

UNITED STATES NUCLEAR REGULATORY COMMISSION REGION II 245 PEACHTREE CENTER AVENUE N.E., SUITE 1200 ATLANTA, GEORGIA 30303

October 2, 2012

Mr. T. Preston Gillespie, Jr. Site Vice President Duke Energy Corporation Oconee Nuclear Station 7800 Rochester Highway Seneca, SC 29672-0752

SUBJECT: OCONEE NUCLEAR PLANT – NRC POST-APPROVAL SITE INSPECTION FOR LICENSE RENEWAL, INSPECTION REPORT 05000269/2012008, 05000270/2012008, AND 05000287/2012008

Dear Mr. Gillespie, Jr,

On August 23, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed a Post-Approval Site Inspection for License Renewal at your Oconee Nuclear Plant Units1, 2, and 3 in accordance with NRC Inspection Procedure 71003. The enclosed report documents the inspection results, which were discussed on August 23, 2012, 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 and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, and interviewed plant personnel.

Based on the inspection sample selected for review, no findings were identified. The inspectors determined that the overall implementation of Aging Management Program (AMP) activities was consistent with the license renewal commitments and the conditions in the renewed operating license. The inspectors also determined that changes to license renewal commitments were performed in accordance with applicable regulatory requirements.

The enclosed inspection report contains ten observations which consist of three different types of observations. The first type of observation is a summary of note-worthy facts and/or information that describe significant changes to commitments that have already been approved or submitted to the NRC with regards to license renewal. There were two of these observations. The second type of observations represent issues of concern that if found during the Period of Extended Operation (PEO), would have been subject to screening and evaluation of performance deficiencies in accordance with the NRC Reactor Oversight Process. There were four of these observations. The third type of observation represents Aging Management Programs (AMP) and license renewal commitment samples selected by the inspectors that were not in a position for the inspectors to complete their review. There were four of these observations.

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 <u>http://www.nrc.gov/reading-rm/adams.html</u> (the Public Electronic Reading Room).

Sincerely,

/**RA**/

Steven J. Vias, Chief Engineering Branch 3 Division of Reactor Safety

Docket No.50-269, 50-270, 50-287License No.DPR-38, DPR-47, DPR-55

Enclosure:

Inspection Report 05000269/2012008, 05000270/2012008, and 05000287/2012008 w/Attachment: Supplemental Information

cc: (See Page 3)

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cc: (See Page 3)

ACCESSION NUMBER:

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OFFICIAL RECORD COPY DOCUMENT NAME: S:\DRS\ENG BRANCH 3\INSPECTIONS\INSPECTION AREAS\LICENSE RENEWAL\OCONEE\INSPECTION REPORTS\OCO IR 2012008 IP71003 PHASE 2 CAF.DOCX cc: Thomas D. Ray Plant Manager Oconee Nuclear Station Duke Energy Corporation Electronic Mail Distribution

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(cc cont'd - See page 4)

(cc cont'd) County Supervisor of Oconee County 415 S. Pine Street Walhalla, SC 29691-2145

W. Lee Cox, III Section Chief Radiation Protection Section N.C. Department of Environmental Commerce & Natural Resources Electronic Mail Distribution Letter to T. Preston Gillespie, Jr. from Steven J. Vias dated October 2, 2012.

SUBJECT: OCONEE NUCLEAR PLANT – NRC POST-APPROVAL SITE INSPECTION FOR LICENSE RENEWAL, INSPECTION REPORT 05000269/2012008, 05000270/2012008, AND 05000287/2012008

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	50-269, 50-270, and 50-287
License No:	DPR-38, DPR-47, DPR-55
Report No:	05000269/2012008, 05000270/2012008, 05000287/2012008
Licensee:	Duke Energy
Facility:	Oconee Nuclear Plant, Units 1, 2, and 3
Location:	7812B Rochester HWY Seneca, SC 29672
Dates:	August 6, 2012 – August 23, 2012
Inspectors:	Cecil Fletcher, Senior Reactor Inspector (Lead) Tom Bilik, Senior Reactor Inspector (NRC Region III) Brendan Collins, Reactor Inspector Matthew Endress, Reactor Inspector Louis Lake, Senior Reactor Inspector Robert Williams, Reactor Inspector
Approved by:	Steven J. Vias, Chief Engineering Branch 3 Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000269,-270,-287/2012008; 08/06/2012 – 08/23/2012; Oconee Nuclear Plant, Units 1, 2, and 3; Post Approval Site Inspection for License Renewal.

The report covers a team inspection conducted by six regional inspectors in accordance with NRC Manual Chapter 2515 and NRC Inspection Procedure 71003.

Based on the sample selected for review, with the exception of two commitments (SSF Diesel Fuel Oil Tank Inspection and Plant Specific Internals Ductility Analysis) 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 Oconee Nuclear Plant Units 1, 2, and 3. With the exception of the Reactor Vessel Internals Inspection Program, the inspectors determined that the licensee had established the required Aging Management Programs (AMPs) for in-scope structures, systems, and components in order to maintain their identified function(s) through the period of extended operation (PEO) of Units 1, 2, and 3. The inspectors determined that the planned inspection activities required for Unit 1, 2, and 3 prior to the PEO of the respective units, were being tracked in the Corrective Action Program (CAP) or work control process.

The inspectors also determined that changes to license renewal commitments were performed in accordance with applicable regulatory requirements. However, based on the status of the Updated Final Safety Analysis Report (UFSAR) supplement for license renewal at the time of the inspection, the team could not complete the review of the UFSAR to ensure that it was adequately updated to reflect the completion of required activities and programmatic changes, including the incorporation of "newly identified" structures, systems, and components in accordance with 10 CFR 54.37(b).

The inspectors identified 10 observations during this inspection. Those observations consisted of three different types of observations. The first type of observation is a summary of note-worthy facts and/or information that describe significant changes to commitments that have already been approved or submitted to the NRC with regards to license renewal. There were two of these observations. The second type of observations represent issues of concern that if found during the Period of Extended Operation (PEO), would have been subject to screening and evaluation of performance deficiencies in accordance with the NRC Reactor Oversight Process. There were four of these observations. The third type of observation represents Aging Management Programs (AMP) and license renewal commitment samples selected by the inspectors that were not in a position for the inspectors to complete their review. There were four of these observations.

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: Post-Approval Site Inspection for License Renewal (Phase 2)
- .1 Implementation of License Conditions, License Renewal Commitments, and Aging Management Programs
 - a. Inspection Scope

The inspectors reviewed a sample of Aging Management Programs and Time-Limited Aging Analyses (TLAAs) associated with the renewed operating license for Oconee Nuclear Plant Units 1, 2, and 3 issued on June 26, 2000. This inspection took place prior to the period of extended operation of Units1, 2, and 3, which begins on February 6, 2013, October 6, 2013, and July 19, 2014 respectively. The inspectors reviewed license renewal documents including administrative procedures, implementing procedures, work orders, inspection reports, engineering evaluations, condition reports, and conducted interviews with licensee staff. The objective of this inspection was to 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 inspection activities described in the UFSAR supplement for license renewal submitted pursuant to 10 CFR 54.21(d). The license renewal application (LRA) for Oconee Nuclear Plant and the corresponding NRC Safety Evaluation Report (SER) documented in NUREG-1723 including Supplement 1 and 2 are available on www.nrc.gov.

For those license renewal action items that were not completed at the time of this inspection (with the exception of the items specifically stated), the team verified that there was reasonable assurance that such action items were on track for completion prior to the PEO or in accordance with an established implementation schedule consistent with the licensing basis documents. The tracking of pending administrative actions to meet the licensee renewal commitments was implemented through the licensee's Corrective Action Program. License renewal commitments and AMPs with pending actions that are subject to additional inspection by the NRC are presented as observations in section 4OA5.1.b of this report.

The commitment items and AMPs/TLAAs selected for the inspection sample are summarized below based on their description in the revised UFSAR supplement submitted with the LRA.

ONS CALCULATION 4.1 – ALLOY 600 AMP [NRC MEMORANDUM COMMITMENT NO. 10]: This Commitment specified that prior to the PEO ONS would implement an Alloy 600 Aging Management Program to manage cracking due to PWSCC of Alloy 600 and Alloy 82/182 locations, including the Alloy 82/182 cladding in the hot leg flowmeter element. The ONS LRA identified PWSCC as the applicable aging effect for RCS Alloy 600 components and Alloy 82/182 weld metal. The original Alloy 600 Program, described in the LRA, relies on engineering evaluations to predict the most susceptible components, coupled with periodic volumetric nondestructive examinations to confirm the predictions. Duke committed to completing inspections of the five most susceptible locations prior to Oconee Unit 1 PEO (February 6, 2013).

Subsequent to the issuance of the ONS renewed operating license, in September 2008, 10CFR50.55a mandated long-term inspection requirements specified in the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code Case N-722. The NRC issued Bulletin 2004-1 and endorsed EPRI's Materials Reliability Program (MRP) 139 report. These documents provided guidance for the mitigation or inspection of Alloy 82/182 butt welds in Reactor Coolant System (RCS) piping greater than four inches in diameter. ONS updated the Alloy 600 Program to incorporate these additional requirements and MRP-139 guidelines.

