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

March 14, 2017

Mr. David R. Vineyard
Southern Nuclear Operating Co., Inc.
Edwin I. Hatch Nuclear Plant
11028 Hatch Parkway North
Baxley, GA 31513

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT – NRC POST-APPROVAL SITE INSPECTION FOR LICENSE RENEWAL, INSPECTION REPORT 05000366/2017008

Dear Mr. Vineyard:

On February 16, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed a Post-Approval Site Inspection for License Renewal at your Edwin I. Hatch Nuclear Plant, Unit 2. The enclosed report documents the inspection results that were discussed on February 16. 2017, with members of your staff.

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

Based on the results of this inspection, no findings were identified. The inspectors identified a number of observations associated with the implementation of certain aging management activities which are subject to follow-up during the NRC Post Approval Site Inspection.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public inspections, exemptions, requests for withholding" of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its Enclosure, and your response (if any), will be available electronically for public inspection in the NRC Public Document Room, or from the Publicly

Available Records (PARS) component of NRC's Agencywide 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/

Binoy B. Desai, Chief
Engineering Branch 3
Division of Reactor Safety

Docket No.: 05000366
License No.: NPF-5

Enclosures: Inspection Report 05000366/2017008
w/Attachment: Supplemental Information

cc: Distribution via Listserv

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT – NRC POST-APPROVAL SITE INSPECTION FOR LICENSE RENEWAL, INSPECTION REPORT 05000366/2017008

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	05000366
License Nos.:	NPF-5
Report Nos.:	05000366/2017008
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Edwin I. Hatch Nuclear Plant, Unit 2
Location:	Baxley, Georgia 31513
Dates:	February 13 – February 16, 2017
Inspectors:	P. Cooper, Reactor Inspector B. Collins, Reactor Inspector
Approved by:	Binoy B. Desai, Chief Engineering Branch 3 Division of Reactor Safety

Enclosure

SUMMARY

Inspection Report 05000366/2017008; 02/13/17 – 02/16/17; Edwin I. Hatch Nuclear Plant, Unit 2; Post-Approval Site Inspection for License Renewal.

The report covers an inspection conducted by regional inspectors in accordance with the U.S. Nuclear Regulatory Commission (NRC) Inspector Manual Chapter 2515, and NRC Inspection Procedure 71003, Post-Approval Site Inspection for License Renewal, dated July 1, 2016.

Based on the sample selected for review, the inspectors determined that commitments, license conditions, and regulatory requirements associated with the renewed facility operating license were either being met, or where commitment actions had not been completed, that the licensee had administrative controls in place to ensure completion before the period of extended operation.

The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

No findings were identified during this inspection. The inspectors identified a number of observations associated with the implementation of certain aging management activities which are subject to follow-up during the NRC Post Approval Site Inspection.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA5 Other Activities: Post-Approval Site Inspection for License Renewal (Phase 1)

.1 Post-Approval Site Inspection for License Renewal (Phase 1)

a. Inspection Scope

The inspectors reviewed a sample of license renewal activities scheduled for the Unit 2 Spring 2017 refueling outage, which was the last outage prior to the period of extended operation (PEO). The objective of the inspection was to maximize observations of the actual implementation of license renewal activities before the beginning of the PEO (June 13, 2018), and verify that the licensee completed the necessary actions to: (a) comply with the conditions stipulated in the renewed facility operating license; (b) meet the license renewal commitments described in NRC Memorandum dated March 6, 2007 (hereinafter referred as "NRC Memorandum" which is available in ADAMS via Accession Number ML070640041); and (c) meet the future activities, including Aging Management Programs (AMPs), described in the Updated Final Safety Analysis Report (UFSAR) supplement submitted pursuant to 10 CFR 54.21(d).

The inspectors reviewed supporting documents; conducted interviews with licensee staff; observed in-process outage activities; and performed visual inspection of structures, systems, and components (SSCs) including those not accessible during power operation. The commitment items and AMPs selected for the inspection sample are summarized below based on their description in Appendix A of the License Renewal Application and the NRC safety evaluation report (SER) supplement issued in December 2001 (ADAMS Accession Numbers ML020020160, ML020020291 and ML020020301). The specific inspection activities conducted for each AMP are also described below. Specific documents reviewed are also listed in the report attachment.

