitment Item 39 specified that prior to the period of extended operation the AMP for Fuse Holders will be a new program that focuses on the metallic clamp (or clip) portion of the fuse holder at least once every 10 years. The parameters monitored include thermal fatigue in the form of high resistance caused by ohmic heating, thermal cycling or electrical transients, mechanical fatigue caused by frequent manipulation of the fuse itself or vibration, chemical contamination, corrosion, and oxidation. The program utilizes thermography or other appropriate testing to identify the potential existence of aging degradation such as high contact resistance. The program applies to fuse holders located outside of active devices. Fuse holders inside an active component, such as switchgear, power supplies, inverters, battery chargers, control panels, and circuit boards, are considered to be parts of the larger assembly. Since piece parts and subcomponents in such an enclosure are inspected regularly and maintained as part of the plant's normal maintenance and surveillance activities, they are not within the scope of this program.

The inspectors reviewed the licensing basis, the program basis document, implementing procedures, planned and completed work orders, and related AR records to verify that the program was implemented as stated in the commitment.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 39.

#### Item 40 – Aging Management Program for Bus Duct

Commitment Item 40 specified that prior to the period of extended operation the AMP for Bus Ducts will be a new program that focuses on periodically inspecting the iso-phase bus duct, as well as all non-segregated 4.16 KV and 480 V bus ducts at least once every 10 years. The program will check a sampling of bolted connections of bus ducts. The sample of accessible bolted connections will be checked for loose connections by using thermography or by measuring connection resistance using a low-range ohmmeter. Visual inspections of the bus ducts for signs of cracks, corrosion, foreign debris, excessive dust buildup, evidence of water intrusion or discoloration, which may indicate overheating, will also be performed to identify the potential existence of aging degradation. Industry experience has shown that the bus ducts exposed to appreciable ohmic or ambient heating during operation may experience loosening of bolted

connections related to repeat cycling of connected loads or the ambient temperature environment.

The inspectors reviewed the licensing basis, the program basis document, implementing procedures, planned and completed work orders, and related AR records to verify that the program was implemented as stated in the commitment.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Item 40.

#### Item 41 – Environmental Qualification of Electric Equipment Program

Commitment Item 41 specified that the existing Environmental Qualification of Electric Equipment Program will be credited and prior to the period of extended operation, the EQ Documentation Packages (EQDP) will be revised to incorporate increased radiation values resulting from power uprate. EQ program activities establish, demonstrate and document the level of qualification, qualified configuration, maintenance, surveillance and replacement requirements necessary to meet 10 CFR 50.49.

The inspectors reviewed the licensing basis document, current program procedures and a sample of various existing EQDPs to verify that the program was implemented as stated in the commitment. The inspectors observed that all of the EQDPs reviewed had been adequately updated to reflect power uprate and the period of extended operation.

Based on the review of the timeliness and adequacy of the licensee's actions and assessment for the program, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 41.

#### Item 42 – TLAA: Reactor Vessel Neutron Embrittlement

Commitment Item 42 specified that the TLAA for Reactor Vessel Neutron Embrittlement is an existing analysis that will be credited for the period of extended operation. As part of the LRA review process, the NRC staff reviewed TLAA's for (1) upper-shelf energy, (2) pressurized thermal shock, and (3) heatup and cooldown (pressure-temperature limits) curves and low temperature over pressure (LTOP) setpoints to ensure that the reactor vessel has adequate fracture toughness to prevent brittle failure during normal and off-normal operating conditions. The NRR staff also reviewed these TLAA's to determine if the licensee had demonstrated that the TLAA's for parameters related to structural integrity had been adequately projected to the end of the period of extended operation for RNP, as required by 10 CFR 54.21(c)(1)(ii). As stated in the SER, the NRC staff concluded that the licensee provided an acceptable demonstration, pursuant to 10 CFR 54.21(c)(1)(ii), that, for the RV neutron embrittlement TLAA, the analyses have been projected to the end of the period of extended operation.

The inspectors reviewed the licensing basis documents, portions of the TLAA's, and interviewed the responsible plant personnel regarding these documents to verify that the analysis was consistent with the LRA and the corresponding SER.

Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 42.

#### Item 43 – TLAA: Metal Fatigue

See discussion for Commitment Item 30 above.

#### Item 44 – TLAA: Environmental Qualification

Commitment Item 44 specified that in accordance with the requirements of the Environmental Qualification Program, any component that is not qualified through the period of extended operation will be refurbished or replaced prior to exceeding its qualified life. Prior to the period of extended operation, certain motor-operated valve (MOV) actuators will either be reevaluated to demonstrate acceptable wear cycle qualifications or they will be replaced.

The inspectors reviewed the current procedure EST-012, "Engineering Periodic Verification of EQ Component Replacements with Qualified Life Less than 60 years," Revision 4. The inspectors reviewed a sample of EQDPs for components within the scope of 10 CFR 50.49. The inspectors verified that these EQDPs were updated to include environmental conditions associated with extended power uprate implementation along with an extended operating period of 60 years. The inspectors also verified that where EQDPs concluded that a qualified life of 60 years could not be achieved; PMs had been created to replace components before end of the qualified life.

The inspectors reviewed Engineering Change (EC) 72274, "Reevaluate EQ Limitorque MOV Number of Strokes/Cycles for 60 Years Plant Life," Revision 0. That EC documented the basis for concluding that installed MOVs would be capable of continued service for the 60 years plant life.

Based on the review of the timeliness and adequacy of the licensee's actions and assessment for the program, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 44.

#### Item 45 and 46 – TLAA: Containment Tendon Loss of Prestress

Commitment Items 45 and 46 specified that testing (at integrated leak rate test pressure) similar to the Structural Integrity Test performed in 1992 will be scheduled to coincide with the Appendix J containment integrated leak rate testing (ILRT) conducted during the period of extended operation. The monitoring criteria for these tests will be limited to deformations and cracking associated with the vertical prestressed tendons, and will not include radial monitoring. Guidelines for performing the IWL examinations for these tests will include additional emphasis on looking for a pattern of horizontal cracks and additional cracking in the discontinuity areas. Additionally, information from the licensee's response to RAI 4.5-1 will be incorporated into Section 3.8.1.4.7 of their UFSAR.

The inspectors reviewed the licensing basis, program basis documents, design calculations, and related AR records to verify that the commitment was implemented as stated in the SER. The inspectors found that the licensee scheduled the development of implementing procedures for this program to occur 18 months prior to the first scheduled Appendix J containment ILRT. The inspectors verified that the Appendix J program documents were administratively updated to reflect their applicability to license renewal commitments and interviewed the responsible plant personnel regarding this program.

At the time of this inspection, this commitment item was partially completed and additional tasks were pending to be implemented prior to the period of extended operation.

Based on the review of licensee actions completed at the time of this inspection, the timeliness of those actions, and the administrative controls in place to track pending actions, the inspectors determined that there was reasonable assurance that the licensee would complete the necessary actions to meet Commitment Items 45 and 46.

#### Item 47 – TLAA: Aging of Boraflex in Spent Fuel Pool

Commitment Item 47 specified that prior to the period of extended operation the Boraflex Monitoring Program will be modified to: (1) include neutron attenuation testing, called blackness testing, to determine gap formation in Boraflex panels; (2) include trending the results for silica levels by using the EPRI RACKLIFE predictive code or equivalent, and (3) include measurements of boron areal density by techniques such as the BADGER device. Additionally, the commitment states that RNP requested, by letter dated May 28, 2003, Serial: RNP-RA/03-0038, an amendment to the Technical Specifications to eliminate the need to credit Boraflex neutron absorbing material for reactivity control. The Boraflex Monitoring Program will be eliminated upon NRC approval of this amendment or upon implementation of another option (such as re-racking the spent fuel pool) which eliminates the need to credit Boraflex for reactivity control.