The current ONS Alloy 600 Program includes preemptive measures to replace Alloy 600 components with Alloy 690 or stainless steel components and apply Full Structural Weld Overlays (FSWO's) over Alloy 82/182 welds using alloy 52/152 weld metal, based on service temperature. The Program also included periodic visual and volumetric examinations to detect cracking of Alloy 600/82/182 components and welds.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, PIPs, the UFSAR, inspection records; and interviewed the responsible plant personnel regarding these documents.

The inspectors determined that the implementation of the current Alloy 600 Program activities provides reasonable assurance that ONS will effectively manage Alloy 600/82/182 aging of RCS components and welds susceptible to PWSCC during the PEO.

<u>ONS CALCULATION 4.6 – CONTAINMENT INSERVICE INSPECTION (CISI)</u> <u>PROGRAM:</u> The licensee identified the CISI plan as a program to manage the effects of aging on containment components and committed to continue it during the PEO. The ONS License Renewal Application (LRA) identified three groups of Containment components based on materials of construction. The three groups are concrete components, steel components, and the post-tensioning system (Loss of pre-stress is a time-limited aging analysis (TLAA) evaluated separately in Chapter 5.3 of the LRA). ONS credits the CISI Plan for managing the applicable aging effects of Containment concrete and steel and the post-tensioning system components during the PEO.

Inspection and acceptance criteria for steel components and seals are in accordance with ASME Section XI Subsection IWE. Inspection and acceptance criteria for concrete and the post-tensioning system components are in accordance with ASME Section XI Subsection IWL. The Safety Evaluation Report (SER) and the ONS UFSAR reflect the commitment to continue the CISI Plan to manage the applicable aging effects in the Containment components, as summarized above.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, PIPs; and interviewed the responsible plant personnel regarding these documents. The inspectors verified that the plan is continuing as described in the license renewal application and approved in the NRC Safety Evaluation Report.

The inspectors determined that the implementation of the current CISI Program activities provides reasonable assurance that ONS will effectively manage the loss of material of the Reactor Building Containment and Containment Penetrations during the PEO during the PEO.

ONS CALCULATION 4.7 – CONTAINMENT LEAK RATE TESTING (CLRT) PROGRAM: The ONS LRA identified that the Containment structure and penetrations would be subject to the aging effects of loss of material, change in material properties, and cracking. ONS credits the CLRT Program for managing the loss of material of the Reactor Building Containment and Containment Penetrations during the PEO. The Safety Evaluation Report (SER) and the ONS UFSAR reflect the commitment to continue the CLRT Program to manage the applicable aging effects in the Containment and Containment Penetrations.

The ONS CLRT Program utilizes three test types: Type A Integrated Leak Rate Testing (ILRT) that measures the overall Containment leakage ONS performs the ILRT using Option B of 10CFR50 Appendix J. 10CFR50, Appendix J specifies the testing frequency and testing and acceptance criteria. Type B Local Leak Rate Testing (LLRT) that measures Containment Penetration leakage of resilient seals and gaskets, including airlock door seals and equipment hatch gaskets, and Type C LLRT to measure Containment isolation valve leakage. The ONS License Renewal Application (LRA) only credits Type A ILRT and Type B LLRT for managing the Containment and Containment Penetration aging effects, Type C LRT, performed to measure isolation valve leakage rates, is not considered part of the containment AMP.

At the time of the LRA, ONS performed the Type B LLRT using 10CFR50 Appendix J Option A, Section III.D.2 and Option B, Section III.B. In 2011, ONS implemented a TS change for Type B LLRT to use Option B of 10CFR50 Appendix J.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, PIPs, the UFSAR, inspection records; and interviewed the responsible plant personnel regarding these documents.

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the effects of aging on containment components and continue it during the PEO. The inspectors identified one observation associated with the implementation of this AMP which is discussed in further details in section 4OA5.1.b(1).

CALCULATION 4.10 – CRDM NOZZLE AND OTHER VESSEL CLOSURE

<u>PENETRATIONS INSPECTION PROGRAM</u>: The original commitment is identified in the Oconee License Renewal Safety Evaluation Report (SER), NUREG-1723. The SER identifies inspection requirements based on all three (3) Oconee Reactor Pressure Vessel Heads (RPVH) being susceptible to primary water stress corrosion cracking (PWSCC). The (RPVH) of all three (3) Oconee Units have been replaced with (PWSCC)

resistant material. Therefore, the original commitment identified in the ONS License Renewal Application, in the ONS Specification OSS-0274.00.00.0004, and in the ONS License Renewal Safety Evaluation Report, NUREG 1723, no longer applies.

As required by the current requirements of 10CFR50.55a (g)(6)(ii)(D)(1), ONS has revised this commitment to include the requirements of ASME Code Case N-729-1. The revised commitment includes:

- A visual examination of the bare-metal surface of the entire outer surface of the head, including essentially 100% of the intersection of each nozzle with the every third refueling outage or 5 calendar years, whichever is less.
- A volumetric and/or surface examination of all partial penetration welds nozzles, not to exceed one inspection interval (nominally 10 calendar years). These examinations should cover essentially 100% of the required volume or equivalent surfaces of the nozzle tube, as identified by figure 2 of ASME Code Case N-729-1. A demonstration volumetric or surface leak path assessment through all Jgrove welds shall be performed.

The inspectors interviewed station personnel implementation of the CRDM penetration examination requirements, and verified that these revised requirements have been incorporated into the station ISI program and implementing procedure NDENAM-NDE-70, Rev. 0, "Visual examination of Reactor Pressure Vessel Upper Head Penetrations"... The inspectors also verified that these revised requirements have been incorporated into Section 18.3.2 of the ONS UFSAR...

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the effects of aging on the Oconee Control Rod Drive components and continue it during the PEO.

ONS CALCULATION 4.13 – FIVE YEAR UNDERWATER INSPECTION OF HYDRO AND APPERTUNANCES PROGRAM: This commitment specified that there are several hydroelectric dams and other structures that are subject to aging effects which would be a concern during the period of extended operation. Section 18.3.6 of the UFSAR supplement stated that inspection of these hydroelectric dams and structures would be inspected under the existing 5-Year Hydroelectric Dams and Appurtenances Program. The 5-Year frequency is established by the Federal Energy Regulatory Commission (FERC) requirements, as stated in 18 CFR Part 12, Safety of Water Power Projects and Project Works.

The inspectors reviewed the licensing basis, program basis documents, administrative and implementing procedures to verify that the program was developed as described in the license renewal application and the corresponding NRC Safety Evaluation Report.

The inspectors interviewed licensee personnel to discuss the implementation of the inspection program, and to verify the program was consistent with the licensing basis. The status of administrative action items associated with the implementation of this commitment was considered "complete" for Units 1, 2 and 3 in the licensee's CAP.

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the effects of aging on the Oconee hydroelectric dams and appurtenances and continue it during the PEO.

<u>ONS CALCULATION 4.18.1 & 4.18.2 – FIRE PROTECTION PROGRAM</u>: This AMP specified that the existing Fire Protection Program would be credited to ensure that the licensing basis would continue to be met for the Fire Water System, Fire Hydrants, Fire Barriers and Fire Detection System. Section 18.3.17.8 of the UFSAR supplement for license renewal stated that the Fire Hydrant Flow Tests would be managed by the Fire Protection Program and the Problem Investigation Process. The other portions of the Fire Protection Program were not explicitly identified in the UFSAR supplement, but are all covered within UFSAR Section 9.5.1 under the Fire Protection Program.

The inspectors reviewed the licensing basis, program basis documents, administrative and implementing procedures, license renewal drawings, and self-assessments to verify that the program was developed as described in the license renewal application and the corresponding NRC Safety Evaluation Report. The inspectors interviewed licensee personnel to discuss the implementation of the Fire Protection Program to verify the licensing basis would continue to be met.

The status of administrative action items associated with the implementation of this AMP was considered "complete" for Units 1, 2 and 3 in the licensee's CAP. The inspectors identified two observations associated with the implementation of this program, which is discussed in further details in sections 4OA5.1.b(2) and 4OA5.1.b(3) of this report.

ONS CALCULATION 4.19 – FLOW ACCELERATED CORROSION (FAC) PROGRAM: This AMP specified that the existing Flow-Accelerated Corrosion Program would be credited to ensure that the aging effects of FAC would be appropriately managed during the period of extended operation, such that the licensing basis for the Main Steam and

the period of extended operation, such that the licensing basis for the Main Steam and Feedwater Systems continues to be met. Section 18.3.9 of the UFSAR supplement for license renewal identifies the specific portions of these systems which are subject to the aging effects of FAC.

The inspectors reviewed the licensing basis, program basis documents, administrative and implementing procedures, license renewal drawings, and self-assessments to verify that the program was developed as described in the license renewal application and the corresponding NRC Safety Evaluation Report. The inspectors interviewed licensee personnel to discuss the implementation of the FAC Program to verify the licensing basis would continue to be met.

The status of administrative action items associated with the implementation of this AMP was considered "complete" for Units 1, 2 and 3 in the licensee's CAP.

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the effects of aging of FAC and continue it during the PEO.

