



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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June 30, 2014

Mr. Larry Weber
Senior Vice President and
Chief Nuclear Officer
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

**SUBJECT: D. C. COOK NUCLEAR POWER PLANT, UNIT 1 – NRC POST-APPROVAL
SITE INSPECTION FOR LICENSE RENEWAL 05000315/2014008**

Dear Mr. Weber:

On May 16, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed a Post-Approval Site Inspection for License Renewal at your D. C. Cook Nuclear Power Plant, Unit 1. The enclosed report documents the results of this inspection as discussed on May 16, 2014, with Mr. Joel Gebbie, and other members of your staff.

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

Based on the sample selected for review, there were no findings of significance identified during this inspection.

We reviewed implementation of all 42 Commitment Items. The inspectors concluded that the actions associated with 30 Commitment Items were properly identified, implemented, and completed, of the total 42 Commitment Items. Additionally, 6 Commitment Items are currently being reviewed by the Office of Nuclear Reactor Regulation (NRR) due to changes in the commitments and safety evaluation reports will be issued for each approved change. For the remaining 6 Commitment Items, the inspectors noted several actions had not been completed; however, actions were in place to ensure full implementation and completion before the period of extended operation. Your actions to address the Commitment Items will be reviewed during a subsequent inspection.

Although 12 Commitment Items remain open, the inspectors determined that you have adequately followed your commitment change process and have tracking mechanisms in place to ensure all actions are completed before the period of extended operation. On these bases and in consultation with the Division of License Renewal in the Office of Nuclear Reactor Regulation, operation into the period of extended operation is acceptable.

L. Weber

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In accordance with Title 10, *Code of Federal Regulations* (CFR), Section 2.390 of the NRC's "Rules of Practice," a copy of this letter 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 Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Ann Marie Stone, Chief
Engineering Branch 2
Division of Reactor Safety

Docket No. 50-315
License No. DPR-58

Enclosure:
Inspection Report 05000315/2014008
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 05000315
License No: DPR-58
Report No: 05000315/2014008
Licensee: Indiana Michigan Power Company
Facility: D. C. Cook Nuclear Power Plant, Unit 1
Location: Bridgman, MI
Dates: April 28 – May 2, 2014 and May 12 – 16, 2014
Inspectors: C. Tilton, Senior Reactor Engineer (Lead)
B. Jose, Senior Reactor Engineer
C. Brown, Reactor Engineer
D. Betancourt, Reactor Engineer
M. Jones, Reactor Engineer
V. Meghani, Reactor Engineer
Approved by: Ann Marie Stone, Chief
Engineering Branch 2
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05000315/2014008; 4/28/2014 – 5/16/2014; D. C. Cook Nuclear Power Plant, Unit 1; Post-Approval Site Inspection for License Renewal.

The report covers a team inspection conducted by region-based engineering inspectors. The inspectors concluded commitments, license conditions, and regulatory requirements associated with the issuance of the renewed operating license are being met. 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

No findings were identified.

B. Licensee-Identified Violations

No violations were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA5 Other Activities

.1 Post-Approval Site Inspection for License Renewal (Phase II) – Inspection Procedure 71003

a. Inspection Scope

(1) Review of Newly Identified Structures, Systems, and Components

The inspectors discussed the identification of newly identified Structures, System, and Components (SSCs) under the purview of 10 CFR 54.37(b), with the licensee staff. The licensee added three components to its Structures Monitoring Program as discussed in Section 4OA5.1a.(3)20 below. The inspectors reviewed correspondence submitted via letter dated October 8, 2010, (ML102930151) in support of the newly identified SSCs and as part of the Final Safety Analysis Report (FSAR) update required by 10 CFR 50.71(e). The inspectors verified the FSAR update described how the effects of aging will be managed such that the intended functions will be effectively maintained during the period of extended operation. The licensee staff reviewed modifications implemented since the renewed license was approved and determined there were no additional newly identified SSCs. The inspectors did not identify any deficiencies.

The inspectors contacted the Office of Nuclear Reactor Regulation (NRR), Division of License Renewal (DLR) staff for information on any generic NRC communications naming newly identified structures, systems, and components. The NRR DLR staff advised the inspectors the NRC has not specified additional newly identified SSCs that the licensee must evaluate and include as applicable in its next Updated Final Safety Analysis Report (UFSAR) update in accordance with §54.37(b).

(2) Review of Updated Final Safety Analysis Report and Commitment Change Process

As part of reviewing the Aging Management Programs (AMPs) associated with the commitments, the inspectors reviewed the associated UFSAR sections to confirm the implemented programs were consistent with the UFSAR descriptions.

The inspectors reviewed the licensee's procedures to ensure commitment revisions followed guidance provided in the Nuclear Energy Institute (NEI) Document 99-04, "Guidelines for Managing NRC Commitment Changes." The review included verifying the licensee appropriately eliminated commitments and properly evaluated, approved, and reported changes to license renewal commitments listed in the UFSAR, in accordance with 10 CFR 50.59. The inspectors reviewed each change associated with the commitment as described in the following sections. No disparities were identified with respect to implementation of the commitment change process. The inspectors concluded the licensee's commitment change actions were acceptable.