Plant Service Water and RHR Service Water Inspection Program (UFSAR Section 18.2.13):
The UFSAR supplement stated that the Plant Service Water and RHR Service Water Inspection program is designed to detect wall thickness degradation, fouling, or cracking in the components associated with the plant service water and residual heat removal service water systems. This program was credited with managing, in part, aging effects for a variety of carbon steel, stainless steel, copper alloy, and gray cast iron components that were exposed to a raw water or buried environment. The service water inspection program also monitored underwater/wetted surfaces of the intake suction pit for the plant service water pumps (including the standby diesel generator service water pump), the residual heat removal service water pumps and the traveling water screens located at the intake structure.

The inspectors reviewed work orders associated with the inspection of the intake suction pit for the plant service water pumps and interviewed plant personnel to confirm the program and applicable commitments was being implemented as described in the licensee correspondence, and the NRC SER.

Wetted Cable Activities (UFSAR Section 18.2.16):
The UFSAR supplement stated that the Wetted Cable Activities program monitored insulated cables outside of containment, in portions of systems that were within the scope of license renewal. The program scope included the 4 kilovolts power cables and transformer feeder cables that ran through conduits that junction in below grade pull boxes located outside. The program routinely monitored for water in the applicable pull boxes, and drained accumulated water when necessary, thereby preventing or mitigating loss of insulation resistance that might otherwise occur if the cables were left immersed. The program also provided for testing of cables to measure cable insulation resistance.

The inspectors reviewed the implementing procedures, interviewed licensee personnel to discuss the scope of the program, and observed the implementation of the pull-box inspection procedure to confirm the program was being implemented as described in the licensee correspondence and the NRC SER.

The inspectors identified two observations associated with the sequence of activities with the measurement of pull box water levels as well as a potential vulnerability in license renewal scope management. These observation are discussed in further details in section 4OA5.1.b(1) and 4OA5.1.b(2), respectively, of this report.

Structural Monitoring Program (UFSAR Section 18.3.5 and Commitment No. 5 in NRC Memorandum):
The UFSAR supplement stated that the Structural Monitoring program (SMP) provided a condition monitoring and appraisal process for structures and components within the scope of the license renewal. The SMP contained eight commitments. These commitments were designed to focus on the following aspects of license renewal: 1) implementing the existing SMP, 2) expanding the scope of the existing SMP to components within the scope of license renewal that were not previously included in the program, 3) enhancing the existing acceptance criteria for inspections such that aging mechanisms for each component would be appropriately managed, and 4) adding a flow test performed as described in Technical Specification Surveillance Requirement (3.6.4.1.4).

The inspectors reviewed work orders associated with the implementation of the structures monitoring walk down inspection and interviewed plant personnel to confirm the program and applicable commitments was being implemented as described in the licensee correspondence, and the NRC SER.

Treated Water Systems Piping Inspections (UFSAR Section 18.4.2 and Commitment No. 7 in NRC Memorandum):
The UFSAR supplement stated that the Treated Water Systems Piping Inspections program was used to verify the effectiveness of the plant chemistry program for managing the effects of aging in stagnant or low-flow portions of piping, or occluded areas of components, exposed to a treated water environment. The commitment associated with the Treated Water Systems Piping Inspections program specified that prior to the PEO, condition monitoring via one-time inspections would be performed to provide objective evidence that the existing chemistry control program was managing aging in piping that was not examined under another inspection program. Additionally, the program stated that: 1) one-time inspections would be performed on a sample population of carbon and stainless steel piping in treated water systems, 2) inspection locations would be based on engineering judgment and would include the most

susceptible areas to aging-related degradation, 3) if components did not meet the acceptance criteria defined in the implementing procedures, they would be evaluated, repaired or replaced, 4) periodic monitoring and trending of degradation for inspection locations would be established provided that the one-time inspection results indicate a concern that components may not be able to perform their intended functions, 5) cracks identified via visual examination would be further inspected via volumetric examinations and 6) inspections may utilize an examination method similar to the VT-1 examination described in ASME Boiler and Pressure Vessel Code Section XI.