The NRC issued Amendment 198, "Elimination of Neutron Absorption Credit for Boraflex," to Facility Operating License Number DPR-23 for the H.B. Robinson Steam Electric Plant, Unit No. 2. This amendment changed the Technical Specifications in response to a request dated May 28, 2003, as supplemented on October 8, 2003. The amendment eliminated the need to credit Boraflex neutron-absorbing material for reactivity control in the spent fuel storage pool. The licensee proposed to take credit for a combination of soluble boron and controlled fuel loading patterns in the spent fuel pool to maintain the required subcriticality margins. The programs for monitoring the condition of the Boraflex and the silica content in the water were also eliminated in Technical Specification 3.7.13, Fuel Storage Pool Boron Concentration.

Based on the review of the timeliness and adequacy of the licensee's actions, the inspectors determined that the licensee completed the necessary actions to meet Commitment Item 47.

#### (2) License Renewal Commitment Changes

As part of the review of the commitments identified in Appendix A of the SER, the inspectors reviewed license renewal commitment change documents to verify the



licensee followed the guidance in NEI 99-04, "Guidelines for Managing NRC Commitment Changes," for any change to the commitments, including their elimination. The inspectors verified that the licensee properly evaluated, reported, and approved where necessary, changes to license renewal commitments listed in the UFSAR in accordance with 10 CFR 50.59.

The inspectors also reviewed the licensee's procedures for commitment revision to ensure that future changes to (or elimination of) license commitments would follow the guidance in NEI 99-04, and would properly evaluate, report, and approve changes to license renewal commitments listed in the UFSAR in accordance with 10 CFR 50.59.

The inspectors did not identify any examples where commitment changes were not consistent with the guidance in NEI 99-04.

### (3) Newly Identified SSCs

After the renewed license is issued, the FSAR update required by 10 CFR 50.71(e) must include any SSCs newly identified that would have been subject to an aging management review or time-limited analysis in accordance with 10 CFR 54.21. The FSAR update must describe how the effects of aging are managed such that the intended function(s) in 10 CFR 54.4(b) will be effectively maintained during the period of extended operation.

The inspectors discussed the identification of new SSCs under the purview of 10 CFR 54.37(b), with the licensee's license renewal staff. The licensee personnel indicated that no components had been identified that should have been within the scope of its license renewal program due to discovering components in the plant that were not accurately reflected in the database used to originally generate the application for a renewed license. Additionally, the inspectors reviewed a sample of modifications implemented since the LRA was submitted to the NRC until the date the renewed operating license was issued to identify any potential new SSCs that should have been subject to aging management review at the time the NRC was reviewing the LRA. The inspectors also reviewed the licensee's evaluation of Regulatory Issue Summary 2007-16 to verify that the newly SSCs identified in that generic communication were considered in the scope of RNP's license renewal.

The inspectors determined that the licensee took appropriate actions to assure newly identified structures, systems, and components were properly identified and evaluated for management of aging affects. The inspection team did not identify any potential new SSCs that were subject to the provisions of 10 CFR 54.37(b).

The inspectors also contacted the Office of Nuclear Reactor Regulation, Division of License Renewal (NRR/DLR) staff for information on any applicable generic NRC communications naming newly identified systems, structures, and components. The NRR/DLR staff advised the inspectors that besides Regulatory Issue Summary 2007-16, the NRC has not specified additional SSCs that the licensee must evaluate and include as applicable in its next UFSAR update in accordance with 10 CFR 54.37(b).

(4) Description of AMPs and TLAAs in the UFSAR Supplement

As part of the review of AMPs and TLAAs approved by the NRC in the SER, the inspectors reviewed their UFSAR descriptions to confirm the implemented programs were consistent with the SER. The inspectors also verified that changes caused by the inclusion of “newly identified” SSCs were included in the UFSAR supplement. With the exception of one example described in the Findings and Observations section of this inspection report, the inspectors did not identify inconsistencies between the AMPs or TLAAs approved in the SER and the UFSAR supplement.

The inspectors also verified that the UFSAR supplement submitted pursuant 10 CFR 54.21(d) was included in the next update to the UFSAR following the issuance of the renewed license as required by license condition 3.K of the Renewed Facility Operating License Number DPR-23. Additionally, the inspectors reviewed changes made to the programs and activities in the UFSAR supplement from the date the renewed license was issued to the next scheduled UFSAR update to verify that changes were evaluated against the criteria in 10 CFR 50.59. The inspectors found that the aforementioned supplement was included in the UFSAR as required and changes to the programs and activities were evaluated in accordance with 10 CFR 50.59.

b. Findings and Observations

- (1) Introduction: The inspectors identified an Unresolved Item related to the Emergency Operations Facility/Technical Support Center (EOF/TSC) Diesel Generator Main Storage Tank (buried diesel fuel oil tank), for which additional information and discussion was needed to determine if a performance deficiency existed, if the performance deficiency was more than minor, or if the issue of concern constituted a violation of NRC requirements.

Description: The inspectors noted that Table 2.3-25 of the LRA lists the components in the Fuel Oil System that require aging management review. This table shows that the results of the AMR for the EOF/TSC Main Storage Tank are documented in Table 3.3-1 and Table 3.3-2 of the LRA.

Table 3.3-1 specifies that aging management for the diesel fuel oil tanks made of carbon steel in the diesel fuel oil system and the EDG system will be implemented through the Fuel Oil Chemistry Program.

Table 3.3-2 specifies that the EOF/TSC Main Storage Tank is a buried tank made of “fiberglass reinforced polyester.” The licensee stated in this table that no aging effects or AMP applies to this tank. Additionally, section B.3.12 of the LRA, “Buried Piping and Tanks Inspection Program” states that this AMP does not contain buried tanks. In RAI B.3.12-1, the NRR staff requested confirmation that no buried tanks were covered under the Buried Piping and Tanks Inspection Program. In its response to this RAI dated April 28, 2003, the licensee stated that the program does not contain buried tanks.

During the review of AMR documents for LR commitments, the inspectors identified that the EOF/TSC Main Storage Tank is made of carbon steel covered with 1/8” nominal exterior coating of fiberglass reinforced polyester. The inspectors noted that the description of the tank in Table 3.3-2 did not include carbon steel.

The inspectors questioned the licensee with regard to the basis for excluding this buried tank from the scope of the Buried Piping and Tanks Inspection Program. According to the licensee, the combination of tank material and environment (i.e. buried carbon steel tank covered with fiberglass reinforced polyester) is not specifically addressed in Table VII.H1 of the GALL Report and therefore the licensee treated this tank as a component that is different from the GALL Report.

The inspection team remained concerned whether the exclusion of the EOF/TSC Main Storage Tank from the Buried Piping and Tanks Inspection Program was appropriate and whether the AMP selected by the licensee to manage aging on the tank's surfaces was adequate. This issue required further review. Therefore, this issue will be tracked as an unresolved item (URI 5000261/2010008-01).

- (2) Observation for Commitment Item 20, Above Ground Carbon Steel Tanks: Based on discussions with the licensee staff the inspectors found that the Alternate Fuel Oil Storage Tank was excluded from the license renewal scope by dedicating this tank to a function that did not require aging management in accordance with 10 CFR 54. However, the inspectors identified that the operating procedure for this tank (OP-909) contradicted this purpose by allowing the tank to be used for an additional function during maintenance activities. The licensee stated that this contradiction was the result of an inadequate procedure revision. The licensee initiated NCR 00380767 to correct the aforementioned operating procedure.
- (3) Observation for Commitment Item 28, Systems Monitoring Program: Enhancement number 6 of the Commitment states that "loss of material due to wear" will be specifically included as an aging effect/mechanism in the system walkdown checklist. The inspectors noted that this enhancement was not included in the UFSAR section 18.1.25, "Systems Monitoring Program." Following discussions with the licensee staff, the inspectors found that absence of this item in the UFSAR was an error. When the FSAR was updated to include the license Renewal Commitments, the list of commitments used from the LRA was used rather than the complete list from Appendix A of the NRC SER. The licensee initiated NCR 382852 to document this deficiency in their corrective action program.