ONS CALCULATION 4.21 – GALVANIC SUSCEPTIBILITY INSPECTION [NRC MEMORANDUM COMMITMENT NO. 2]: This commitment specified that prior to the end of the initial operating license terms for Units 1, 2 and 3, a Galvanic Susceptibility Inspection Program would be implemented to manage the aging effects of the loss of material due to galvanic corrosion on the internal surfaces of susceptible piping and components. The UFSAR supplement for license renewal stated that this program involves one-time inspections on the internal surfaces of selected piping and components with the greatest susceptibility to galvanic corrosion. The UFSAR also stated that loss of material is expected mainly in carbon steel components directly coupled to stainless steel components in raw water systems. Calculation OSC-10474, "License Renewal Documentation Calculation, 4.21 Galvanic Susceptibility Inspection," was used to select a representative sample of components in Units 1, 2, and 3 for a baseline examination in selected systems to determine if the corrosion mechanism was active and the need for follow-up examinations. From the results of the inspections at the selected locations, the licensee determined that follow-on inspections would be required at some locations. Since there were few of these follow-on locations, the licensee determined that it would be more effective to add these locations to their Service Water Piping Corrosion Program. The inspectors reviewed that program to verify the locations were appropriately tracked.

The inspectors reviewed the licensing basis, program basis documents, administrative and implementing procedures to verify that the program was developed as described in the license renewal application and the corresponding NRC Safety Evaluation Report.

The inspectors interviewed licensee personnel to discuss the implementation of the onetime and follow-on inspections, and to verify the program was consistent with the licensing basis. The status of administrative action items associated with the implementation of this commitment was considered "complete" for Units 1, 2 and 3 in the licensee's CAP.

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the effects of aging of the loss of material due to galvanic corrosion on the internal surfaces of susceptible piping and components and continue it during the PEO. The inspectors identified one observation associated with the implementation of this program, which is discussed in further details in section 4OA5.1.b(4) of this report.

ONS CALCULATION 4.24 - CIVIL ENGINEERING STRUCTURES AND

<u>COMPONENTS INSPECTION PROGRAM</u>: This commitment specified that the licensee would continue the inspection program for Civil Engineering Structures and Components for the period of extended operation. The purpose of the program is to manage the loss of material for the Reactor Coolant System structural components, external surfaces of mechanical components, and loss of material, cracking and change of material properties for all other structural components. The inspection program is implemented through Engineering Directives Manual (EDM) 410 and Model Work Orders (MWOs) 01536567, 01592142, 01592149, and 01592150.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, applicable condition reports, and work orders regarding these documents to verify that the program had been implemented as described in the license renewal

application. The inspectors verified that the licensee developed procedures and conducted inspections as described in the Program Basis Document and the UFSAR. The inspectors also verified that the inspections were appropriately scheduled and tracked to meet the required inspection period. The status of administrative action items associated with the implementation of this commitment were considered "complete" for Units 1, 2, and 3 in the licensee's CAP.

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the loss of material for the Reactor Coolant System structural components, external surfaces of mechanical components, and loss of material, cracking and change of material properties for all other structural components and continue it during the PEO.

ONS CALCULATION 4.25 – INSULATED CABLES AND CONNECTIONS AMP [NRC <u>MEMORANDUM COMMITMENT NO. 12]</u>: This AMP specified that aging effects associated with insulated cables and connections would be managed under a new Insulated Cables and Connections program. This program implements inspections which are to be accomplished on a 10-year frequency, and the acceptance criteria will be developed for each cable/connection independently just prior to each inspection. The UFSAR supplement specifically stated that the cables and connections managed under this program are not within the scope of the Environmental Qualification program.

The inspectors reviewed the licensing basis, program basis documents, administrative and implementing procedures to verify that the program was developed as described in the license renewal application and the corresponding NRC Safety Evaluation Report.

The inspectors interviewed licensee personnel to discuss the implementation of the program, and to verify the program was consistent with the licensing basis. The status of administrative action items associated with the implementation of this AMP was considered "complete" for Units 1, 2 and 3 in the licensee's CAP.

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the aging effects associated with insulated cables and connections and continue it during the PEO.

ONS CALCULATION 4.26 – KEOWEE AIR AND GAS SYSTEMS INSPECTION [NRC <u>MEMORANDUM COMMITMENT NO. 3]</u>: This commitment specified that the licensee would perform one time inspections on carbon steel piping of the Keowee Carbon Dioxide, Depressing Air, and Governor Air Systems using ultrasonic testing to ensure no acceptable loss of material due to corrosion. In addition, the licensee would perform a visual inspection of the Governor Air Tanks to ensure no unacceptable loss of material due to corrosion. The UFSAR supplement for license renewal stated that based on the results of these inspections, the need for additional inspections or programmatic corrective actions would be established. The aging effect of concern for this commitment is general corrosion of carbon steel components. The inspectors reviewed the licensing basis, program basis documents, implementing procedures, applicable condition reports, and work orders regarding these documents to verify that the program had been implemented as described in the license renewal application. The inspections performed on the associated pipe showed that no unacceptable pipe thinning had occurred. The Governor Air Tanks were found to be in good condition with little to no rust.

As a result of the Governor Air Tank inspection results, no future inspections of the tanks are scheduled. While no pipe thinning was found, the licensee performed a calculation of corrosion rates and determined that wall thinning may occur during the Period of Extended Operation for the CO2 piping. As a result of the calculation, the licensee scheduled and conducted follow-on inspections on the CO2 piping in early 2012 to recheck pipe wall thickness. No significant thinning was detected, but the licensee scheduled future inspections of this pipe into the PEO.

The status of administrative action items associated with the implementation of this commitment were considered "complete" for Units 1, 2, and 3 in the licensee's CAP.

ONS CALCULATION 4.29 – ONCE THROUGH STEAM GENERATOR UPPER LATERAL SUPPORT INSPECTION [NRC MEMORANDUM COMMITMENT NO. 4]: This commitment specified that a one-time visual inspection would be performed to assess the condition of the Once Through Steam Generator (OTSG) Upper Lateral lubrite pads. The results of these inspections would be evaluated to determine the need for additional inspections and programmatic corrective actions. The aging mechanism of concern is cracking of the lubrite pads by gamma irradiation. The inspections would be implemented prior to the end of the initial operating license terms for Units 1, 2, and 3. The inspection would consist of visually inspecting the 5 lubrite pads in one OTSG in Unit 1 for degradation and visual signs of cracking due to gamma irradiation.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, applicable condition reports, and work orders; and interviewed the responsible plant personnel regarding these documents. The inspectors verified the licensee performed the required inspection on one of the Unit 1 OTSGs. This inspection did not identify any degradation or cracking of the lubrite pads. Even though no corrective action was required based on the inspection performed, the licensee changed out the lubrite pads on all OTSGs in Units 1, 2, and 3. The inspectors verified that the replacement pad material was similar to previous pad material inspected.

The status of administrative action items associated with the implementation of this commitment was considered "complete" for Units 1, 2, and 3 in the licensee's CAP.

ONS CALCULATION 4.31 – PRESSURIZER EXAMINATIONS [NRC MEMORANDUM]

<u>COMMITMENT NO. 5</u>]: This commitment specified that Pressurizer examinations would be performed prior to the end of the initial operating license term. NUREG-1723 and the UFSAR supplement for license renewal described the planned visual examinations of the internal cladding, spray line, spray head, and heater bundle penetration welds. The NRC conducted an inspection of the implementation of this commitment in April 11, 2011 as documented in NRC Inspection Report 05000269/2011013 for Unit 1. At that time, all inspections were completed with the exception of the cladding inspection in the area adjacent to the heater bundles and the heater bundle penetration weld inspection. The licensee planned to complete the inspection during the heater bundle replacement. Due to vendor schedule delays, the heater bundles will not be replaced until the licensee has entered the PEO. As a result, the licensee used the FSAR change process to make a commitment change to reflect the fact that inspections supposed to be performed prior to the PEO would be performed in the PEO.

The inspectors reviewed license renewal commitment change documents to verify the licensee followed the guidance in Nuclear Energy Institute (NEI) 99-04, "Guidelines for Managing NRC Commitment Changes," for any change to Commitment Item 4.31. 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 licensing basis, program basis documents, implementing procedures, applicable condition reports, and work orders; and interviewed the responsible plant personnel regarding these documents.

The status of administrative action items associated with the implementation of this commitment were considered "complete" for Units 1, 2, and 3 in the licensee's CAP. The inspectors identified one observation associated with the completion time and performance of the pressurizer examinations, which is discussed in further detail in section 4OA5.1.b(5).

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the aging effects associated with the pressurizer and continue it during the PEO.

ONS CALCULATION 4.32.14 – STANDBY SHUTDOWN FACILITY (SSF) DIESEL FUEL OIL TANK INSPECTION: The Standby Shutdown Facility Diesel Fuel Oil Tank Inspection Program is an aging management program that monitors the loss of tank material due to corrosion. ONS implements this program as a preventive maintenance activity that inspects the tank at a frequency of every ten years. An SSF diesel fuel oil tank inspection was performed in August of 2012 to meet a commitment made to the NRC and provide reasonable assurance that the existing inspection program was adequate to manage the aging effects of Microbiologically Induced Corrosion (MIC).