The inspectors interviewed licensee personnel to discuss the scope of the program, observed an ultrasonic examination associated with the implementation of a one-time inspection, and reviewed completed one-time inspection results to verify the program and applicable commitments was being implemented as described in the licensee correspondence and the NRC SER.

The inspectors identified one observation associated with the documentation of the acceptability of one-time inspections. This observation is discussed in further details in section 4OA5.1.b(3) of this report.

RHR Heat Exchanger Augmented Inspection and Testing Program (UFSAR Section 18.4.6 and Commitment No. 11 in NRC Memorandum):
The UFSAR supplement stated that the RHR Heat Exchanger (HX) Augmented Inspection and Testing program was a condition monitoring program that managed aging of the RHR heat exchangers. The aging effects managed were loss of material, flow blockage, cracking, and loss of thermal performance. This program was intended to satisfy one of the requirements of GL 89-13 and implement guidance found in SAND 93-7070.UC-523, “Aging Management Guideline for Commercial Nuclear Power Plants - Heat Exchangers (DOE, July 1984).” The commitment associated with the RHR Heat Exchanger Augmented Inspection and Testing program specified that prior the PEO, the program would provide enhanced aging management of both the shell and tube sides of Unit 1 and 2 RHR HXs and would be inspected visually and via eddy current on a regular basis. The program implemented visual inspections of each RHR HX channel, channel cover, tube sheet (channel side), tubes, and partition plate along with eddy current examinations of a sample of non-plugged RHR HX tube bundles. Leakage testing was also performed when heat exchanger tube leaks were suspected.

The inspectors reviewed eddy current data of the RHR HX and interviewed plant personnel to confirm the program and applicable commitments was being implemented as described in the licensee correspondence and the NRC SER.

Review of Newly-Identified SSCs: This inspection requirement was completed during the Phase 2 implementation of inspection procedure (IP) 71003 (ADAMS Accession Number ML12089A130).

Descriptions of AMPs and Time-Limited Aging Analysis (TLAA) in the UFSAR Supplement: The review of the description of AMPs and TLAAs in the UFSAR supplement submitted pursuant 10 CFR 54.21(d) was completed during the Phase 2 implementation of IP 71003 (ADAMS Accession Number ML12089A130).

Review of License Renewal Commitment Changes: This inspection requirement was completed during the Phase 2 implementation of IP 71003 (ADAMS Accession Number ML12089A130).

b. Findings and Observations

The inspectors identified a number of observations associated with the implementation of certain aging management activities which are subject to follow-up during the NRC Post Approval Site Inspection.

(1) Observation for the Wetted Cable Activities: Pull Box Inspection Procedure

The Cable Monitoring Program (NMP-ES-051) is the program document associated with the Wetted Cable Activities AMP. The goal of the Cable Monitoring Program is to maintain the 4 kilovolts power cables and transformer feeder cables, within the scope of license renewal, that junction in below grade pull boxes, located outside in a dry condition. The program is implemented through procedures such as the Tan Delta Testing (NMP-ES-051-002) and the Pull Box Inspection Procedure (NMP-ES-051-004).

During this inspection, the inspector observed the activities associated with the Pull Box Inspection Procedure. The purpose of this procedure is to perform the periodic maintenance inspections on the outdoor electrical duct run pull boxes/man-holes containing medium voltage, low voltage and control cables. Specifically, the procedure monitors sump pump operation and verifies water levels. The inspector observed that generically the steps in the pull box procedure is to (1) verify the correct pull box is being inspected (by number and geographical location), (2) test the solar-powered sump pump by pumping some water by manual override, (3) measure water level in the pull box sump, and (4) pump out any excess water by manual override as required. When the inspectors observed a few inspections of various pull boxes, these steps were performed exactly as the procedure is written.

The intent of the process is to measure how much water has accumulated since the last measurement. That information is used to dictate whether a CR is entered and whether the inspection frequency is increased or decreased, etc. Performing the steps in this order renders the process vulnerable because if some of the water is pumped out prior to measuring the water level, it is possible that the actions will be taken based on the lower level rather than the actual level that existed prior to testing the sump pump. As a result of this observation, the licensee entered this item as CR10331018, “Revise Sequence of Pull Box Inspection Procedure NMP-ES-051-004,” for further consideration.