Additionally, section 3.K of the renewed license states "The Updated Final Safety Analysis Report supplement, as revised, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4) following issuance of this renewed license." This requirement was not completely accomplished, in that enhancement number 6 of Commitment Item 28 was not included in the UFSAR.

- (4) Observation for Commitment Item 28, Systems Monitoring Program: Enhancement number 6 of the Commitment states that "loss of material due to wear" will be specifically included as an aging effect/mechanism in the system walkdown checklist. This commitment item was implemented in site procedure TMM-104, "System Walkdown Procedure," Revision 22. Specifically, the enhancement was implemented as "loss of material due to wear (AR 84967)" in section 2.a of Attachment 10.2 - System Inspection Checklist for Quarterly Walkdowns. The Action Request number in parenthesis is intended to flag the line item in the implementing procedure as a license renewal commitment to prevent inadvertent deletion during future revisions. However, procedure TMM-104 was replaced with corporate wide procedure EGR-NGGC-0026, "System Walkdown Procedure," Revision 0 and this particular enhancement was not included in

the corporate procedure. The licensee initiated NCR 382858 to document this deficiency in their corrective action program.

- (5) Observation for Commitment Item 28, Systems Monitoring Program: Enhancement number 5 of the Commitment states that a section specifically addressing corrective actions will be added to the licensee's system walkdown procedure. The inspectors noted that procedure TMM-104, "System Walkdown Procedure," Revision 22 contained section 8.4 titled "Corrective Actions (AR 84967, AR 84947, AR 84964)" to implement enhancement five. However, procedure TMM-104 was replaced with corporate wide procedure EGR-NGGC-0026, "System Walkdown Procedure," Revision 0 and this particular enhancement was deleted from the new corporate procedure. The new corporate procedure still addresses corrective actions in certain procedure steps. However, the inspectors concluded that implementation of this enhancement in the new corporate procedure did not fully meet the commitment in that the procedure did not include "a section specifically addressing corrective actions." The licensee included this issue in NCR 382858 to document this deficiency in their corrective action program.
- (6) Observation for Commitment Item 31, RVH Nickel Alloy Program: The inspection plan required by this commitment item was submitted to NRR under licensee letter RNP-RA/09-0067. This letter states that the Code Case N-729-1 non-visual inspection of the upper VHPs is scheduled for RO-27. However, the inspectors identified that the ISI plan shows this inspection as scheduled for RO-29 in 2014. The licensee initiated NCR 380373 to address this discrepancy and found that the inspection date submitted on the letter to the NRC was based on the original Alloy 600 upper VHPs. The licensee replaced the upper reactor vessel head in 2005, which was made of Alloy 690 VHPs. It appeared that licensee personnel may not have updated their schedule when they submitted the letter to the NRC. The inspectors determined that the inspection schedule shown on the licensee's ISI plan met the requirements of Code Case N-729-1.
- (7) Observation for Commitment Item 31, RVH Nickel Alloy Program: The inspectors noted that the UFSAR section on Nickel Alloy Nozzles references NRC Order EA-03-009 as the regulatory requirement driving the inspection of upper VHP nozzles. The NRC Order for the examination of upper VHP nozzles has been superseded by 10CFR 50.55a, with the incorporation of Code Case N-729-1. The inspectors found that neither the UFSAR nor the commitment has been revised to reflect the new regulatory requirements. However, the inspectors determined that the licensee's ISI plan showed an adequate implementation of the Code Case N-729-1 requirements with regard the schedule of visual and non-visual inspections. The licensee initiated NCR 0380367 to address this issue.
- (8) Observation for Commitment Item 32, Thermal Aging and CASS Program: The inspectors noted that the implementing procedures do not contain a program description that was fully consistent with the LRA, the UFSAR, and the SER. The SER states that the Thermal Aging and CASS Program applies to cast austenitic stainless steels in RCS "piping, valves, and pump casings." However, the implementing procedures state that the program applies to Class 1 cast austenitic stainless steels in RCS "piping, valves, and fittings." The inspectors questioned whether this created the vulnerability for missing the CASS pump casing inspections stipulated in the license renewal commitment. The licensee generated NCR 381872 to correct the implementing procedures. Although this discrepancy existed in the implementing procedures, the

inspectors found that the current ISI Plan included the inspections of Class 1 CASS pump casings as stated in the commitment.

- (9) Observation on Tracking of License Renewal Tasks: The inspectors noted that the implementation of license renewal commitments was tracked through a series of Nuclear Tasks Management (NTM) items in the licensee's AR system. Each commitment had an NTM with one or more assignments to track the complete implementation of the commitment item. Additional tasks such as procedure revisions, preventive maintenance request, and work orders were created to implement each of the NTMs tracking the commitments. However, all these tasks had not been cross-referenced to the main NTM tracking the commitment item. The inspectors questioned whether this created the vulnerability for closing a commitment while other associated actions are still pending.

The inspectors found that the failure to cross-reference the license renewal commitment items was not consistent with License Renewal Program procedure EGR-NGGC-0501, which specifically requires that license renewal NTMs be cross-referenced with associated tasks. The licensee generated NCR 380471 to address this issue. The licensee established the required cross-reference between NTMs and associated tasks before the end of this inspection.

c. Overall Conclusions

The inspectors determined that the licensee had completed, or was on track to complete, the necessary tasks to meet the license renewal commitments, license conditions, and regulatory requirements associated with the issuance of the renewed operating license at the H.B. Robinson Steam Electric Plant Unit 2. Some commitments had pending actions remaining, for which task items existed in the Action Request system to track their completion. Based on the review of completed actions to meet license renewal commitments, the corrective actions initiated for the observations discussed above, and the administrative controls in place to track pending license renewal actions, the inspectors determined that there was reasonable assurance that the licensee would complete the remaining actions to meet the license renewal commitments prior to the period of extended operation.

4OA6 Management Meetings

Exit Meeting Summary

On 02/26/2010, the inspectors presented the inspection results to the Mr. Eric McCartney and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

T. Bardauskas, Site License Renewal Manager  
M. Heath, Corporate License Renewal Manager  
G. Sanders, Licensing Engineer

### LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

#### Opened

|                     |     |   |
|---------------------|-----|---|
| 05000261/2010008-01 | URI | Aging Management Program for exterior surface of EOF/TSC Main Storage Tank (Section 4OA5.1) |
|---------------------|-----|---|

#### Closed

None

#### Discussed

None

## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance or endorsement of the document or any part of it.