The inspectors reviewed the licensing basis, program basis documents, administrative and implementing procedures to verify that the program was developed as described in the license renewal application and the corresponding NRC Safety Evaluation Report.

The inspectors identified one observation which is discussed in further detail in section 4OA5.1.b(6) of this inspection report.

ONS CALCULATION 4.32.16 – CONTROL ROOM VENTILATION SYSTEM

<u>EXAMINATION COMMITMENT:</u> This commitment specified that the licensee would perform quarterly inspections on exterior surfaces of the Control Room Ventilation System (CRVS) components, including seals, sealants, rubber boots, and flexible collars. This would provide for periodic visual inspection and examination for degradation of accessible surfaces and structures and components of the CRVS, and corrective actions as required based on these inspections. The inspection procedures would be enhanced for license renewal by using industry best practices to do more detailed inspections of the CRVS.

Inspections are performed using procedures PT/1-2/A/0170/003, "Control Room Ventilation System Operational Test" and PT/3/A/0170/003, "Control Room Ventilation System Operational Test".

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, applicable condition reports, and work orders; and interviewed the responsible plant personnel regarding these documents. The inspectors verified the licensee performed the CRVS inspections on a quarterly basis and covered all required components in their procedure and inspection.

The status of administrative action items associated with the implementation of this commitment was considered "complete" for Units 1, 2, and 3 in the licensee's CAP.

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the aging effects associated with the CRVS and continue it during the PEO.

ONS CALCULATION 4.33 – HIGH PRESSURE INJECTION (HPI) CONNECTIONS TO REACTOR COOLANT SYSTEM (RCS) AMP: This commitment specified that the licensee would conduct periodic, non-destructive inspections of the HPI connections to the RCS, specifically the RCS nozzle, safe end, thermal sleeve (TS), HPI pipe, and connecting welds. These inspections are scheduled for every other refueling outage. The aging effects of concern are the cracking of base metal or weld metal and the initiation and growth of gaps between the thermal sleeve and nozzle safe end.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, applicable condition reports, and work orders; and interviewed the responsible plant personnel regarding these documents. The inspectors also verified that the licensee had a plan in place to ensure that the required inspection frequency would be maintained after the licensee switched from an 18-month to 24-month outage schedule.

The status of administrative action items associated with the implementation of this commitment were considered "complete" for Units 1, 2, and 3 in the licensee's CAP.

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the aging effects associated with the HPI connections to the RCS and continue it during the PEO.

<u>ONS CALCULATION 4.34 – REACTOR BUILDING SPRAY SYSTEM INSPECTION</u> <u>[NRC MEMORANDUM COMMITMENT NO. 6]</u>: This commitment specified that prior to the period of extended operation, a one-time inspections of a length of Reactor Building Spray System piping (including at least one stainless steel weld and heat-affected zone) would be conducted to determine the extent of loss of material. These inspections would characterize the loss of material from pitting and cracking from stress corrosion of stainless steel components of the system that were periodically exposed to a borated water environment. The scope of the inspections included piping and components downstream of the containment isolation valves (open to the reactor building environment) of which the most bounding of six susceptible locations (two per Unit) were inspected. During both examinations radiography was implemented. The inspectors reviewed the licensing basis, program basis documents, implementing procedures, and applicable condition reports. The inspectors also reviewed the licensee's selection criteria for the most bounding location, the work orders that implemented the examinations, and the results of those examinations. The inspectors interviewed the responsible plant personnel regarding these documents. The inspectors verified that the program had been implemented as described in the license renewal application and in the NRC Safety Evaluation Report.

The status of administrative action items associated with the implementation of this commitment was considered "complete" for Units 1, 2, and 3 in the licensee's CAP.

<u>ONS CALCULATION 4.36 – REACTOR COOLANT PUMP MOTOR OIL COLLECTION</u> <u>SYSTEM INSPECTION [NRC MEMORANDUM COMMITMENT NO. 7]:</u> This commitment specified that prior to the period of extended operation, a visual inspection of the bottom half of the interior surface of a Reactor Coolant Pump (RCP) Motor Oil Collection Drain Tank would be performed to check for any loss of material due to pitting or general corrosion. Due to the density differences between the motor oil and water, the lower portions of the system had the greatest potential to be exposed to water. The licensee chose to inspect the Unit 3 RCP Motor Oil Collection Tank because that unit had previously been exposed to reactor coolant due to a leak. Selection of a Unit 3 tank would represent a worst-case scenario for possible tank corrosion. The licensee also chose to inspect a Unit 2 tank. If any signs of corrosion were found, an engineering evaluation would be conducted to determine acceptability and the need for further inspections.

The inspectors reviewed the licensing basis, program basis documents, administrative and implementing procedures to verify that the inspections were implemented as described in the license renewal application and the corresponding NRC Safety Evaluation Report.

The status of administrative action items associated with the implementation of this commitment was considered "complete" for Units 1, 2, and 3 in the licensee's CAP.

ONS CALCULATION 4.41 AND 4.42 – REACTOR VESSEL INTERNALS PROGRAM INRC MEMORANDUM COMMITMENT NO. 11]: On June 16, 2010, Duke sent a letter of intent to adopt "Material Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines, (MRP-227-A)". On November 8, 2010, Duke Energy submitted LAR 2010-06. In that submittal, Duke Energy requested that the NRC review and approve a Reactor Vessel (RV) Internals inspection plan based on "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines (MRP-227-Rev.0). The MRP-227 guidance was a proposed industry approach to manage aging of the reactor vessel internal materials and it had been submitted to the NRC for review and approval through the Nuclear Energy Institute in January 2009. The licensee's letter of intent to adopt MRP-227 represented a change to the approach described in the original commitment to manage aging of the reactor vessel internals. Following the Duke's LAR submittal, the NRC issued "NRC Regulatory Issue Summary (RIS) 2011-07 License Renewal Submittal Information for Pressurized Water Reactor Internals Aging Management" dated July 21, 2011, to provide guidance to the utilities pending the issuance of MRP-227-A. On December 16, 2011, the NRC issued Revision 1 of the Safety Evaluation Report to incorporate technical changes required to ensure the final approved version of MRP-227 (i.e. MRP-227-A) included all NRC required changes.

The inspectors reviewed the licensing basis and available program documents to verify that this program was implemented in accordance with the revised commitment as described in the letter submitted to the NRC on June 28, 2012. The inspectors also interviewed plant and corporate personnel to assess the implementation of the Reactor Vessel Internals Inspection Program.

The inspectors identified an observation associated with the completion status of this program which is discussed in further details in section 4OA5.1.b(7) of this inspection report.

<u>ONS CALCULATION 4.43 – SERVICE WATER PIPING CORROSION AMP</u>: This commitment requires that a program be established and maintained to examine, evaluate, and correct problems in the Service Water System piping at Oconee due to corrosion. Oconee has established a Service Water Pipe Inspection Program (SWIP) that manages loss of material due to general corrosion of brass, bronze, carbon steel, and cast iron components and loss of material due to pitting corrosion and microbiologically influenced corrosion (MIC) in bronze, carbon steel, cast iron, and steel components.

The inspectors reviewed the ONS Service Water System Manual, Rev. 9 This program includes components in 14 systems and includes periodic inspections repairs and replacements. The inspectors also reviewed procedure SM/0/B/8530/002, Rev. 8, Periodic Inspection for Corrosion Induced Wall Thinning and procedure NDE-946, rev. 2, Ultrasonic Thickness Measurement.

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 tasks, the inspectors determined that there was reasonable assurance that the licensee would manage the aging effects associated with the Service Water System and continue it during the PEO.

ONS CALCULATION 4.44 – SMALL BORE PIPING INSPECTOIN AMP [NRC MEMORANDUM COMMITMENT NO. 8]: This commitment requires a one-time inspection of Class A (ASME Section XI Class 1) in lines less than 4 inches nominal pipe size, including pipe, fittings, and branch connections, to validate that service weld cracking is not occurring in the small bore RCS piping. The inspection is required to be complete prior to February 6, 2013. The one time inspection was completed in October 2008. Based on the results of this inspection a corrective action was initiated in PIP 08-06116 to revise the risk ranking used to identify the pipe segments and welds selected for inspection.

The inspectors reviewed OSS-0274.00.00-0017, Rev. 1, Oconee Commitment Management Specification for License Renewal Aging Management Programs, and

OSS-0274.00.00-0004, Rev. 1, Oconee Reactor Coolant System Aging Management Review for License Renewal. Inspectors also reviewed PIP 08-06116.

The inspectors identified an observation associated with the completion status of this program which is discussed in further details in section 4OA5.1.b(8) of this inspection report.

ONS CALCULATION 4.49 – TREATED WATER STAINLESS STEEL INSPECTION INRC MEMORANDUM COMMITMENT NO. 9]: This commitment specified that prior to the period of extended operation, a one-time volumetric inspection of a length of susceptible stainless steel piping locations and a one-time visual inspection of the interior of a valve in the Treated Water Systems would be performed. These inspections would be performed to check for loss of material due to pitting corrosion and cracking due to stress corrosion of stainless steel piping and valves. This volumetric examination would include a stainless steel weld and heat affected zone as this was a more likely location for stress corrosion cracking to occur. In addition to the volumetric examination, a visual examination of the interior of a valve would be conducted to determine the presence of pitting corrosion.