(3) Review of Commitment Items

The inspectors reviewed supporting documents including completed surveillance records, conducted interviews, and performed walkdowns to verify the licensee completed the necessary actions to comply with the license conditions that are a part of

renewed operating license. The inspectors verified the licensee implemented the AMPs and time-limited aging analyses (TLAA) included in NUREG-1831, "Safety Evaluation Report (SER) Related to the License Renewal of the D. C. Cook Nuclear Power Plant, Unit 1 and Unit 2," (ML052230442), in accordance with Title 10 of the *Code of Federal Regulations* (CFR) Part 54, "Requirements for the Renewal of Operating Licenses for Nuclear Power Plants." The inspectors verified a selected sample of corrective actions taken to address issues identified during the D. C. Cook Nuclear Power Plant License Renewal Phase I Inspection, as documented in IR 05000315/2013008 (ML13144A174).

In addition to following the requirements specified by Inspection Procedure (IP) 71003, "Post-Approval Site Inspection for License Renewal," for a selected sample, the inspectors reviewed attributes of IP 71002, "License Renewal Inspection." The IP 71002 inspection was conducted in 2004 as documented in Inspection Report 05000315/2004013 (ML050100227). At the time of the inspection, the licensee had not developed many of their aging management programs and implementing procedures. Therefore, during this inspection, the inspectors reviewed the Aging Management Programs to verify the aging effects of the scoped structures, systems, and components (SSCs) would be adequately managed.

When changes to the commitments were identified, the inspectors reviewed the commitment change evaluation to verify the licensee followed the guidance in NEI 99-04 for license renewal commitment change process, including the elimination of commitments, and 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 reviewed the commitments listed below, which are referenced in Appendix A of the Safety Evaluation Report (SER). All 42 Commitment Items were selected for review. The inspectors concluded the licensee completed actions to allow closure of 30 commitments; however, the following Commitments Items will remain open pending a subsequent inspection: 5, 6, 12, 16, 20, 23, 30, 34, 36, 37, 39, and 42.

Specific documents reviewed are listed in the Attachment to this report.

1. Alloy 600 Aging Management Program, Commitment Items 1, 2 and 3:

The Alloy 600 Aging Management Program is a new, plant-specific program that will manage aging effects of Alloy 600/690 components and Alloy 52/152 and 82/182 welds in the reactor coolant system (RCS) that are not addressed by other aging management programs. This program will detect primary water stress corrosion cracking (PWSCC) prior to loss of component intended function by using the examination and inspection requirements specified in American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI.

Commitment Item 1 specified the Alloy 600 Aging Management Program will be implemented prior to the period of extended operation. This program will manage aging effects of Alloy 600/690 components and Alloy 52/152 and 82/182 welds in the RCS that are not addressed by other aging management programs. This program will detect primary water stress corrosion cracking prior to the loss of component intended function by using the examination and inspection requirements specified in ASME, B&PV Code, Section XI.

Commitment Item 2 specified the Alloy 600 Aging Management Program commitment will also be revised to indicate that an inspection plan will be submitted for staff review and approval three years prior to the period of extended operation to determine if the program demonstrates an ability to manage the effects of aging per 10 CFR 54.21(a)(3).

Commitment Item 3 specified the licensee will continue to participate in industry initiatives, such as the Westinghouse Owners Group and the Electric Power Research Institute (EPRI) Materials Reliability Program (MRP). Susceptibility rankings and program inspection requirements regarding Alloy 82/182 pipe butt welds will be consistent with the later version of the EPRI MRP safety-assessment or its successors.

The inspectors interviewed the program owner and reviewed program basis document, implementing procedures, and scheduled and completed work orders.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 1, 2, and 3.

2. Boric Acid Corrosion Prevention Program, Commitment Item 4:

The Boric Acid Corrosion Prevention Program is an existing program, which relies on implementation of recommendations in NRC Generic Letter (GL) 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants," (Reference B.3-6) to monitor the condition of ferritic steel components on which borated reactor water may leak. Periodic visual inspection of adjacent structures, components, and supports for evidence of leakage and corrosion is an element of the GL 88-05 Monitoring Program.

Commitment Item 4 specified the Boric Acid Corrosion Prevention Program will be consistent with the program described in NUREG-1801, July 2001, Section XI.M10. The program will be enhanced to include the attributes documented in License Renewal Application (LRA), Section B.1.4, page B-26. The following enhancements to the Boric Acid Corrosion Prevention Program will be implemented prior to the period of extended operation:

- The program scope will be revised to address electrical components in addition to ferrite steel.
- The program acceptance criteria will be revised to address electrical components in addition to ferrite steel.

The inspectors reviewed program basis documents, implementing procedures, and work orders. In addition to the commitment implementation review, the inspectors reviewed the attributes of the Aging Management Program in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 4.

3. Buried Piping Inspection Program, Commitment Items 5 and 42:

The Buried Piping Inspection Program is a new program, which will manage the effects of corrosion on the pressure-retaining capability of buried carbon steel piping and tanks.

Commitment Item 5 specified the Buried Piping Inspection Program will be implemented prior to the period of extended operation. The program will include (a) preventive measures to mitigate corrosion, periodic inspections to manage the effects of corrosion on the pressure-retaining capability of buried carbon steel, copper alloy, copper, and iron piping and tanks. Preventive measures will be in accordance with standard industry practice for maintaining external coatings and wrappings. Buried piping and tanks, including buried piping and tanks constructed from carbon steel, copper alloy, copper, and iron that are not within the scope of license renewal, will be inspected when they are excavated during maintenance. Deficiencies associated with out-of-scope piping and tanks, will be evaluated for extent of condition, as applicable to in-scope buried piping and tanks.