### Commitment Item 1

AR 00084897, LR Commitment #1  
 NGGM-PM-0007, Quality Assurance Program Manual, Revision 16

### Commitment Item 2

AP-044, Procedure Process Enhancements, Revision 23  
 AR 363977, SA 305571 D1: License Renewal Process for UFSAR Updates  
 EGR-NGGC-0005, Engineering Change, Revision 29  
 EGR-NGGC-0514, License Renewal Implementation Procedure, Revision 0  
 Model WO 01674547, Perform Review Required by 10CFR 54.37(b) (License Renewal)  
 NTM 00092130, LR Commitment #2 Requirements Met of 10 CFR 54.37(b)  
 PMQR 00088958, Perform Review Required by 10CFR 54.37(b) (License Renewal)  
 PRO-NGGC-0204, Procedure Review and Approval, Revision 16  
 REG-NGGC-0010, 10 CFR 50.59 and Selected Regulatory Reviews, Revision 12  
 RNP-L/LR-0009, UFSAR Updates for Post Renewed License – Newly Identified SSCs, Revision 0  
 RNP-L/LR-0009, UFSAR Updates for Post Renewed License – Newly Identified SSCs, Revision 1  
 RNP-L/LR-0009, UFSAR Updates for Post Renewed License – Newly Identified SSCs, Revision 2

### Commitment Item 3

AR 00092135-01, Commitment 3 and License Condition 3.K, UFSAR Supplement

### Commitment Item 4

AR 00084907, Incorporate changes into procedures to indicate credit for R AMP  
 NRC Request for Additional Information RAI B.1-1  
 PLP-025, Revision 20, Inservice Inspection Programs  
 RNP-L/LR-0606, Aging Management Program ASME Section XI, Subsections IWB, IWC, and IWD Inservice Inspection Program  
 Robinson Nuclear Plant License Renewal Application, Appendix B, Section B.2.1, ASME Section XI, Subsection IWB, IWC, and IWD Program  
 TMM-015, Inservice Repair and Replacement  
 TMM-020, revision 17, Inservice Pressure Testing Program  
 TMM-038, Revision 14, Inservice Inspection Program

### Commitment Item 5

AR 00084912, LR Commitment #5  
 CP-001 Chemistry Monitoring Program, Revision 96  
 CP-005 Secondary Chemistry Corrective Action Program, Revision 34  
 CP-200 Chemistry Program Implementation, Revision 16  
 OM-001-13 Plant Chemistry, Revision 13  
 RNP-L/LR-0600, Aging Management Program Water Chemistry Program, Revision 11

Commitment Item 6

AR 00084913, LR Commitment #6 Reactor Head Closure Studs Program  
 MRP-003, Revision 35, Reactor Vessel Stud Removal and Installation  
 NRC Request for Additional Information RAI B.1-1  
 NRC Request for Additional Information RAI B.1-1  
 PLP-025, Revision 20, Inservice Inspection Program  
 RNP-L/LR-0619, Aging Management program Reactor Head Stud Program  
 Robinson Nuclear Plant License Renewal Application, Appendix B, Section B.2.1, Reactor Head  
 Closure Studs Program.  
 TMM-038, Revision 15, Inservice Examination Program

Commitment Item 7

AR 00084915, LRA Commitment #7, Steam Generator Tube Integrity Program  
 AR 00185319, Perform procedure technical review  
 ERG-NGGC-0208, Revision 7, Steam Generator Integrity Program  
 NRC Request for Additional Information RAI B.1-1  
 Plant Technical Specifications, 5.5.9, Steam Generator Program  
 RNP-L/LR-0604, Revision 1, Aging Management Program Steam Generator Tube Integrity  
 Program  
 Robinson Nuclear Plant License Renewal Application, Appendix B, Section B.2.4 Steam  
 Generator Tube Integrity Program  
 TMM-112, Revision 18, team Generator Inspection (Refueling Outage).  
 TMM-112-1, Revision 6, Steam Generator Eddy Current Analysis Guidelines

Commitment Item 8

OST-910, Dedicated Shutdown Diesel Generator (Monthly)  
 AR 00084897, LR Commitment #8  
 AR 00210085, Three tubes plugged in the 'B' CCW Heat Exchanger  
 AR 00221280, Three tubes plugged in the 'A' CCW Heat Exchanger  
 AR 00246999, Small Pieces of Concrete Found in the 'B' CCW HX  
 AR 00339413, Increase in CCW system Leakage  
 CP-001, Chemistry Monitoring Program  
 CP-200, Chemistry Program Implementation  
 OST-405, TSC/EOF/PAP Diesel Generator (Semiannual)  
 OST-406, TSC/EOF/PAP Diesel Generator (monthly except when OST-405 is scheduled)  
 OST-409-1, EDG A Fast Speed Start  
 OST-409-2, EDG B Fast Speed Start  
 OST-410, Emergency Diesel Generator 'A' (Twenty-Four Hour Load Test)  
 OST-411, Emergency Diesel Generator 'B' (Twenty-Four Hour Load Test)  
 OST-908, Component Cooling System Component Test  
 PM-025, EOF/TSC Emergency Diesel Generator Inspection Number 1  
 PM-108, Dedicated Shutdown Diesel Twenty Four (24) Month Inspection  
 PMR 00016866-01, Cleaning and Inspection of 'A' CCW Heat Exchanger  
 PMR 00016866-02, Clean and Repair the Coating on the Tube Sheet and Housing On 'A' CCW  
 PMR 00016866-03, Eddy Current Test 'A' CCW Heat Exchanger  
 PMR 00016867-01, Cleaning and Inspection of 'B' CCW Heat Exchanger  
 PMR 00016867-02, Cleaning and Inspection of 'B' CCW Heat Exchanger  
 PMR 00016867-03, Eddy Current Test 'B' CCW Heat Exchanger  
 RNP-L/LR-0627, Aging Management Program Closed Cycle Cooling Water System, Revision 2  
 WO 00054467, Cleaning and Inspection of 'A' CCW Heat Exchanger



WO 00054468, Clean and Repair the Coating on the Tube Sheet and Housing on 'A' CCW  
 WO 00054470, Cleaning and Inspection of 'B' CCW Heat Exchanger  
 WO 00058469, Cleaning and Inspection of 'B' CCW Heat Exchanger  
 WO 01073453, Eddy Current Test 'A' CCW Heat Exchanger  
 WO 01073544, Eddy Current Test 'B' CCW Heat Exchanger

#### Commitment Item 9

AR 00084918, LR Commitment Item 9, ASME Section XI, Subsection IWF  
 PLP-025, "Inservice Inspection Programs," Revision 20  
 RNP-L/LR-0618, "Aging Management Program ASME Section XI, Subsection IWF Program,"  
 Revision 3  
 TMM-015, "Inservice Repair and Replacement," Revision 34  
 TMM-038, "Inservice Examination Program," Revision 14

#### Commitment Item 10

AR 00084919, LR Commitment Item 10, 10CFR Appendix J Program  
 EGR-NGGC-0015, "Containment Inspection Program," Revision 3  
 EST-062 Procedure Performance Results, 7/29/09  
 EST-062, "Local Leak Rate Test of Containment Instrument Air Header Isolation Valves  
 (Refueling Shutdown, Not to Exceed 2 Years)," Revision 17  
 EST-064, "Containment Isolation Valve Local Leakage Rate Survey (Refueling Interval Not to  
 Exceed 2 Years)," Revision 12  
 EST-064, Attachment 10.2, "Containment Isolation Valve Local Leakage Rate Survey," 7/29/09  
 PLP-025, "Inservice Inspection Programs," Revision 20  
 RNP-L/LR-0615, "Aging Management Program 10 CFR Part 50, Appendix J Program," Revision  
 1  
 TMM-005, "10CFR50, Appendix "J" Testing Program," Revision 28

#### Commitment Item 11

EST-108 Flux Thimble Eddy Current Inspection (Specified Refueling Outages) Revision 8  
 Eddy Current Inspection Results from September 2005  
 RNP-L/LR-0609, Aging Management Program Flux Thimble Eddy Current Inspection Program,  
 Revision 1