The inspectors reviewed the licensing basis, program basis documents, administrative and implementing procedures to verify that the inspections were performed as described in the license renewal application and the corresponding NRC Safety Evaluation Report. The inspectors interviewed licensee personnel to discuss the selection process for the inspection points within the scope of the program and verify consistency with the licensing basis. The inspectors also reviewed a sample of volumetric and visual inspection results to verify that the examination and evaluation of results were performed in accordance with the implementing procedures.

The status of administrative action items associated with the implementation of this commitment was considered "complete" for Units 1, 2, and 3 in the licensee's CAP.

<u>NRC MEMORANDUM COMMITMENT NO 13 – PLANT SPECIFIC INTERNALS</u> <u>DUCTILITY ANALYSIS:</u> This commitment specified prior to period of extended operation, a plant-specific analysis would be developed to demonstrate that, under LOCA and seismic loading and irradiation accumulated at the expiration of the period of extended operation, the reactor vessel internals would have adequate ductility to absorb local strain at the region of maximum stress intensity and would meet the deformation limits through the period of extended operation.

The inspectors identified an observation associated with the completion status of this program which is discussed in further details in section 4OA5.1.b(9) of this inspection report.

<u>ONS TIME-LIMITED AGING ANALYSIS (TLAA) ACTIVITIES</u>: The inspectors selected a sample of TLAAs to verify that any pending actions identified during the review of the license renewal application and due prior to the period of extended operation were completed as described in the license renewal application and the NRC Safety Evaluation Report. The TLAAs selected for review are listed below:

- ONS Calculation 4.8 Containment Liner Plate Penetrations Thermal Cycles
- ONS Calculation 4.9 Containment Post-Tensioning System Pre-Stress Loss

- ONS Calculation 4.12 Cranes and Controls of Heavy Loads
- ONS Calculation 4.16 Environmental Qualification of Electrical Equipment
- ONS Calculation 4.37.1 and 4.37.2 [NRC Memorandum Commitment No. 14] Thermal Fatigue Management Program
- ONS Calculation 4.39 and 4.40 Reactor Vessel Integrity

b. Findings and Observations

No findings were indentified.

Based on the sample selected for review, with the exception of two commitments (SSF Diesel Fuel Oil Tank Inspection and Plant Specific Internals Ductility Analysis) 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 Oconee Nuclear Plant Units 1, 2, and 3. With the exception of the Reactor Vessel Internals Inspection Program, the inspectors determined that the licensee had established the required Aging Management Programs (AMPs) for in-scope structures, systems, and components in order to maintain their identified function(s) through the period of extended operation (PEO) of Units 1, 2, and 3. The inspectors determined that the planned inspection activities required for Unit 1, 2, and 3 prior to the PEO of the respective units, were being tracked in the Corrective Action Program (CAP) or work control process.

The inspectors also determined that changes to license renewal commitments were performed in accordance with applicable regulatory requirements.

The inspectors identified 10 observations during this inspection. Those observations consisted of three different types of observations. The first type of observation is a summary of note-worthy facts and/or information that describe significant changes to commitments that have already been approved or submitted to the NRC with regards to license renewal. There were two of these observations. The second type of observations represent issues of concern that if found during the Period of Extended Operation (PEO), would have been subject to screening and evaluation of performance deficiencies in accordance with the NRC Reactor Oversight Process. There were four of these observations. The third type of observation represents Aging Management Programs (AMP) and license renewal commitment samples selected by the inspectors that were not in a position for the inspectors to complete their review. There were four of these observations.

(1) <u>OBSERVATION FOR COMMITMENT ITEM 4.7 – CONTAINMENT LEAK RATE</u> <u>TESTING PROGRAM (CLRT)</u>: The Oconee Unit 1 ILRT is currently on a 10-year schedule in accordance with the requirements of 10CFR50 Appendix J. In a letter submitted to the NRC, dated April 3, 2012, ONS requested an amendment to the Technical Specifications (TS) of Renewed Facility Operating License No. DPR-38. The proposed change would allow for a one-time extension to the ten-year frequency of the Oconee Unit 1 CLRT. This test is required by TS 5.5.2 "Containment Leakage Rate Testing Program." The last Oconee Unit 1 ILRT was completed on December 8, 2003. The next ILRT is therefore required by TS 5.5.2 to be performed no later than December 8, 2013, which is approximately 12 months after the conclusion of Oconee Unit 1 outage 1EOC27. The proposed change would permit the existing ILRT frequency to be extended from ten years to approximately 11.25 years.

- (2) <u>OBSERVATION FOR ONS CALCULATION 4.18.1 & 4.18.2 FIRE PROTECTION</u> <u>PROGRAM</u>: The Acceptance Criteria or Standard subsection of Section 4.16.1.1 of the License Renewal Application (LRA), Program Description, stated "For fire barrier penetration seals, no visual indication of cracking, separation from wall, separation of layers of material, holes and ruptures or puncture of seal." The inspectors identified that the implementing procedure for the Fire Barrier inspection utilized a 1/8" crack as an acceptance criterion, contrary to the statement in the Commitment. The licensee captured this observation in the CAP as PIP O-12-09426. If this issue of concern would have been identified during the PEO, it would be subject to screening and evaluation of performance deficiencies in accordance with IMC 0612.
- (3) <u>OBSERVATION FOR ONS CALCULATION 4.18.1 & 4.18.2 FIRE PROTECTION</u> <u>PROGRAM</u>: EDM 229 Appendix B, Oconee Nuclear Station License Renewal Aging Management PIP Screening Guide, contained instructions that helped licensee staff identify which components fall within the scope of License Renewal commitments. The inspectors identified that the screening process does not identify components in the Fire Detection portion of the Fire Protection Program, and subsequently, the corrective actions may not meet the requirements of the Commitment. The licensee captured this observation in the CAP as PIP O-12-09435.
- (4) <u>OBSERVATION FOR ONS CALCULATION 4.21 GALVANIC SUSCEPTIBILITY</u> <u>PROGRAM</u>: Section 18.3.9 of the UFSAR supplement and Section 4.3.3 of the License Renewal Application identified that this program would be addressed through one-time inspections. Upon completion of these inspections, the licensee evaluated the results and made the assessment that follow-on inspections would be required during the Period of Extended Operation. The licensee placed these follow-on inspections into the Service Water Piping Corrosion Program. The inspectors identified that there is no tie to the UFSAR to indicate that this is how the Galvanic Susceptibility Program is being managed during the Period of Extended Operation. The licensee captured this observation in the CAP as PIP O-12-07152.
- (5) OBSERVATION FOR ONS CALCULATION 4.31 PRESSURIZER
 - EXAMINATIONS: Based on delays from the heater bundle vendor, the licensee had to delay the installation of the new heater bundles. In order to account for this delay in inspection completion, the licensee made a change in their commitment to reflect a completion time in the period of extended operation (Fall 2014 Outage 1EOC28), which is when the new heater bundles will arrive on-site. In addition, due to changing out the Alloy 600 heater bundles for stainless steel heater bundles, the licensee changed their commitment to perform a VT-3 examination and surface examination in that they will no longer be performed. The primary water stress corrosion cracking (PWSCC) aging concern associated with the Alloy 600 heater bundles is not applicable to stainless steel heater bundles. The licensee communicated these commitment changes through the UFSAR change process, in accordance with 10CFR 50.59, as well as in a letter to the NRC dated 5/29/2012. The completion of the cladding inspection around heater bundle is being tracked by Licensee Corrective Action Document PIP O-08-05500.

(6) <u>OBSERVATION FOR ONS CALCULATION 4.32.14 – SSF DIESEL FUEL OIL</u> <u>TANK INSPECTION:</u> An SSF diesel fuel oil tank inspection was performed in August of 2012 to provide reasonable assurance that the existing inspection program would adequately manage the aging effects due to MIC. However, the inspection in August of 2012 identified 9 locations of through-wall pitting due to MIC at elevations from 790 ft to 786 ft. The corrosion in these areas was removed and the tank repaired in accordance with requirements of the ONS Repair/Replacement Program, ASME Section XI, and ASME Section III, which is the construction code of the tank.

Due to the close proximity in time of the SSF diesel fuel oil tank inspection and this license renewal inspection, the licensee had not completed the engineering evaluations which were needed for the NRC inspectors to complete their review. Therefore, this AMP is subject to further NRC review during future license renewal inspections to verify that actions have been taken to implement the program in accordance with license renewal commitments.

(7) <u>OBSERVATION FOR ONS CALCULATION 4.41 AND 4.42 – REACTOR VESSEL</u> <u>INTERNALS PROGRAM [NRC MEMORANDUM COMMITMENT NO. 11]</u>: The inspectors identified that the licensee had not completely implemented the Reactor Vessel Internals Inspection Program as described in MRP-227-A. Specifically, the inspectors noted that the licensee was still working on several tasks associated with the plant specific actions necessary to meet the guidelines in MRP-227-A.

On June 28, 2012, Duke Energy submitted LAR 2010-06 – Supplement 1 which included a revised inspection plan and a commitment change request. The commitment change request is associated with the anticipated delayed completion dates required by Licensee Action Items 2, 4, 6, and 7 from revision 1 of the SER for MRP-227, Revision 0.