Commitment Item 42, specified in response to the Advisory Committee on Reactor Safeguards, License Renewal Subcommittee comment regarding scheduling of buried piping inspections, the new Buried Piping Inspection Program will be enhanced to require performance of an inspection of buried piping included in the scope of this program. This inspection would occur within ten years after entering the period of extended operation, unless an opportunistic inspection of similar underground piping has occurred within this ten-year period. Before the end of the tenth year of extended operation, the licensee will perform an engineering evaluation to determine whether sufficient inspections have been conducted to draw a conclusion regarding the ability of the underground coatings to protect the underground piping from degradation. If not, the licensee will conduct an inspection of a sample of buried piping to allow that conclusion to be reached.

The inspectors reviewed program basis documents, implementing procedures, and work orders. In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

In a letter dated October 17, 2013, (ML13295A422), the licensee notified the NRC of their intent to change Commitment Items 5 and 42. The Nuclear Reactor Regulation (NRR) staff is currently reviewing the adequacy of these changes and intends to issue a Safety Evaluation Report by the end of 2014.

While reviewing the commitment changes, which included copper alloy and copper tubing in the scope of the program, the inspectors identified the licensee failed to revise the program description in the UFSAR. The licensee initiated Action Report (AR) 2014-5582 to address this minor violation of 10 CFR 50.71(e).

Commitment Items 5 and 42 will remain open pending NRR DLR staff review of the proposed change.

4. Cast Austenitic Stainless Steel Evaluation Program, Commitment Item 6:

The Cast Austenitic Stainless Steel (CASS) Evaluation Program is a new program, which will augment the inspection of RCS components in accordance with ASME Section XI. The CASS Evaluation Program will manage the effects of loss of fracture toughness in RCS CASS components susceptible to thermal aging embrittlement using volumetric inspections or a component-specific flaw tolerance evaluation. This program will not include CASS components within reactor vessel internals as these are evaluated and inspected in the Reactor Vessel Internals CASS Program.

Commitment Item 6 specified the CASS Evaluation Program will be implemented prior to the period of extended operation. The program will include a determination of the susceptibility of the CASS components to thermal aging embrittlement based on casting method, molybdenum content, and percent ferrite. Prior to the period of extended operation, the licensee will develop aging management program details (for example, plans for additional volumetric inspections or flaw tolerance evaluations) for the RCS piping heats of material that are susceptible to reduction of fracture toughness. The CASS Evaluation Program will be consistent with the program described in NUREG-1801, July 2001, Section XI.M12, as documented in LRA, Section B.1.7, page B-33.

The inspectors interviewed the program owner and reviewed program basis document, implementing procedures, and scheduled and completed work orders.

The licensee contracted Westinghouse to perform the required flaw tolerance evaluation for the CASS reactor coolant loop piping. This evaluation is due before the period of extended operation (August 29, 2014) and is currently being tracked by Action Item 00846695-21.

Based on the information presented above, Commitment Item 6 will remain open until further review by regional inspectors to ensure licensee completion of the required actions.

5. Fire Protection Program, Commitment Item 7:

The Fire Protection Program is an existing program and is consistent with, and includes exceptions to, the program as described in NUREG-1801, July 2001, Section XI.M26.

Commitment Item 7 specified the Fire Protection Program will be enhanced to include the attributes documented in LRA, Section B.1.11.1, pages B-45 and B-46. The following enhancements to the Fire Protection Program will be implemented prior to the period of extended operation:

- In the carbon dioxide (CO₂) and halon procedures, ensure that conditions that may affect the performance of the system (such as corrosion, mechanical damage, or damage to dampers) are observed and degraded conditions are addressed via the Corrective Action Program (CAP).
- Enhance procedures to ensure the diesel fuel supply line is monitored for degradation during performance testing.

The inspectors reviewed program basis documents, implementing procedures, and work orders. In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 7.

6. Fire Water System Program, Commitment Item 8:

The Fire Water System Program is an existing program, consistent with, and includes exceptions to, the program as described in NUREG-1801, July 2001, Section XI.M27.

Commitment Item 8 specified that the program will be enhanced to include the attributes documented in LRA, Section B.1.11.2, Page B-49. The following enhancements will be implemented prior to the period of extended operation:

- A sample of sprinkler heads were inspected using the guidance of National Fire Protection Act (NFPA) 25, Section 2.3.3.1.
- The Fire Water System Program was enhanced to perform nonintrusive measurement of pipe wall thickness per the NRC interim staff guidance (ISG) (ISG-04 [ML023440137]).

The inspectors reviewed program basis documents, implementing procedures, and work orders. In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program. In accordance with IP 71002 to determine that the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 8.

7. Heat Exchanger Monitoring Program, Commitment Item 9:

The Heat Exchanger Monitoring Program is a new plant-specific program, which includes measures to verify heat exchanger degradation is not occurring in heat exchangers susceptible to loss of material and cracking.

Commitment Item 9 specified the licensee would implement the Heat Exchanger Monitoring program prior to the period of extended operation. Furthermore, the licensee committed to inspect heat exchangers for degradation using non-destructive examinations, such as eddy current inspections or visual inspections or, if appropriate, the heat exchanger will be replaced. If degradation is found, an evaluation will be performed to determine its effects on the heat exchanger design functions.