(2) Observation for the Wetted Cable Activities: License Renewal Scope Management

As described above, the purpose of the Cable Monitoring Program is to maintain the 4 kilovolts power cables and transformer feeder cables, within the scope of license renewal, that junction in below grade pull boxes, located outside in a dry condition. While observing the pull box inspections, the inspector asked the program owner which pull boxes were in the scope of license renewal. It was noted during the review of the pull box procedure that the data sheets specific to Farley identified the pull boxes within the scope of license renewal as “Pull Box Number (LR)” (e.g. A1M49 (LR)). The Hatch data sheets however identified select pull boxes as “Pull Box Number (SR)” (e.g. PB2-D (SR)). Since the scope of license renewal is not limited to just safety related structures,

the program owner, after reviewing the program information, was not able to clearly identify if any additional pull boxes were within the scope of license renewal. Generically, if there is no way for program owners to positively identify which components are in the scope of license renewal and which aren't, the vulnerability exists that they may treat all components equally. In some cases, this could result in non-conservative actions that may lead to missing regulatory requirements. As a result of this observation, the licensee entered this item as CR10331831, "Identify Which Cable Pull Boxes are in Scope of License Renewal," for further consideration.

(3) Observation for One-Time Inspection Activities: Acceptability of Results

A one-time inspection of selected components is used to verify the system-wide effectiveness of an aging management program (AMP) that is designed to prevent or minimize aging to the extent that it will not cause the loss of intended function during the period of extended operation. Plant Hatch does not have a standalone One-Time Inspection program but rather implements elements through programs such as the Gas Systems Component Inspection Program (42IT-QCX-005-0) and the Treated Water System Piping Inspections Program (42IT-QCX-006-0). These procedures include an acceptance criteria which states that a reduction of pressure-retaining wall thickness must be less than 10%.

The inspectors reviewed completed one-time inspections and found the documentation simply stated whether the inspection was "Sat" or "Unsat." In some cases, the UT results were available, however the minimum acceptable thickness measurement was not documented for comparison. Conversations were held with licensee staff regarding the minimum requirements for a QA record and as a result the licensee entered this concern as CR10332058, Vulnerability in QA Recordkeeping, and CR10331486, "LRI QC Inspection Record Missing," for further consideration.

4OA6 Management Meetings

Exit Meeting Summary

On February 16, 2017, the inspectors presented the inspection results to Mr. David Vineyard, Site Vice President, 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

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee
L. Bohn, License Renewal Engineer
C. Collins, Site Licensing Supervisor
J. Duvall, Site License Renewal Program Owner
B. Osterbuhr, License Renewal Engineer

LIST OF DOCUMENTS REVIEWED

Condition Reports
CR10329986, Unable to Perform LRI of 2P33 piping, 2/12/17
CR10330808, LRI found unsatisfactory, 2/14/17
CR10331018, Revise Sequence of Pull Box Inspection Procedure NMP-ES-051-004, 2/14/2017
CR10331486, LRI QC Inspection Record Missing, 2/15/17
CR10331831, Identify Which Cable Pull Boxes are in Scope of License Renewal, 2/16/2017
CR10332058, Vulnerability in QA Recordkeeping, 2/16/2017

Procedures
42IT-QCX-006-0, Treated Water System Piping Inspections Program: General Inspection Procedure, Ver. 3.1
NL-09-1779, Letter from R.D. Baker to R.E. Varnadore, "Wetted Cable Activities Aging Management Program, License Renewal Implementation Package (EIH-LR-IMP-1.16)," dated December 7, 2009
NMP-ES-021, Structural Monitoring Program for the Maintenance Rule, Ver. 9.0
NMP-ES-024-201, Visual Examination (VT-1), Ver. 3.1
NMP-ES-024-511, Ultrasonic Thickness Examination Procedure, Ver. 4.1
NMP-ES-051-004, Pull Box Inspection, Ver. 5.0

Work Order
WO# SNC656487, LRI between 2T48F211 & Torus penetration, 11/9/16
WO# SNC656492, LRI of drain piping on 2U41D004, 3/2/16
WO# SNC656533, LRI above 2E21F020A, 1/24/17
WO# SNC656543, LRI on CRD 3019, 11/10/15