While the licensee had completed the majority of the items required to implement MRP-227-A, the outstanding items (analyses performed by vendors) will not be completed prior to entering the PEO.

Therefore, this commitment is subject to further NRC inspection during future license renewal inspections to verify that actions have been taken to implement the program in accordance with the revised license renewal commitment.

(8) <u>OBSERVATION FOR ONS CALCULATION 4.44 – SMALL BORE PIPING</u> <u>INSPECTION AMP [NRC MEMORANDUM COMMITMENT NO. 8]</u>: As required by the commitment, the one-time license renewal inspection of small bore piping was completed. The license renewal one-time inspection did not identify any issues and the commitment was subsequently considered closed. However, Oconee site specific operational experience (OE) shows that Oconee has issues with vibration, stress corrosion cracking, and thermal fatigue with regards to small bore piping.

The inspectors noted that the site specific OE showed a number of aging effects with regards to small bore piping were being managed by other programs and the license renewal commitment was met as written. However, there was no tie between the supplemental UFSAR chapter for small bore piping and the existing

AMPs that manage these issues. This leaves a potential vulnerability that the existing AMP for small bore piping could be altered without the consideration of all license renewal aspects.

(9) <u>OBSERVATION FOR NRC MEMORANDUM COMMITMENT NO. 13 – PLANT</u> <u>SPECIFIC DUCTILITY ANALYSIS</u>: At the time of this inspection, the licensee had recently submitted this plant-specific analysis to the NRC Headquarters for review. Due to the current on-going status of this review, the inspectors could not perform a review of this commitment item.

Therefore, this commitment is subject to further NRC inspection during future license renewal inspections to verify that actions have been taken to complete this analysis in accordance with the revised license renewal commitment.

.2 License Renewal Commitment Changes

a. Inspection Scope

As part of the review of license renewal commitments, Aging Management Programs, and Time-Limited Aging Analyses described in section 4OA5.1.a of this report, 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 obtain reasonable assurance 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.

b. Findings and Observations

No findings were identified.

On the basis of the sample selected for review, the inspectors determined that the licensee followed the established plant procedures to modify license renewal commitments, which referenced the guidance in NEI 99-04. Commitment changes where implemented against the guidance in NEI 99-04 and formal notification was submitted to the NRC where applicable. For changes to AMP descriptions in the UFSAR supplement, the licensee implemented such changes under the controls of 10 CFR 50.59. Additionally, for changes affecting the plant Technical Specifications, the licensee used the license amendment process pursuant to 10 CFR 50.90.

.3 Newly Identified Structures, Systems, and Components (SSCs)

a. Inspection Scope

In accordance with 10 CFR 54.37(b), after the renewed license is issued, the FSAR update required by 10 CFR 50.71(e) must include any "newly indentified" SSCs that would have been subject to an aging management review or evaluation of Time-Limited Aging Analyses in accordance with 10 CFR 54.21. The FSAR update must describe how the effects of aging will be 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 staff. The inspectors also reviewed an evaluation performed by the licensee under PIP G-10-00593, which assessed the applicability of "newly identified" SSCs described in Regulatory Issue Summary 2007-16 and other SSCs identified by the licensee through self-assessments. The inspectors also reviewed an assessment of plant modifications performed from the time the license renewal application was submitted to the time the renewed operating license was issued to identify any potentially new SSCs that would have been subject to aging management review at the time the NRC was reviewing the LRA. The inspectors also reviewed Engineering Directive Manual EDM-229, License Renewal Aging Management Programs and Activities, which is the directive that provides the process for identifying any structures and components that were newly identified since the issuance of the renewed license in accordance with 10 CFR 54.37(b).

b. Findings and Observations

No findings were identified.

On the basis of the sample selected for review, the inspectors determined that the licensee took appropriate actions to assure "newly identified" SSCs were identified and evaluated for management of aging affects. Based on the review of NRC Generic Communications and licensee self-assessments, the inspectors determined that no "newly identified" SSCs had been identified that would have been subject to aging management during the preparation of the original license renewal application and subsequent revisions. Additionally, the inspection team did not identify any new SSCs that were subject to the provisions of 10 CFR 54.37(b) during the independent review of commitments and Aging Management Programs described in section 4OA5.1.a of this report.

.4 Description of Aging Management Programs in the UFSAR Supplement

a. Inspection Scope

As part of the review of implementation activities for the selected AMPs described in section 4OA5.1.a of this report, the inspectors reviewed the corresponding UFSAR sections to verify that the program descriptions were consistent with the licensing basis. The inspectors reviewed three versions of the UFSAR supplement for license renewal as follows:

- The inspectors reviewed the last revision of the UFSAR supplement submitted with the license renewal application to identify the program attributes and future inspection activities that were originally relied upon for the approval of the renewed operating license.
- The inspectors reviewed the last revision of the UFSAR submitted to the NRC pursuant to the requirements in 10 CFR 50.71(e)(4) to verify that the UFSAR supplement for license renewal was included with the updated FSAR as required by the renewed operating license.
- The inspectors reviewed the latest revision of the UFSAR supplement for license renewal (aka "Living FSAR") to verify that the program attributes and inspection activities were consistent with the Aging Management Programs as originally approved by the NRC and subsequent revisions performed under the provisions of 10 CFR 50.59. The inspectors also verified that any changes caused by the inclusion of "newly identified" SSCs were included in the UFSAR supplement.

b. Findings and Observations

No findings were identified.

Based on the status of the Updated Final Safety Analysis Report (UFSAR) supplement for license renewal at the time of the inspection, the team could not complete the review of the UFSAR to ensure that it was adequately updated to reflect the completion of required activities and programmatic changes, including the incorporation of "newly identified" structures, systems, and components in accordance with 10 CFR 54.37(b). Oconee normally submits the UFSAR in June of each year, with the cutoff date of December 31. At the time of this inspection was (in August), a number of the UFSAR supplemental chapters had not been updated to reflect the current status of license renewal action items.

Therefore, the UFSAR is subject to further NRC inspection during future license renewal inspections to verify that UFSAR was adequately updated.

.5 Operating Experience

a. Inspection Scope

The inspectors reviewed licensee actions to address recent industry operating experience and its applicability to the existing Aging Management Programs. The renewed operating license for Oconee was issued in 2000 and a significant amount of industry operating experience has been identified since then. The NRC has captured relevant operating experience items, in part, in license renewal guidance documents including NUREG 1801, "Generic Aging Lessons Learned (GALL) Report," Revision 1 and Revision 2, and various Regulatory Information Summaries. The inspectors reviewed several AMPs as described in Revision 2 of the GALL Report and reviewed licensee actions to address the available operating experience for each program.

The inspectors also reviewed licensee procedures to assess how operating experience directly associated with the management of aging effects would be continuously considered for the existing Aging Management Programs during the period of extended operation.

b. Findings and Observations

No findings were identified.

The inspectors determined that operating experience was being reviewed for applicability to the existing Aging Management Programs. For example, the licensee did not make any commitments in the original license renewal application to follow the recommendations described in the GALL Report because the application for Oconee was submitted prior to the first publication of the GALL Report in July 2001. However, the licensee performed a self-assessment to identify gaps between the existing Aging Management Programs and the recommendations included in Revision 2 of the GALL Report. At the time of this inspection, the licensee had not generated any specific action items in the CAP to address the gaps identified in the self-assessment. However, the inspectors noted that some Aging Management Programs were revised to adopt the recommendations in the GALL Report or reconcile the gaps with similar programmatic attributes in the existing AMPs.

4OA6 Management Meetings

Exit Meeting Summary

On August 23, 2012, the inspectors presented the inspection results to Mr. Preston Gillespie, 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

- P. Gillespie, Site Vice President
- K. Alter, Regulatory Compliance Manager
- B. Norris, OMP PI Manager
- G. Martin, Regulatory Compliance Engineer
- E. Swanson, License Renewal Lead
- S. Perry, Regulatory Affairs
- H. Galloway, LR Program Owner
- J. Bryan, Engineering Manager
- L. Hekking, Fleet License Renewal Program Owner
- W. Roman, LR Implementation Team

LIST OF REPORT ITEMS

<u>Opened</u>

None

<u>Closed</u>

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 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.