The Heat Exchanger Monitoring Program states eddy current inspection of heat exchanger tubes will be performed every 10 years or more frequently, if inspection results indicate a need for more frequent inspections.

The inspectors reviewed program basis documents, implementing procedures, scheduled and completed work orders, and commitment change documents.

In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine that the adequacy of the program in detecting and monitoring aging effects. Specifically, the inspectors reviewed visual and eddy current inspection results, action requests generated, heat exchanger program procedures, and tube plugging calculations. The inspectors also interviewed current and past Heat Exchanger Program owners.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined that the licensee met Commitment Item 9.

8. Inservice Inspection Augmented Inspection Program, Commitment Item 10:

The ASME Section XI, Augmented Inspections Program will manage the effects of aging on selected components outside the jurisdiction of ASME Section XI. To the extent practical, augmented inspections will be consistent with the applicable ASME requirements of ASME Section XI (i.e., selection of inspection methods, inspection frequency, percentage of components examined within a population, and acceptance criteria). This program requires enhancements that will be implemented prior to the period of extended operation.

Commitment Item 10 specified the following enhancements to the Inservice Inspection (ISI) – ASME Section XI, Augmented Inspections Program will be implemented prior to the period of extended operation:

- An augmented ISI volumetric inspection of the spray additive tanks and the portions of the containment spray systems that are wetted by sodium hydroxide.
- An augmented ISI volumetric inspection of the portions of the discharge header in containment that may contain water with concentrated contaminants.

The inspectors interviewed the program owner and reviewed program basis document, implementing procedures, and scheduled and completed work orders.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 10.

9. Instrument Air Quality Program, Commitment Item 11:

The Instrument Air Quality Program is an existing program, which periodically documents the control air system quality for maximum dew point, particulate size, and dryer condition. The program ensures the control air supplied to components within the scope of license renewal is maintained free of water and significant contaminants.

Commitment Item 11 specified the licensee would enhance the Instrument Air Quality Program procedure prior to the period of extended operation to clearly specify frequencies for the dew point and dryer tours.

The inspectors interviewed the program owner and reviewed the implementing procedures, completed work orders, scheduled recurring tasks for the program, and available trending data for applicable components.

In addition to the commitment implementation review, the inspectors reviewed attributes of the aging management program in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects. Specifically, the inspectors reviewed the license renewal application, the D. C. Cook SER, implementing documents and the licensee's evaluation of Aging Management Program document for the Instrument Air Quality Program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 11.

10. Non-EQ Inaccessible Medium-Voltage Cable Program Extended Period, Commitment Item 12:

The Non-EQ Inaccessible Medium-Voltage Cable Program is a new program that will be implemented prior to the operation.

Commitment Item 12 specified the Non-EQ Inaccessible Medium-Voltage Cable Program applies to inaccessible (e.g., in conduit or direct-buried) medium-voltage cables within the scope of license renewal that are exposed to significant moisture simultaneously with applied voltage. This program will test these cables to provide an indication of the condition of the conductor insulation. The specific type of test performed will be determined prior to the initial test. The Non-EQ Inaccessible Medium Voltage Cable Program will be consistent with the program described in NUREG-1801, July 2001, Section XI.E3, as documented in LRA, Section B.1.20, page B-71.

The inspectors reviewed program basis documents, implementing procedures, and work orders. In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

While reviewing the current test results, the inspectors noted that the licensee had not completed all of the committed cable tests. The inspectors reviewed the scheduled work orders (WOs) and verified they were in track to be completed before entering the period of extended operation.

Based on the information presented above, Commitment Item 12 will remain open until further review by regional inspectors to ensure completion of required testing.

11. Non-EQ Instrumentation Circuits Test Review Program, Commitment Items 13 and 38:

The Non-EQ Instrumentation Circuits Test Review Program is a new program that will be implemented prior to the period of extended operation. The licensee's program will be comparable to the program described in NUREG-1801, Section XI.E2, Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits.

Commitment Item 13 specified the Non-EQ Instrumentation Circuits Test Review Program will be implemented prior to the period of extended operation. The electrical cables included in the scope of this program meet all of the following criteria:

- Not subject to the EQ requirements of 10 CFR 50.49;
- Used in instrumentation circuits with sensitive, high voltage, low-level signals; and,
- Exposed to adverse localized environments caused by heat, radiation, or moisture.

This program will be consistent with the program described in NUREG-1801, Section XI.E2, with the exception noted in the LRA, Section B.1.21, pages B-72 and B-73.

Commitment Item 38 specified an insulation resistance test method, such as time-domain reflectometry (TDR), will be continued through the period of extended operation, as part of the Non-EQ Instrumentation Circuits Test Review Program. The test frequency of instrumentation cables that are in the scope of this program, but are disconnected during calibration, shall be determined by the licensee based on engineering evaluation, but will not be less than once every ten years.

The inspectors reviewed program basis documents, implementing procedures, and work orders. In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 13 and 38.

12. Non-EQ Insulated Cables and Connections Program, Commitment Item 14:

The Non-EQ Insulated Cables and Connections Program is a new program, which will be implemented prior to the period of extended operation. The licensee's program will be comparable to the program described in NUREG-1801, Section XI.EI, Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification (EQ) Requirements.