#### Commitment Item 12

AR 00084923-01, LR Commitment #12  
 EGR-NGGC-0351 Condition Monitoring of Structures, Revision 15 – draft revision under PPR  
 353128  
 FP-013 Fire Protection Systems Surveillance Requirements Revision 10  
 RNP-L/LR-0612, Aging Management Program Fire Protection Program, Revision 5  
 TMM-104, System Walkdown Procedure, Revision 21  
 WO 1038781 replace flex hoses reserve CO2 bank 2009.  
 WO 1038782 replace flex hoses main CO2 bank 2009.  
 WO 1038786 replace flex hoses for the cable vault pilot control valves 2009.  
 WO 303032 replace all the flex hoses on the Cable Vault C02 System 6195 2004

#### Commitment Item 13

AR 00084924, LR Commitment Item 13, BACCP  
 AR 00068113, "Boric Acid Corrosion Control Program Assessment"  
 EGR-NGGC-0207, "Boric Acid Corrosion Control," Revision 3  
 EST-083-1, "Inservice Inspection Pressure Retaining VT-2 Bolting Examinations of the Reactor  
 Coolant System (Refueling Shutdown Interval)," Revision 5

EST-083-2, "Inservice Inspection Pressure Testing of the Reactor Coolant System (Refueling Shutdown Interval)," Revision 5  
 OST-051, "Reactor Coolant System Leakage Evaluation (Every 72 Hours during Steady State Operation and Within 12 Hours after Reaching Steady State Operation)," Revision 41  
 OST-052, "RCS Leakage Test and Examination Prior To Startup Following an Opening of the Primary System (Refueling and/or Startup Interval)," Revision 23  
 OST-51, Attachment 10.2, "Leakage Evaluation Calculation Sheet," Revision 41, 2/19/10  
 RNP-L/LR-0601, "Aging Management Program Boric Acid Corrosion Control Program," Revision 5  
 TMM-104, "System Walkdown Procedure," Revision 22

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EGR-NGGC-0202, Flow Accelerated Corrosion Monitoring Program, Revision 10  
 Flow Accelerated Corrosion (FAC) Program Document System Elimination Analysis, Revision 5, January, 2010  
 AR 00084931, Commitment in RNP-RA/03-0031 Flow-Accelerated Corrosion Program  
 RNP-L/LR-0603, Aging Management Program Flow Accelerated Corrosion Program, Revision 5

Commitment Item 15

1039252, Disassemble, repair, and reassemble CVC-381  
 AR 00084833-2, LR Commitment #15  
 AR 84933-02, Inspection of high strength bolting used in valve CVC-381  
 MMM-016, Torquing Procedure  
 RNP-L/LR-0625, Aging Management Program Bolting Integrity Program, Revision 2

Commitment Item 16

AR 00084935, LR Commitment #16  
 AR320264, Change processes not followed for license renewal commitment  
 CM-201, Safety Related and Non-Safety Related Heat Exchanger Maintenance  
 CP-001, Chemistry Monitoring Program  
 CP-009, Chlorination  
 EC 49207, Cooling coil replacement in HVH-6A/B, HVH-7A/B, and HVH-8A/B  
 EST-116, Service Water Piping Inspection  
 OST-151-1, Safety Injection System Components Test – Pump "A"  
 OST-151-2, Safety Injection System Component Test – Pump "B"  
 OST-201-1, MDAFW System Component Test – Train A  
 OST-201-2, MDAFW System Component Test – Train B  
 PMR 17986, Assist Contractor With Performing Eddy Current on HVH-6B  
 PMR 17985, Assist Contractor With Performing Eddy Current on HVH-6A  
 PMR 17987, Assist Contractor With Performing Eddy Current on HVH-7A  
 PMR 17988, Assist Contractor With Performing Eddy Current on HVH-7B  
 PMR 17989, Assist Contractor With Performing Eddy Current on HVH-8A  
 PMR 17990, Assist Contractor With Performing Eddy Current on HVH-8B  
 PMR 190631, SI, RHR and AFW room cooler heat exchangers must be eddy current tested  
 RNP-L/LR-0602, Aging Management Program Open Cycle Cooling Water System Program, Revision 7

Commitment Item 17

AR 00084937-01, License Renewal Commitment Item 17, Inspection of Overhead Heavy Loads and Light Loads Handling  
 AR 00220518, "Turbine crane gear wear"

AR 00347161, "Spent fuel cask crane flex couplings not in PM program"  
 EGR-NGGC-0351, "Condition Monitoring of Structures," Revision 15  
 RNP-L/LR-0628, "Aging Management Program Inspection of Overhead Heavy Load and Light Load Handling Systems Program," Revision 2  
 TMM-104, "System Walkdown Procedure," Revision 22  
 TMM-104, "System Walkdown Report – 4th Quarter 2008"  
 TMM-104, "System Walkdown Report – Inspection July 2008"  
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 TMM-104, "System Walkdown Report – RO-025 Inspection Sept-Nov 2008"

#### Commitment Item 18

AR 00084942-1, LR Commitment #18  
 PMR 348790  
 PMR 348792  
 RNP-L/LR-0611, Aging Management Program Fire Water System Program, Revision 7  
 WO 1120123  
 WO 1519261  
 WO 1549734  
 WO 1605254  
 WO 706192-02

#### Commitment Item 19

AR 00373580, Independent Vendor Assessment of Cathodic Protection System  
 AR 84944-02, Buried Piping and Tank Surveillance Program (Cathodic Protection System) License Renewal Commitment Implementation  
 Evaluation / Adjustment Survey Cathodic Protection Systems Units No. 1 and 2 Underground Fuel System Piping H.B. Robinson Plant, Progress Energy Hartsville, South Carolina, Prepared by CORRPRO Companies, October, 2009  
 NACE RP0169-1996, Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems  
 NACE SP0169-2007, Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems  
 NCR 374152, Attachment 4, Equipment Reliability Form  
 PM-403, Cathodic Protection System Rectifier Inspection and Cleaning, Revision 11  
 PM-417, Cathodic Protection System Soil to Structure Potential Measurement Test, Revision 9  
 PM-467, Fuel Oil Transfer Pressure Test, Revision 8  
 Resurvey Report Cathodic Protection System Units No. 1 and 2 Underground Fuel System Piping H.B. Robinson Plant, Progress Energy Hartsville, South Carolina, January, 2009  
 Work Order Package 01399645-14, Install EC 65116  
 Work Order Package 01480838-01, Perform Cathodic Protection System Inspection (PM-417)

#### Commitment Item 20

AR 00084947-01, LR Commitment #20  
 EGR-NGGC-0026, System Walkdown Procedure  
 PMR 8735701, EDG fuel storage tank  
 PMR 1729203, DSD fuel storage tank  
 PMR 368289, Security diesel day tank  
 PMR 368829, Unit 1 fuel storage tanks  
 PMR 8600001, Fire pump fuel tank  
 RNP-L/LR-0630, Aging Management Program Above Ground Carbon Steel Tanks Program, Revision 4

## TMM-104, System Walkdown Procedure

Commitment Item 21

AR 380782, CP-039

AR 380788, CP-001

AR 380897, OST-405 TSC/EOF/PAP Diesel Generator (Semiannual)

CP-00, Chemistry Monitoring Program, Revision 97

CP-039, Bacteria in Fuel Oil, Revision 0

CP-116, Chemistry Data Tracking and Trending Program, Revision 13

AR 00084951, Commitment in RNP-RA/03-0031 Fuel Oil Chemistry Program

OST-023, Monthly Surveillances, Revision 26

RNP-L/LR-0631, Aging Management Program Fuel Oil Chemistry Program, Revision 4

Commitment Item 22H.B. Robinson Steam Electric Plant Unit 2 – Updated Final Safety Analysis Report, Revision 22,  
Section 5.3.1.6, “Material Surveillance”