Procedures NSD 214, Duke Energy Regulatory commitment Management Program, Revision 9 NSD 228, Duke Energy Applicability Determination, Revision 8 EDM 229, Oconee Engineering Directive Manual, License Renewal Aging Management **Programs and Activities** IP/O/A/2000/001, Power and Control Cable Inspection and Testing, Rev. 011 Manual of Inspection for Civil Works and Structures at Hydroelectric Stations, Rev. 4 MP/1/A/1705/018, Fire Protection – Penetration – Fire and Flood Barrier – Inspection and Minor Repair, Rev.045 MP/2/A/1705/018. Fire Protection – Penetration – Fire and Flood Barrier – Inspection and Minor Repair, Rev. 045 MP/3/A/1705/018, Fire Protection – Penetration – Fire and Flood Barrier – Inspection and Minor Repair, Rev.045 MP/O/A/1705/019, Fire Protection – Fire Rated Doors – Inspection, Rev. 013 NSD 203, Nuclear Policy Manual, Rev. 24 PT/1/A/0250/010 B, Fire Suppression Systems Test, Rev. 019 PT/2/A/0250/010 B, Fire Suppression Systems Test, Rev. 019 PT/3/A/0250/010 B, Fire Suppression Systems Test, Rev. 019 PT/O/A/0250/005, High Pressure Service Water Pump Functional Test, Rev. 038 PT/O/A/0250/025. HPSW Pump and Fire Protection Flow Test. Rev. 058 MP/0/A/1150/029. Reactor Vessel Head Penetrations Visual Inspection NDEMAN-NDE-70, NDE Procedure Manual, Rev. 0 NDE-70, Visual Examination of Reactor Pressure Vessel Upper Head Penetrations, Rev. 0 MP/0/A/5050/039, SSF Diesels 12 and 16 Cylinder Preventive Maintenance and Inservice Inspection, rev. 10 SM/0/B/8530/002, Periodic Inspection for Corrosion Induced Wall Thinning NDE-946, Ultrasonic Thickness Measurement, Rev. 2 MP/0/A/1140/013, CRDM Flanges and Motor Tubes Visual Inspeption, Rev. 001 NED-322, Boric Acid Corrosion Control Program, Rev. 003 TesTex Procedure NPS-Proc 007, Low Frequency Electromagnetic Technique Inspection Procedure, 2/15/10 SM/O/B/85301002, Periodic Inspection for Corrosion Induced Wall Thinning, Rev. 0 SM/0/B/8530/002, Periodic Inspection for Corrosion Induced Wall Thinning, Rev 001 PT/1-2/A/0170/003, Control Room Ventilation System Operational Test, Rev 020 PT/3/A/0170/003, Control Room Ventilation System Operational Test, Rev 041 MP/0/A/1710/017B, Crane-Whiting-Polar-Periodic and Quarterly Inspection and Preventative Maintenance, Rev 10 IP/0/B/3002/002A, Polar Crane Inspection and Preventative Maintenance, Rev 14 MP/0/B/1710/023, Crane-Fuel Handling Bridges-Periodic Inspection and Preventative Maintenance, Rev 23 NSD 214, Regulatory Commitment Management Program, Rev 9 PT/1-2/A/0170/003, Control Room Ventilation System Operational Test, Rev 20

PT/3/A/0170/003, Control Room Ventilation System Operational Test, Rev 41 NSD 220, UFSAR Revision Process, Rev 13

Program Basis Documents

EDM-229, License Renewal Aging Management Programs and Activities, Rev. 5 EDM-410, Inspection Program for Civil Engineering Structures and Components, Rev. 14 Engineering Support Program – Fire Protection, Rev. 8

Flow Accelerated Corrosion Program ESD, Rev. 14

H130UW-T06-001, Specification for Performing Five Year Underwater Inspection of Hydropower Dams and Appurtenances, Rev. 5

Oconee Cable Aging Management in Support of License Renewal ESD, dated 6/25/2012 Oconee Environmental Qualification Criteria Manual, Rev. 20

OSC-10184, License Renewal Documentation Calculation – Flow Accelerated Corrosion Program (Commitment 4.19) – Program, Rev. 0

OSC-10333, License Renewal Documentation Calculation – DP 5-Year Underwater Inspection' Program of Hydroelectric Dams and Appurtenances (Commitment 4.13) – Program, Rev. 0

OSC-10467, License Renewal Documentation Calculation – Fire Barriers Inspection Program (Commitment 4.18.2), Rev. 0

OSC-10468, License Renewal Documentation Calculation – Fire Water System Test and Fire Hydrant Flow Test (Commitment 4.18.1), Rev. 0

OSC-10474, License Renewal Documentation Calculation – Galvanic Susceptibility Inspection, Rev. 0

OSC-10477, License Renewal Documentation Calculation – Insulated Cables and Connections Aging Management Program (Commitment 4.25), Rev. 0

OSC-10483, License Renewal Documentation Calculation – Environmental Qualification of Electrical Equipment (Commitment 4.16) – Time Limited Aging Analysis, Rev. 0

SSS-0504.01, Five-Year Underwater Inspection of Hydroelectric Dams and Appurtenances, Rev. 6

OSC-10181, License Renewal Documentation Calculation – Reactor Building Spray Piping Inspection (Commitment 4.34) – One-Time Inspection, Rev. 1

OSC-10182, License Renewal Documentation Calculation – Reactor Coolant Pump (RCP) Motor Oil Collection Drain Tank, Rev. 2

OSC-9835, License Renewal Documentation Calculation - Oconee Thermal Fatigue Management Program (Commitment 4.37.1) – TLAA, Rev. 0

OSC-9835.03, License Renewal Documentation Calculation - Commitment to Address GSI-190, Environmental Assisted Fatigue (Commitment 4.37.2) – TLAA, Rev. 0

OSC-66J6, Aging Effects in Oil and Fuel Oil Systems within the Scope of License Renewal, Rev. 2

OSS-0274.00-00-0016, Oconee License Renewal Commitments, Rev. 0

OSS-0274.00-00-0005, Oconee Mechanical Component Aging Management Review for License Renewal, Rev. 3

OSS-0274.00-00-0009, Time-Limited Aging Analyses of Mechanical System Thermal Fatigue for License Renewal, Rev. 0

- OSC-10472, License Renewal Calculation Reactor Vessel Internals Program, Rev. 0
- OSC-10466; LR Basis Document-Containment Inservice Inspection Plan; Revision 0

OSC-10461; LR Basis Document-Containment Leak Rate Testing Program; Revision 1

OSC-10410; LR Basis Document-Containment Post Tensioning System; Revision 0

OSC-10337; LR Basis Document-Containment Liner Plate and Penetrations; Revision 0

OSC-9834; LR Basis Document-Alloy 600 Aging Management; Revision 0

OSC-10669; Aging Management OE/GALL Evaluation; Revision 0

Corrective Action Documents

- PIP G-10-00593, NRC Regulatory Issue Summary 2007-16, Rev 1, Implementation of Requirements of 10 CFR 54.37 (b) for Holders of Renewed Licenses
- PIP G-10-00739, Documentation Results from Focused Self-Assessment G-PIP-SA-10-02, License Renewal Post Approval Inspection Readiness
- PIP G-11-01621, EDM-601, Engineering Change Manuals Appendix K screening criteria for License Renewal-Aging Management is Insufficient to Address All Areas of the Program for Design Changes and Requires Additional Guidance
- PIP O-10-04649, Periodic License Renewal Review Required by 10 CFR 54.37(b) to Report Newly Identified SSCs in the Scope of License Renewal Has Not Been Completed in a Timely Manner
- PIP O-11-13671, Generic Aging Lessons Learned (GALL) Issues
- PIP O-11-15005, Review of Calculation OSC-10332
- PIP O-12-00962, Evaluate Applicability of Monticello Green Finding at All Duke Sites
- PIP O-12-00963, Incorporate OE into Duke Fleet Aging Management Programs
- PIP O-12-06107, License Renewal Commitment Galvanic Corrosion Inspection
- PIP O-12-07152, Update UFSAR Chapter 18 to Reflect Final Implementation of License Renewal Commitments
- PIP O-12-09371, Evaluate Need for Revising UFSAR 18.3.6
- PIP O-12-09426, Evaluate Need for Revising LRA Section 4.16.1.1
- PIP O-12-09428, Evaluate Need for Revising LRA Section 4.16
- PIP O-12-09435, Evaluate Need to Revise EDM 229 Appendix B Screening
- PIP 10-0-09967 CA-10, Process UFSAR Change Package to revise section 18.3.1.2 to remove reference to EA-03-009 and replace it with ASME Code Case N-729-1
- PIP O-08-08244 CA-5-1, Procedure revision to update frequency inspection from 12 to 10 years PIP O-08-08244 CA-5-3, Modify PM so model work order uses UT inspection
- PIP O-12-07152 Regulatory Compliance to Update Chapture 18 to reflect final implementation of license renewal commitments and programs following entry into PEO
- PIP O-12-08182 Actions needed to update Reactor Vessel Integrity Time Limited Aging Analysis due to increase in capacity factor
- PIP G-12-00595 Non-conservative fluence inputs to technical specifications pressure/temperature curves (TMI)
- PIP G-11-01433 Revise the UFSAR Chapture 18 to include a more defined process for irradiation embrittlement for the Reactor Vessel Integrity Program
- PIP O-12-04820 Document newly identified time limiting aging analysis
- PIP O-08-06110, License Renewal Commitment Keowee Air & Gas System Inspection
- PIP O-08-04082, Delay of EDM 410 Inspection of Underwater Portions of Intake and Discharge Structure
- PIP O-07-01131, Existing OSCs Require Revision Due to the Results of OSC-8729
- PIP O-10-06256, Oconee License Renewal Commitment Review Action Items for "Program to
- Inspect High Pressure Injection Connections to Reactor Coolant System"
- PIP O-12-05829, 3EOC26 Fiber Reinforced Polymer Inspection Results
- PIP O-12-08102, Action Items From 5 Year Civil/Structural Inspection of Keowee
- Powerhouse, SSF, U1/2/3 Switchgear Enclosures, 100kV Switchyard
- PIP O-11-12767, Development of Control Room HVAC Inspection Procedure to Match Industry Standards
- PIP O-11-15064, Challenge Review Board Meeting Covering Review of Calculation OSC-10324 – Control Room Ventilation System Program
- PIP O-08-05500, Establish Inspection Plan for One Pressurizer to Meet Requirements of License Renewal Commitment