Commitment Item 14 specified the Non-EQ Insulated Cables and Connections Program will be implemented prior to the period of extended operation. The Non-EQ Insulated Cables and Connections Program will apply to accessible insulated cables and connections installed in structures within the scope of license renewal and prone to adverse localized environments. The Non-EQ Insulated Cables and Connections Program will be consistent with the program described in NUREG-1801, July 2001, Section XI.E1, as documented in LRA, Section B.1.22, page B-74.

The inspectors reviewed program basis documents, implementing procedures, and work orders. In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 14.

13. Pressurizer Examinations Program, Commitment Item 15:

The Pressurizer Examinations Program is an existing plant-specific program. There is no comparable NUREG-1801 Program. As discussed in WCAP-14574-A, "License Renewal Evaluation: Aging Management for Pressurizers," (Reference B.3-18), cracking of the pressurizer cladding (and items attached to the cladding) may propagate into the underlying ferritic steel. In addition, the pressurizer spray head is susceptible to cracking and reduction of fracture toughness. The purpose of the pressurizer examinations is to identify degradation that could potentially cause loss of intended function of these pressurizer components.

Commitment Item 15 specified the following enhancements to the Pressurizer Examinations Program will be implemented prior to the period of extended operation:

- The condition of the internal spray head, spray head locking bar, and coupling will be determined by a one-time visual examination (VT-3) of these components in one unit. This examination will be performed to accepted ASME Section XI methods and standards to ensure that degradation of these items has not occurred; and
- If flaws are detected in the spray head, spray head locking bar, or coupling, engineering analysis will be completed to determine corrective actions, which could include replacement of the spray head. The need for subsequent inspections will be determined after the results of the initial inspection is evaluated.

The inspectors interviewed the program owner and reviewed program basis document, implementing procedures, and schedules and completed work orders.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 15.

14. Preventative Maintenance Program, Commitment Items 16 and 37:

The Preventative Maintenance (PM) Program is an existing program comprises those PM tasks intended to sustain plant equipment within design parameters and maintain the equipment intrinsic reliability. The PM activities provide for periodic equipment inspections and testing to detect the various aging effects applicable to those components included in the scope of the PM Program for license renewal.

Commitment Item 16 specified that the following enhancements to the PM Program would be implemented prior to the period of extended operation:

- Revise PM tasks for the emergency diesel generator (EDG) ventilation system to include inspection of the flex joints; for the control room ventilation air handler packages to include inspection of the heat exchanger tubes and flex joints; and for the auxiliary feedwater pump room cooling units to include inspection of the internal evaporator tubes, valves and tubing.
- The PM program will manage the aging effects for the emergency diesel engine elastomer flex hoses or tubing, reactor coolant pump lube oil leakage collection components, rubber hoses in the compressed air system, rubber hoses in the Post-Accident Containment Hydrogen Monitoring System reagent gas supply, security diesel engine elastomer flex hoses or tubing, and elastomer condensate storage tanks floating head seals.

Commitment Item 37 specified the PM Program will manage the loss of material for the EDG exhaust silencer internals. Visual inspections of the silencer internals will be completed, evaluated, and documented thoroughly before the period of extended operation, as part of the PM Program. The frequency of future inspections will be determined after reviewing the initial inspection results.

The inspectors interviewed the program owner and reviewed implementing procedures, samples of completed work orders, and scheduled recurring tasks for the program. The inspector also observed a PM on the Unit 2 turbine drive auxiliary feedwater room cooler. The inspectors identified an observation as documented in Section 4OA5.1.b(1).

In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects.

The licensee submitted a commitment revision to the NRC on March 1, 2013, (ML13073A110), related to Commitment Item 16. Commitment 16 remains open pending the review of the revised commitment by NRR.

The inspectors confirmed the licensee established work activities to complete the inspections associated with Commitment Item 37 prior to the period of extended operation.

Based on the information provided above, Commitment Items 16 and 37 remain open pending future inspection of activities to be completed.

15. Reactor Vessel Integrity Program, Commitment Item 17:

The Reactor Vessel Integrity Program is an existing program. The purpose of the Reactor Vessel Integrity Program is to manage reduction of fracture toughness of reactor vessel beltline materials to ensure that the pressure boundary function of the reactor vessel beltline is maintained for the period of extended operation. The program is based on ASTM E-185-82, "Standard Recommended Practice for Surveillance Tests for Nuclear Reactor Vessels," and includes an evaluation of radiation damage based on pre-irradiation and post-irradiation testing of Charpy V-notch and tensile specimens. Eight specimen capsules were inserted into each

reactor vessel prior to initial startup. The capsules contain reactor vessel steel specimens from the limiting shell plate surrounding the core region of the reactor and associated weld metal and heat-affected zone metal. The capsules also contain dosimeters and thermal monitors.

Commitment Item 17 specified the Reactor Vessel Integrity Program will be consistent with the program described in NUREG-1801, July 2001, Section XI.M31. The program will be enhanced to include the attributes documented in LRA, Section B.1.26, page B-89. The following enhancements to the Reactor Vessel Integrity Program will be implemented prior to the period of extended operation:

- The licensee will pull and test one additional standby capsule for each unit between 32 effective full-power years (EFPY) and 48 EFPY to cover the peak fluence expected at 60 years. A fluence update will be performed at approximately 32 EFPY when Capsules W (Unit 1) and S (Unit 2) are pulled and tested. A subsequent fluence update will be performed when the standby capsules are pulled and tested between 32 EFPY and 48 EFPY.
- Modifications to design and operation that result in changes to the neutron energy spectrum or operating temperatures will be compared to the original environment in which the capsules were irradiated.