Model WO 00053419, FSAR 5.3 Perform Reactor Vessel Surveillance Capsule Testing

AR 00084955, Commitment 22 and License Condition 3.L, RV Surveillance Program

PMID 13444, FSAR 5.3 Perform Reactor Vessel Surveillance Capsule Testing

RNP-L/LR-0613, Aging Management Program Reactor Vessel Surveillance Program, Revision  
2WCAP-15805, Analysis of Capsule X from the Carolina Power & Light Company H.B. Robinson  
Unit 2 Reactor Vessel Radiation Surveillance Program, March 2002Commitment Item 23

AR 00084959-01, LR Commitment #1

EGR-NGGC-0209, Buried Piping Program, Revision 0

EGR-NGGC-0351, Structures Monitoring Program, Revision 14

MNT-NGGC-024, Excavation and Backfill, Revision 0

RNP-L/LR-0634, Aging Management Program Buried Piping and Tanks Inspection Program,  
Revision 4Commitment Item 24

“NGG RNP IWE/IWL Program Health Report,” 12/31/2009

AR 00084960-01, LR Commitment Item 24, ASME Section XI, Subsection IWE

CM-764, “Inspection and Repair of CV Liner and Insulation,” Revision 8

EC-47701, “CV Liner Thickness Acceptance Criteria,” Revision 6

EC-72699, “Evaluation of Containment Building Liner, Insulation, Sheathing, and Coatings,”  
Revision 0

EGR-NGCC-0351, “Condition Monitoring of Structures,” Revision 15

EST-064, “Containment Isolation Valve Local Leakage Rate Survey (Refueling Interval Not to  
Exceed 2 Years),” Revision 12

EST-150, “Containment Inspection (IWE/IWL),” Revision 9

PLP-025, “Inservice Inspection Programs,” Revision 20

RNP-L/LR-0616, “Aging Management Program ASME Section XI, Subsection IWE,” Revision 1

TMM-015, “Inservice Repair and Replacement,” Revision 34

TMM-124, “Inservice IWE/IWL Program,” Revision 9

Commitment Item 25

AR 00084961-01, LR Commitment Item 25, ASME Section XI, Subsection IWL Program

EST-150, “Containment Inspection (IWE/IWL),” Revision 9

MMM-051, "Plant Excavation, Backfill, Core Drilling, and Cutting Concrete/Masonry," Revision 15  
 MNT-NGGC-0024, "Excavation and Backfill," Revision 0  
 PLP-025, "Inservice Inspection Program," Revision 20  
 RNP-L/LR-0617, "Aging Management Program ASME Section XI, Subsection IWL," Revision 3  
 TMM-015, "Inservice Repair and Replacement," Revision 34  
 TMM-104, "System Walkdown Procedure," Revision 22  
 TMM-124, "Inservice IWE/IWL Program," Revision 9

#### Commitment Item 26

AR 00084964-02, LR Commitment Item 26, Structures Monitoring Program  
 AR 00365673-16, "Adequate progress has not been made on the license renewal commitment for the structural monitoring program"  
 EGR-NGCC-0351, "Condition Monitoring of Structures," Revision 15  
 Inspection Attributes for Structural Monitoring Program: Air Compressor Enclosure, 1/22/10  
 Inspection Attributes for Structural Monitoring Program: Diesel Fire Pump FO Tank & Control Panel; Manholes M-50A & M-50B, 1/22/10  
 Inspection Attributes for Structural Monitoring Program: DSDG Enclosure, Tank, Charger, Cooler 1/22/10  
 MNT-NGGC-0024, "Excavation and Backfill," Revision 0  
 RNP-L/LR-0608, "Aging Management Program Structures Monitoring Program," Revision 3

#### Commitment Item 27

AR 00084965-01, LR Commitment Item 27, Dam Inspection Program  
 AR 00245643-20, "Based on the material condition of the Lake Robinson Dam Spillway Tainter Gates recorded during a recent system walkdown, corrective maintenance is required to insure that the functionality and/or structural integrity is not compromised."  
 EGR-NGCC-0351, "Condition Monitoring of Structures," Revision 15  
 Progress Energy Carolinas H.B. Robinson Steam Electric Plant Cooling Lake Dam and Ash Pond Dike Hartsville, South Carolina Mactec Project No. 6468-05-0992(05) Five-Year Independent Consultant Inspection, 12/20/05  
 Report of 2008 Limited (Annual) Field Inspection Cooling Lake Dam and Ash Pond Dam H.B. Robinson Steam Electric Plant Hartsville, South Carolina Mactec Project 6468-08-2087(05), 11/11/08  
 RNP-L/LR-0636, "Aging Management Program Recommended Guidelines for Safety Inspection of Dams," Revision 5  
 Work Order #00852383, "Lake Robinson Dam Inspection & Report"

#### Commitment Item 28

AR 00084967, LR Commitment #28  
 EGR-NGGC-0026 System Walkdown Procedure, Revision 0  
 TMM-104, System Walkdown Procedure, Revision 22

#### Commitment Item 29

AR 00084999, LR Commitment #29  
 AR/NCR 365671 PM and model work orders not specific to aging mechanism  
 EGR-NGGC-0512 Licensing renewal Aging Management Activities, Revision 4  
 RNP-L/LR-0642 Aging Management program for Preventive Maintenance Program

#### Commitment Items 30 and 43

AR 00092151, Commitment in RNP-RA/03-0074 TLAA Metal Fatigue

AR 00085003, LR Commitment No. 30 Fatigue Monitoring Program  
 PLP-109, Cycle and Transient Monitoring, Revision 9  
 RNP-M/MECH-1593, Feedwater (FW) Branch Connection Reinforcement Pad Plate Design & Fatigue CUF Calculation for H.B. Robinson – Unit 2, Revision 1  
 RNP-M/MECH-1594, Stress and Fatigue Analysis for AFW to FW Tie-In Thermal Fatigue Concerns, Revision 1  
 RNP-L/LR-0502, Thermal Fatigue TLAA Review for H.B. Robinson - Unit 2, Revision 4  
 RNP-L/LR-0605, Aging Management Program for Metal Fatigue of Reactor Coolant Pressure Boundary (Fatigue Monitoring Program), Revision 4  
 WCAP-16694-P, Environmental Fatigue Evaluations for H.B. Robinson Unit 2 Pressurizer and Surge Line, April 2007 (Westinghouse Proprietary Class 2 Document)

Commitment Item 31

ADM-NGGC-0112, Reactor Coolant System Material Integrity Management Program, Revision 2  
 Fourth Ten-Year Interval Inservice Inspection Plan, Section E-11, Volume 190  
 Fourth Ten-Year Interval Inservice Inspection Program, Volume 180  
 AR 00085005, Commitment in RNP-RA/03-0074 Nickel-Alloy Nozzles & Penetrations  
 PLP-025, Inservice Inspection Programs, Revision 20  
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 RNP-RA/09-0067, Nickel Alloy Nozzles and Penetrations Program Inspection Plan, 07/29/09  
 TMM-015, Inservice Repair and Replacement, Revision 34  
 TMM-020, Inservice Pressure Testing Program, Revision 18  
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Commitment Item 32

H.B. Robinson Steam Electric Plant, Unit No. 2, Fourth Ten-Year Interval Inservice Inspection Program, Revision 13  
 H.B. Robinson Steam Electric Plant, Unit No. 2, Fourth Ten-Year Interval Inservice Inspection Plan, Revision 16  
 AR 00085006, Commitment in RNP-RA/03-0031 Cast Austenitic Stainless Steel  
 PLP-025, Inservice Inspection Programs, Revision 20  
 RNP-L/LR-0621, Aging Management Program Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS) Program, Revision 2  
 TMM-038, Inservice Examination Program, Revision 15

Commitment Item 33

AR 00085009-01, LR Commitment #33  
 ADM-NGGC-0112, Reactor Coolant System Material Integrity Management Program, Revision 2  
 Letter Serial RNP-RA/09-0081, From H.B. Robinson Steam Electric Plant, Unit No. 2, To USNRC, Subj: Reactor Vessel Internals Aging Management Program Inspection Plan, Sep 24, 2009  
 RNP-L/LR-0614, Aging Management Program PWR Vessel Internals Program, Revision 2  
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 WCAP-17077-NP, PWR Vessel Internals Program Plan for Aging Management of Reactor Internals at Robinson Nuclear Plant, July 2009

Commitment Item 34

AR00085012, LR Commitment Item 34

NRC Information Notice 97-46, Unisolable Crack in High-Pressure Injection Piping RNP-L/LR-0632, Aging Management Program One Time Inspection Program, Revision 6 Robinson Nuclear Plant License Renewal Application, Appendix B, Section B.4.4, One Time Inspection Program.