PIP O-11-14934, Corrective Actions and Action Items Identified During Review of Calc OSC-10183-Cranes and Control of Heavy Loads

PIP O-10-01707, Oconee License Renewal Commitment Review Performed for the "OTSG Upper Lateral Support Inspection"

PIP O-11-13260, NRC Comments on AR 308430

PIP O-10-04359, Documentation of NON-CUNCURRENCE from ILRT for Evaluation of Date Change to License Renewal Commitment to Perform PZR Inspections

PIP O-09-07124; 2009 Oconee INPO Primary Systems Integrity Review Visit (PSIRV); October 12, 2009

PIP O-12-09515; IP-710003-Following an Interview with NRC, ONS is reviewing a CR Provided by VC Summer for Applicability at ONS

Drawings

1-RC-0229; RCS from Pressurizer Surge Line to AB Component Drain Header; Revision 11 ISI-OCNI-015; Pressurizer Surge Line; Revision 1

ISI OCNI-005; Steam Generator 1A Hot Leg to Reactor Vessel; Revision 2

ISI OCN3-012; Pump 32 Discharge Piping; Revision 1

3-RC-0210; RCS from HP-P3A to the Reactor Inlet Line "3A2"; Revision 19

3-RC-0211; RCS from HP-P3A to the Reactor Inlet Line "3A1"; Revision 17

1-RC-0230; RCS from Pressurizer Spray Line to the Pressurizer; Revision 10

ISI-OCNI-002; Pressurizer Weld Outline; Revision 2

ISI OCNI-016; Pressurizer Spray Piping; Revision 0

Work Requests/Work Orders

MWO 01466576, U3 RB Insp. Fire Protection Equipment MWO 01482951, PT/O/A/250/05 HPSW Pump Functional Test MWO 01517169, PT/3/A/0250/10B Fire Suppression Systems Test MWO 01573826, Inspect U1 Rx Bldg. Fire Protection Equipment MWO 01573831, Inspect U2 Rx Bldg. Fire Protection Equipment WO 01980748 WO 01980749 WO 01536567 WO 01592142 WO 01592149 WO 01592150 WO 01860204 WO 01932677 WO 01930265 WO 01612861 WO 37019075 WO 39022011 WO 39022012

WO 39022012 WO 39022126 WO 40005208

Other Documents

Calculation OSC-10472, License Renewal Calculation – Reactor Vessel Internals Program, Revision 0

Duke Energy License Renewal Response for Additional Information for Oconee Nuclear Station, February 17, 1999

Duke Energy Company Change Package No. 11-028, Tracking PIP No. O-11-10233, SSF Diesel Fuel Oil Storage Tank Inspection

Calculation OSC-10484, Oconee Units 1, 2, & 3, License Renewal Scope Change Process, Rev 0

Duke Energy Letter to NRC, Aging Management Reviews for Newly Identified Systems, Structures and Components as of December 31, 2011, Dated June 26, 2012

OSC-7167, Qualified Life Analysis for Limitorque Motor Operated Valves, Rev. 2

OSS-0254.00-00-4008, Design Basis Specification for Fire Protection, Rev. 24

OSS-0274.00-00-0006, Oconee Electrical Component AMP Review for License Renewal, Rev 2

License Renewal Calculation OSC-8688, Small Bore Piping Inspections for License Renewal License Renewal Calculation OSC-10456 Control Rod Drive Mechanism Nozzle and other Vessel Closure Penetrations

License Renewal Calculation OSC-10397 SSF Diesel Fuel Oil Tank Inspection

License Renewal Calculation OSC-10464 Reactor Vessel TLAA and Reactor Vessel Integrity Program

License Renewal Calculation OSC-9836 Small Bore Piping Inspection

License Renewal Calculation OSC-10411 Service Water Piping Corrosion Program

Specification OSS-0274.00-00-0016, Oconee License Renewal Commitments

Nuclear System Directive 312, Service Water System Program, Rev. 2

Service Water System Program Manual, Rev. 9

Engineering Support Document, Raw Water Program, Rev. 10

Engineering Support Document, Service Water Program Appendix A (ONS Unit 1 Inspection Results)

Engineering Support Document, Service Water Program Appendix B (ONS Unit 2 Inspection Results)

Engineering Support Document, Service Water Program Appendix C (ONS Unit 3 Inspection Results)

Engineering Support Document, Service Water Program Appendix D (Keowee Unit 1 Inspection Results)

Engineering Support Document, Service Water Program Appendix E (Keowee Unit 1 Inspection Results)

Engineering Support Document, Service Water Program, Rev. 10

Service Water Piping Program Health Report, Third Quarter 2011

Oconee Nuclear Station Probability of Leakage Predictions for Unit 1 Reactor Building LPSW Piping Dated 9/23/2003

EC 108833, Evaluation of Encapsulation Pipe Cap on SSF Fuel Oil Storage Tank

Duke Engineering & Materials Lab Report, ONS SSF Diesel Fuel Oil Storage Tank, July 17, 2002

Program Health Report, Reactor Vessel Integrity Program, 2nd Quarter, 2012

Calculation OSC-9773, Reactor Building Spray Piping Inspection for License Renewal, Rev. 0

Calculation OSC-8729, HPI Nozzle-Supporting Vendor Analyses for Environmental Fatigue Effects, Rev. 0

Calculation OSC-8729.1, Decay Heat Drop Line Environmental Assisted Fatigue (EAF) Analyses, Rev. 0

Calculation OSC-8729.2, Pressurizer Surge Line Environmental Assisted Fatigue (EAF) Analyses, Rev. 0

Calculation OSC-10237, Update of Irradiation Embrittlement in BAW-10008 Part 1, Rev. 1

OSC-6602, Component Screening for Oconee Oil and Fuel Oil Systems within the Scope of License Renewal, Rev. 2

Work Order 01603281, Perform RT on 2B RX Bldg Spray Header

Work Order 01574197, Perform RT on 2B RX Bldg Spray Header

- Work Order 01559487, Inspect 3A1 RCP Oil Drain Tank
- Letter from Mr. T. Preston Gillespie, Jr. (Duke Energy Corporation) to (NRC) Document Control Desk; Subject License Renewal Commitment to Submit a TLAA for the Reactor Vessel Internals to the NRC for Review, February 20, 2012
- Calculation OSC-10479, License Renewal Commitment Documentation Calculation Keowee Air and Gas Systems Inspection, Rev 0
- Calculation OSC-10324, License Renewal Commitment Documentation Calculation Control Room Ventilation System Examination, Rev 0
- Calculation OSC-10413, License Renewal Commitment Documentation Calculation Pressurizer Examination, Rev 1
- Calculation OSC-10339, License Renewal Commitment Documentation Calculation Once Through Steam Generator Upper Lateral Support Inspection, Rev 1
- Calculation OSC-10183, License Renewal Commitment Documentation Calculation Cranes and Control of Heavy Loads, Rev 0
- Calculation OSC-10412, License Renewal Commitment Documentation Calculation Inspection Program for Civil Engineering Structures and Components, Rev 1
- Calculation OSC-9835.01, License Renewal Commitment Documentation Calculation Inspect HPI Connections to RCS, Rev 0
- SLC 16.5.8, Reactor Coolant Systems Pressurizer A/R 00308430, 50.59 Screen for Removal of PZR Heater Bundle Penetration Weld Inspection from UFSAR, 4/29/10
- A/R 00308431, 50.59 Evaluation for Commitment Change for Extension of PZR Cladding Inspection Date into PEO, 9/30/10
- Crane Manufacturers Association of America Specification #70
- NSD204; Nuclear Policy Manual; Revision 5
- ASME Code Case N-729-1; Alternative Examination Requirements for PWR Reactor Vessel Upper Heads with Nozzles Having Pressure-Retaining Partial-Penetration Welds Section XI, Division 1
- ASME Code Case N-770-2; Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material with or without Application or Listed Mitigation Activities Section XI, Division 1
- 3-PDA1-2; Visual Examination (VT-2) of Pump 3A1 Discharge Piping Safe-End-to-Elbow; October 24, 2010
- 3-PDA1-2; Ultrasonic Examination (UT) of Pump 3A1 Discharge Piping Safe-End-to-Elbow; October 28, 2010
- 3-PDA2-2; Visual Examination (VT-2) of Pump 3A2 Discharge Piping Safe-End-to-Elbow; October 24, 2010
- 3-PDA2-2; Ultrasonic Examination (UT) of Pump 3A2 Discharge Piping Safe-End-to-Elbow; October 28, 2010
- 1RC-229-67V; PDI-UT-8 (UT) of Steam Generator 1A Hot Leg Surge Nozzle Weld Overlay: April 19, 2011
- 1RC-230; UT of Pressurizer Spray Nozzle-to-Piping Weld Overlay; April 19, 2011
- Duke Energy Letter to NRC; License Amendment Request No. 2012-03; April 3, 2012