The inspectors interviewed the program owner and reviewed program basis document, implementing procedures, and scheduled and completed work orders.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 17.

16. Reactor Vessel Internals Plates, Forgings, Welds, and Bolting Program, Commitment Items 18, 19, and 36:

The Reactor Vessel Internals Plates, Forgings, Welds, and Bolting Program is a new program which manages aging effects of reactor vessel internals plates, forgings, welds, and bolting. This program supplements the reactor vessel internals inspections required by the ASME Section XI Inservice Inspection Programs.

Commitment Item 18 specified the Reactor Vessel Internals Plates, Forgings, Welds, and Bolting Program commitment will be revised to indicate that the program to manage void swelling will be submitted for staff review and approval three years prior to the period of extended operation. Commitment Item 18 was superseded by Commitment Item 36.

Commitment Item 19 specified the Reactor Vessel Internals Plates, Forgings, Welds, and Bolting Program is a new program that will be implemented prior to the period of extended operation. This program will include visual inspections and non-destructive examinations of the reactor vessel internals during the period of extended operation. A visual inspection will be performed on plates, forgings, and welds to detect and monitor cracking caused by Irradiation Assisted Stress Corrosion Cracking enhanced by reduction of fracture toughness by irradiation embrittlement and distortion due to swelling. For baffle bolts, a volumetric inspection of critical locations will be performed to assess cracking. The licensee will participate in industry-wide programs designed by the pressurized water reactor (PWR) Materials Reliability

Project Issues Task Group for investigating the impacts of aging on PWR vessel internal components.

Commitment Item 36 states the licensee will submit the Reactor Vessel Internals Plates, Forgings, Welds, and Bolting Program for NRC staff review and approval three years prior to the period of extended operation for Unit 2 and no later than October 1, 2012, for Unit 1. The Reactor Vessel Internals Plates, Forgings, Welds, and Bolting Program will be consistent with the program described in NUREG-1801, July 2001, Section XI.M16, as documented in LRA, Section B.1.27, page B-92. The inspectors interviewed the program owner and reviewed program basis document, implementing procedures, and scheduled and completed work orders.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 19.

Commitment Items 36 is currently under review by NRR DLR staff. Therefore, this commitment will remain open pending review and approval by the staff.

17. Reactor Vessel Internals Cast Austenitic Stainless Steel Program, Commitment Item 20:

The Reactor Vessel Internals (RVIs) Cast Austenitic Stainless Steel (CASS) Program is a new program to manage aging effects of CASS reactor vessel internal components.

Commitment Item 20 specified the Reactor Vessel Internals CASS Program will be implemented prior to the period of extended operation. This program will provide visual inspections and non-destructive examinations of the RVIs during the period of extended operation. The program will monitor propagation of cracks from existing flaws. In addition to the features of the program described in NUREG-1801, Section XI.M13, the program will manage the aging effect of distortion due to void swelling of the RVIs. Applicable components will be determined based on the neutron fluence and thermal embrittlement susceptibility of the component. The commitment further specified that the licensee will participate in industry-wide programs designed by the PWR Materials Reliability Project Issues Task Group for investigating the impacts of aging on PWR vessel internal components.

The inspectors reviewed the licensing and program basis documents, implementing procedures, work orders, ARs, and interviewed the plant personnel responsible for the program.

In the letter AEP-NRC-2012-82 (ML12284A320) dated October 1, 2012, the licensee submitted the new Reactor Vessel Internals Aging Management Program to the NRC, and that the NRC staff review is in process. The RVI CASS Program is included within this program. Per Enclosure 2 in the letter, the licensee committed to provide the NRC results of the specific evaluations of the RVI CASS materials prior to the period of extended operation for each unit. The NRC staff safety evaluation is expected to be completed in 2015. Therefore, Commitment Item 20 remains open pending review and approval by NRR DLR staff.

18. Service Water System Reliability Program, Commitment Items 21 and 41:

The Service Water System Reliability Program is an existing program. The program was enhanced and is comparable to the program described in NUREG-1801, Section XI.M20, "Open-Cycle Cooling Water Systems," with exceptions. This program relies on implementation of the recommendations of Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety Related Equipment," to ensure the effects of aging on the essential service water (ESW) system will be managed for the period of extended operation. The program includes surveillance and control techniques to manage aging effects caused by bio-fouling, corrosion, erosion, protective coating failures, and silting in the ESW system or structures and components serviced by the ESW system.

The program takes exception to the program described in NUREG-1801, Section XI.M20, in that:

- Program heat exchangers may receive a thorough visual inspection and cleaning in lieu of thermal performance testing; and
- NUREG-1801 states that system components are constructed of appropriate materials and lined or coated to protect the underlying metal surfaces from being exposed to aggressive cooling water environments. Not all of the licensee's system components are lined or coated. They are lined or coated only where necessary to protect the underlying metal surfaces; and
- NUREG-1801 requires that testing and inspections be performed annually and during refueling outages. The licensee's program performs tests and inspections on a refueling outage frequency.

Commitment Item 21 specified the service water reliability program will be enhanced to check for selective leaching during visual inspections.