WO 0083077, Perform as-found Tube Measurements for License Renewal

WO 01537084, Perform and inspect valves and piping in condensate system for LR Commitment prior to period of extended operation.

WO 01537087, Perform and inspect valves and piping in feed water system for LR Commitment prior to period of extended operation.

WO 01537098, Perform and inspect valves and piping in auxiliary feed water system for LR Commitment prior to period of extended operation.

WO 01537102, Perform and inspect valves and piping in steam generator blow down system for LR Commitment prior to period of extended operation.

Commitment Item 35

RNP-L/LR-0633, Selective Leaching of Materials Program

AR 00085018, LR Commitment Item 35

WO 388899 Inspection of MDAFWP lube oil cooler 1/29/04

WO 410468 Inspection of SDAFWP lube oil heat exchanger 9/20/04

WO 652567 Inspection & replace service water valve SW-6 4/20/07

WO 759603 Inspect V6-33E SW booster pump A 4/20/07

WO 615770 Replace SW-8 SW D pump discharge 10/14/08

WO 1122995 Inspect valve V6-16C turbine building isolation 10/28/08

WO 1016122 Inspect valve DG-9A DG A jacket water HX tube side drain

WO 355999 Inspect valve FP-75 EDFP relief valve

WO 608534 Tie in new line 10-FP-374 to 10-FP-358 5/5/05

WO 831096 Replace potable water line cable spread/battery room 2/25/09

Commitment Item 36

AR00085019, LR Commitment Item 36

AR 366618, List required by EGR-NGGC-0108 not available

AR311293-04, Self Assessment RNP Cable Aging Management Program

EGR-NGGC-0507, Cable Aging Management Program

EPRI Technical Report 1003317, "Cable System Aging Management" (April 2002)

EPRI Technical Report 1003663, "Integrated Cable System Aging Management Guidance – Low Voltage Cable" (January 2003)

EPRI Technical Report 1007933, "Aging Assessment Field Guide" (December 2003)

EPRI Technical Report 109619, "Guideline for the Management of Adverse Localized Equipment Environments" (June 1999)

PMR 11777, Walkdown Non-Eq cable in the Turbine Building

PMR 18064, Walkdown Non-Eq cable in the Aux Building

PMR 72802, Walkdown Non-Eq cable in CV

RNP-L/LR-0390, Aging Management Review of Electrical Commodities for License Renewal, Revision 4

WO 01126106-01, inspect cables in R025 in CV

WO 01126106-02 inspect cables in R025 in Aux Bldg

WO 01126106-03, inspect cables in R025 in Turbine Bldg

WO 01447552-01, Lighting panel intake structure

WO 01447565-01, Lighting panel outside charging pump room

WO 01447567-01, Lighting panel 24A spent fuel pit  
 WO 01447569-01, Lighting panel spent fuel pit  
 WO 01447572-01, Lighting panel hot machine shop  
 WO 01447573-01, Lighting panel turbine area mezzanine floor  
 WO 01447576-01, Lighting panel turbine area ground floor  
 WO 01541004, Engineering Inspection of Pressurizer Relief Valve Wiring

Commitment Item 37

AR00092137-01, LR Commitment Item 37  
 LP-256, Containment High Range Radiation Monitor (AREA) RMS 32A & 32B  
 PRR 287488  
 RNP-L/LR-0390, Aging Management Review of Electrical Commodities for License Renewal,  
 Revision 4  
 WO 01410926, R31A & B review calibration results for age degradation  
 WO 082332-01, R-32A & B Review calibration results for age degradation

Commitment Item 38

AR 316141, Unexpected degradation of NIS Power Range N-42, N-43, and N-44 detectors  
 AR 92139-02, Aging Management Program for Neutron Flux Instrumentation  
 PM-496, Source Range Cable/Connector/Detector Condition Monitoring (Shutdown)  
 PM-497, Intermediate Range Cable/Connector/Detector Condition Monitoring (Shutdown)  
 PM-498, Power Range Cable/Connector/Detector Condition Monitoring (Shutdown)  
 PMR 10603-02, N-31  
 PMR 10604-02, N-32  
 PMR 14160-04, N-35  
 PMR 14161-04, N-36  
 PMR 14163-03, N-41  
 PMR 14164-03, N-42  
 PMR 14165-03, N-43  
 PMR 14166-03, N-44  
 PMR 79175-01, NE-51  
 PMR 79176-01, NE-52  
 RNP-L/LR-0390, Aging Management Review of Electrical Commodities for License Renewal,  
 Revision 4  
 WO 01038843-01, Condition monitoring N-31  
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 WO 01038876-01, Condition monitoring N-35  
 WO 01038877-01, Condition monitoring N-36  
 WO 01038879-01, Condition monitoring N-42  
 WO 01038880-01, Condition monitoring N-43  
 WO 01038882-01, Condition monitoring N-44  
 WO 01286606-01, Condition monitoring NE-51  
 WO 01286866-01, Condition monitoring NE-52

Commitment Item 39

AR00092145-01, LR Commitment Item 39  
 PMR 80661, Perform thermography on DSDG fuse  
 RNP-L/LR-0390, Aging Management Review of Electrical Commodities for License Renewal,  
 Revision 4  
 WO 01351332-01, Perform thermography on DSDG fuse



Commitment Item 40

AR00092147-01, LR Commitment Item 40

AR 302117, E1 non-segregated bus degradation

EC 72328, License Renewal Commitment Number 40, Aging Management Program for Bus Duct

PM-013, 480V Nonseg Bus Duct Inspection

PM-128, Main Generator Isophase Bus Duct Inspection

PM-143, Auxiliary Transformer Bus Duct Inspection

PM-144, Startup Transformer Bus Duct Inspection

PMID 11457, Generator bus duct

PMID 14146, Thermography – plant transformers

PMID 86588-01, Perform Thermal Imaging on EDG A Nonseg Bus Duct

PMID 86590-01, Perform Thermal Imaging on EDG B Nonseg Bus Duct

PMID 88097-01, Perform Thermal Imaging on MG Set A and B Bus Work

PMID 88098-01, Perform Thermal Imaging on DS Bus Work And Nonseg Bus

PMID 88099-01, Perform Thermal Imaging on System 5175 Non Segregated Bus

PMID 88100-01, Perform Thermal Imaging on Bus Duct Buses E1 &amp; E2 Tie

PMR 264977

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PMR 321962

PMR 321967

PMR 322527

PMR 322538

PMR 322648

PMR 322649

PMR 322654

PMR 374675

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WO 01130871-01, Inspect isophase bus de –Ionizing Baffle