The licensee submitted a UFSAR update per the guidance of 10 CFR 50.71(e) to remove the commitment to develop a new PM activity or revise an existing PM activity to ensure the 8-inch expansion joints in the ESW supply lines to the EDG heat exchangers are inspected for evidence of loss of material, change in material properties, and cracking. The licensee determined that because the required PM activity is currently being implemented that ensures the 8-inch expansion joints are replaced on a 5R frequency, these components are not subject to the license renewal rules.

Commitment Item 41 specified the Service Water Reliability Program will be enhanced to manage the loss of material due to selective leaching of susceptible materials by visual inspections and hardness testing, or an equivalent method.

The inspectors reviewed the program basis document, implementing procedures, scheduled and completed work orders, commitment change documents, and applicable ARs. The inspectors reviewed vendor recommendations and operating experience related to expansion joint replacements.

In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002

to determine adequacy of the program in detecting and monitoring aging effects. Specifically, the inspectors reviewed visual inspection results, action requests generated, and program procedures; inspectors also interviewed the Service Water Reliability Program owner.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 21 and 41.

19. Small Bore Piping Program, Commitment Item 22:

The Small Bore Piping Program is a new program for managing cracking of small bore Class 1 RCS piping, comparable to the program described in NUREG-1801, Section XI.M32, One-Time Inspection.

Commitment Item 22 specified the Small Bore Piping Program will be implemented prior to the period of extended operation. The small bore piping inspections will involve a one-time volumetric examination of susceptible items in selected locations of Class 1 small bore piping. These inspections will occur at or near the end of the initial operating period for Units 1 and 2.

The inspectors reviewed the licensing and program basis documents, implementing procedures, work orders, ARs and interviewed the plant personnel responsible for the program.

In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects. Specifically, the inspectors reviewed licensee evaluation of the operating experience including comparison with Generic Aging Lessons Learned (GALL) Revisions 0 and 2 and selected volumetric examination reports.

The inspectors identified one observation related to the Small Bore Piping Program which is documented in Section 4OA5.1.b(2). Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 22.

20. Structures Monitoring - Structures Monitoring Program, Commitment Item 23:

The Structural Monitoring Program is an existing program comparable to the program described in NUREG-1801, Section XI.S6 implemented to monitor the condition of structures and structural components within the scope of the Maintenance Rule. The program was expanded to encompass structures and structural components within the scope of license renewal.

Commitment Item 23 specified the Structures Monitoring Program will be consistent with the program described in NUREG-1801, July 2001, Section XI.S6. The program will be enhanced to include the attributes documented in LRA, Section B.1.32, pages B-101 and B-102. The program will be enhanced to include the following in the Structures Monitoring Program:

- equipment supports;
- instrument panels;

- racks; cable trays;
- conduits;
- cable tray supports;
- conduit supports;
- elastomers;
- pipe hangers/supports;
- fire protection pump house superstructure and walls;
- gas bottle storage tank rack and foundation;
- security diesel generator room;
- switchyard control house;
- fire protection water storage tank foundation;
- primary water storage tank foundation; and
- the roadway west of the greenhouse.

The licensee also identified three newly-identified SSCs to include within the scope of the Structures Monitoring Program. These include:

- turbine sump emergency overflow sump;
- ramp curbs at the turbine room entrance to passageway between the diesel generator rooms;
- the reinforced concrete grade beam wall and tops of the ramps on the west side of the Turbine Building

The inspectors reviewed the licensing and program basis documents, implementing procedures, work orders, ARs, performed a walkdown, and interviewed the plant personnel responsible for the program.

The inspectors noted the last three items noted above (turbine emergency overflow sump, ramp curbs at turbine room entrance, and grade beam wall and top of the rams) were added to the scope after issuance of the NRC Safety Evaluation Report per NUREG-1831, based on a new flooding report performed by the licensee in 2007. The licensee communicated this change to the NRC through letter AEP-NRC-2010-61 (ML102930151), dated October 8, 2010. The inspectors identified one observation related to the Structural Monitoring Program, which is documented in Section 4OA5.1.b(3). The inspectors also noted a commitment change to remove the security diesel generator room from the license renewal scope was submitted to the NRC in the letter AEP-NRC-2013-15 (ML13073A110), dated March 1, 2013, and is under review by the NRC staff.

The licensee actions reviewed by the inspectors were timely and adequate. However, pending NRR DLR staff review of the commitment change involving removal of the security diesel generator room from the Structural Monitoring Program Scope, the inspectors determined Commitment Item 23 remains open.

21. Structures Monitoring – Crane Inspection Program, Commitment Item 24:

The Crane Inspection Program is an existing program comparable to the program described in NUREG-1801, Section XI.M23, Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems.

Commitment Item 24 specified the Structures Monitoring - Crane Inspection Program will be consistent, but with some exceptions to, the program described in NUREG-1801, July 2001, Section XI.M23, as documented in LRA, Section B.1.33, Page B-104. The program will be enhanced to include the attributes documented in LRA, Section B.1.33, page B-105. The following enhancements to the Crane Inspection Program will be implemented prior to the period of extended operation:

- Develop procedures or recurring tasks to: evaluate the effectiveness of the maintenance monitoring program and the effects of past and future usage on the structural reliability of in-scope cranes, verify in-scope crane rails and structural components are visually inspected on a routine basis for loss of material, and verify significant visual indications of loss of material due to corrosion or wear are evaluated according to applicable industry standards and good industry practice.

The inspectors reviewed the licensing and program basis documents, implementing procedures, work orders, ARs and interviewed the plant personnel responsible for the program.