WO 01455219

WO 1039856-01

WO 1152110

WO 1152123

WO 1152124, Remove 480V Bus Duct Panels And Perform Inspection

WO 1152125

WO 1455216

WO 1455221

WO 1496235

WO 1588504-01, Perform Thermography, Plant Transformers

WO 1588504-01, Thermography, Plant Transformers

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WO 1625326-01,

WO 1636173-01, Perform Thermal Imaging on DS Bus Work And Nonseg Bus

WO 1636174-01, Perform Thermal Imaging On System 5175 Non Segregated Bus

WO 1636312-01, Perform Thermal Imaging On MG Set A and B Bus Work

WO 1688116-01

WO 59553-02, Perform Inspection Of Generator Isolated Phase Bus Duct

WO 59747, Perform Meggaring Of Generator Isolated Phase Bus Duct

WO1152136, Remove 480V Bus Duct Panels And Perform Inspection

Commitment Item 41 and 44

AR00092148-01, LR Commitment Item 41

AR00092152-01, LR Commitment Item 44

Engineering Change 72274, Reevaluate EQ Limitorque MOV Number of Strokes/Cycles for 60 Years Plant Life, Revision 0

EQDP – 2.0 – Limitorque MOV actuators outside CV, Revision 10

EQDP – 2.1 – Limitorque MOV actuators outside CV, Revision 9

EQDP – 37.0 – Minco RTDs for RVLIS, Revision 6

EST-012 Engineering Periodic Verification of EQ Component Replacements with Qualified Life Less than 60 years, Revision 4.

Commitment Item 42

WCAP-15828, Evaluation of Pressurized Thermal Shock for H.B. Robinson Unit 2, Revision 0  
Engineering Change 51708R2, RCS Operating Limits

Commitment Item 45 and 46

AR00092154-01, LR Commitment Item 45 TLA Containment Tendon Loss of Pre-stress

AR00092155, LR Commitment Item 46

EST-064, "Containment Isolation Valve Local Leakage Rate Survey (Refueling Interval Not to Exceed 2 Years," Revision 12

EST-085, "Containment Integrated Leak Rate Test," Revision 16

PMID 10563-02, "License renewal commitment structural integrity test"

RNP-C-CONT-1004, "Calculation for Prestress Tendon Loading," Revision 0

RNP-L/LR-0506, "Prestressed Steel Tendons Time-Limited Aging Analysis Review," Revision 1

Commitment Item 47

AR00092156, LR Commitment Item 47

Amendment 198, Elimination of Neutron Absorption Credit for Boraflex, to Facility Operating License No. DPR-23 for the H.B. Robinson Steam Electric Plant, Unit No. 2

Other Documents

AP-007, Generic Procedure Writer's Instructions, Revision 24

AR 247243, RIS 2007-16 - Implementation of 10 CFR 54.37(b) for holders of Renewed Licenses

EGR-NGGC-0201, NGG Standard Procedure Writer's Guide, Revision 19

EGR-NGGC-0501, Nuclear Plant License Renewal Program, Revision 13

EGR-NGGC-0512, License Renewal Aging Management Activities, Revision 5

List of Engineering Changes Categorized as "MODIFIED" between 06/01/2002 and 05/01/2004  
H.B. Robinson Steam Electric Plant Unit 2 – Updated Final Safety Analysis Report, Revision 19,  
Chapter 18, "Aging Management Programs and Activities"

H.B. Robinson Steam Electric Plant Unit 2 – Updated Final Safety Analysis Report, Revision 20,  
Chapter 18, "Aging Management Programs and Activities"

H.B. Robinson Steam Electric Plant Unit 2 – Updated Final Safety Analysis Report, Revision 21,  
Chapter 18, "Aging Management Programs and Activities"

H.B. Robinson Steam Electric Plant Unit 2 – Updated Final Safety Analysis Report, Revision 22,  
Chapter 18, "Aging Management Programs and Activities"

NCR 00380367, FSAR Chapter 18 Update for Vessel Head Inspections

NCR 00380376, MMM-016 Clarification to Define "High Strength" Bolting

NCR 00380471, Tracking of Open License Renewal Commitments

NCR 00380649, License Renewal Commitments for FAC Program  
NCR 00380767, Discrepancy in OP-909 Concerning LR Commitment for AFOST  
NCR 00381173, PLP-037 Requirements for NIS Maintenance  
NCR 00381872, Difference in Words between LR Commitment and Procedures  
NCR 00382852, License Renewal Commitment Not Fully Described in the UFSAR  
NCR 00382858, Part of License Renewal Commitment Lost in Procedure Revision  
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NUREG-1785, "Safety Evaluation Report (SER) Related to the License Renewal of H.B. Robinson Steam Electric Plant, Unit 2"  
PRO-NGGC-0204, Procedure Review and Approval, Revision 16  
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**LIST OF ACRONYMS USED**

|        |   |
|--------|---|
| ACI    | American Concrete Institute                                     |
| ADAMS  | Agencywide Document Access Management System                    |
| AFW    | Auxiliary Feedwater   |
| AMP    | Aging Management Program  |
| AMR    | Aging Management Review   |
| ANSI   | American National Standard Institute                            |
| AR     | Action Request  |
| ASCE   | American Society of Civil Engineers                             |
| ASME   | American Society of Mechanical Engineers                        |
| BACCP  | Boric Acid Corrosion Control Program                            |
| BPVC   | Boiler and Pressure Vessel Code                                 |
| CASS   | Cast Austenitic Stainless Steel                                 |
| CCW    | Component Cooling Water   |
| CFR    | Code of Federal Regulations                                     |
| CUF    | Cumulative Usage Factor   |
| EAF    | Environmentally Assisted Fatigue                                |
| EC     | Engineering Change  |
| EDG    | Emergency Diesel Generator                                      |
| EOF    | Emergency Operations Facility                                   |
| EPRI   | Electric Power Research Institute                               |
| EQ     | Environmental Qualification <u>or</u> Environmentally Qualified |
| EQDP   | Environmental Qualification Documentation Package               |
| FAC    | Flow-Accelerated Corrosion                                      |
| FERC   | Federal Energy Regulatory Commission                            |
| FMP    | Fatigue Monitoring Program                                      |
| FOST   | Fuel Oil Storage Tank   |
| GALL   | NUREG-1801 "Generic Aging Lessons Learned"                      |
| ILRT   | Integrated Leak Rate Test                                       |
| IMC    | Inspection Manual Chapter                                       |
| INPO   | Institute of Nuclear Power Operations                           |
| IP     | Inspection Procedure  |
| IR     | Inspection Report   |
| ISI    | Inservice Inspection  |
| LLRT   | Local Leak Rate Test  |
| LRA    | License Renewal Application                                     |
| LTOP   | Low Temperature Over-Pressure                                   |
| MOV    | Motor-Operated Valve  |
| NACE   | National Association of Corrosion Engineers                     |
| NCR    | Nuclear Condition Report  |
| NDE    | Non-Destructive Examination                                     |
| NEI    | Nuclear Energy Institute  |
| NRC    | U.S. Nuclear Regulatory Commission                              |
| NUMARC | Nuclear Management and Resources Council                        |
| PARS   | Publicly Available Records                                      |
| PRR    | Procedure Revision Request                                      |
| RAI    | Request for Additional Information                              |
| RCS    | Reactor Coolant System  |
| RNP    | Robinson Nuclear Plant  |
| RO     | Refueling Outage  |

|       |                                      |
|-------|--------------------------------------|
| SER   | Safety Evaluation Report             |
| SG    | Steam Generator                      |
| SSC   | Structures, Systems, and Component   |
| TAA   | Time Limited Aging Analysis          |
| TSC   | Technical Support Center             |
| UFSAR | Updated Final Safety Analysis Report |
| URI   | Unresolved Item                      |
| UT    | Ultrasonic Testing                   |
| VHP   | Vessel Head Penetration              |
| WO    | Work Order                           |