In addition to the commitment implementation review, the inspectors reviewed attributes of the aging management program in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects. Specifically, the inspectors reviewed the applicable program basis documents, implementing procedures, the PM requirements, and the licensee's evaluation of the program (comparison to the GALL Revisions 0 and 2).

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 24.

22. Structures Monitoring – Masonry Wall Program, Commitment Item 25:

The Masonry Wall Program is an existing program comparable to the program described in NUREG-1801, Section XI.S5, Masonry Wall Program.

Commitment Item 25 specified the Structures Monitoring - Masonry Wall Program will be consistent with the program described in NUREG-1801, July 2001, Section XI.S5. The program will be enhanced to include the attributes documented in LRA, Section B.1.36, page B-112. The following enhancements to the Masonry Wall Program will be implemented prior to the period of extended operation:

- Include the 4-hour fire-rated masonry block in the turbine building and screenhouse; and Masonry block in the auxiliary building; and
- Enhance the Plant Structures Performance Evaluation and Monitoring Program procedure to specify the masonry walls in the auxiliary building that perform a license renewal intended function and fire-rated masonry walls in the turbine building and screenhouse are within the scope of this procedure.

The inspectors reviewed the licensing and program basis documents, implementing procedures, work orders, ARs and interviewed the plant personnel responsible for the program.

In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects. Specifically, the inspectors reviewed the licensing and program basis documents, implementing procedures, work orders, ARs, and licensee's review of the program comparison with the GALL, Revisions 0 and 2.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 25.

23. System Testing Program, Commitment Item 26:

The System Testing Program is an existing program, which encompasses a number of miscellaneous system and component testing activities credited for managing the effects of aging. These activities are typically surveillance activities required by the Technical Specifications or normal monitoring of plant operation (for example, plant log readings or other normal monitoring techniques).

Commitment Item 26 specified the following enhancements would be implemented prior to the period of extended operation:

- Develop periodic surveillance for the centrifugal charging pumps minimum flow orifices to detect internal erosion.
- Ensure procedures for engineered safety features ventilation unit, the fuel handling area exhaust unit, and control room ventilation unit surveillance testing include visual verification that the drain valves and drain piping have not experienced loss of material to the extent that their pressure boundary function is compromised. The procedures will include inspection of the external surfaces of ventilation drain valves and drain piping for any through-wall degradation (e.g., pinholes, etc.) or any general corrosion.

The inspectors interviewed the program owner and reviewed implementing procedures, completed work orders, scheduled recurring tasks for the program, and available trending data for applicable components. During the review of the periodic surveillance credited with detecting loss of material in the minimum flow lines, the inspectors noted that the procedures did not contain appropriate acceptance criteria to detect loss of material. The inspectors identified an observation documented in Section 4OA5.1.b.

In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects. Specifically, the inspectors reviewed the license renewal application, the D. C. Cook SER, implementing documents, and the licensee's evaluation of the Aging Management Program document for the System Testing Program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 26.

24. System Walkdown Program, Commitment Item 27:

The System Walkdown Program is an existing program, which manages loss of material, loss of mechanical closure integrity and cracking, as applicable, for systems and components within the scope of license renewal. The program uses general visual inspections of readily accessible system and component surfaces during system walkdowns.

Commitment Item 27 specified the System Walkdown Program would be enhanced prior to the period of extended operation to:

- Ensure balance of plant systems are adequately addressed with regard to license renewal considerations.
- Enhance the program description to emphasize management expectations that the entire system, where accessible, is walked down once a refueling cycle.
- Enhance the program description to emphasize the accessibility of aspects of the system during refueling and maintenance outages.
- Ensure evidence of corrosion is monitored adequately.
- Enhance the program description to emphasize the need to walkdown existing aging concerns, and to provide feedback to management regarding their condition (i.e., in system health reports or corrective action program). If the condition declines significantly, initiate a condition report for further evaluation.
- Enhance acceptance criteria to ensure adequate detection of aging effects, including:
 - The impact of non-safety related SSCs on safety related components with emphasis that preventive measures will be taken prior to loss of an SSC's license renewal intended function.
 - Extrapolation of conditions found in accessible structures or components to inaccessible structures or components.
 - Ensuring changes in material/environment combinations are addressed. Examples include: soil or water covering a pipe that was previously uncovered and excessive moisture in the area where previously not present.
- Develop and implement enhanced administrative controls.

The inspectors interviewed the program owner and reviewed implementing procedures, completed work orders, scheduled recurring tasks for the program, and a sample of completed system walkdown reports. Additionally, the inspectors reviewed generated Action Requests (ARs) to review the disposition of items identified during walkdowns.

In addition to the commitment implementation review, the inspectors reviewed attributes of the aging management program in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring

aging effects. Specifically, the inspectors reviewed the license renewal application, the D. C. Cook SER, implementing documents and the licensee's evaluation of Aging Management Program document for the System Walkdown Program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 27.

25. Wall Thinning Monitoring Program, Commitment Item 28:

The Wall Thinning Monitoring Program is a new program that will include inspections of carbon steel piping and valves in the containment isolation system and the auxiliary feedwater system to ensure piping wall thickness is above the minimum required.

Commitment Item 28 specified the Wall Thinning Monitoring Program will be implemented before the period of extended operation. The wall thinning inspections will be performed to ensure piping wall thickness is above the minimum required to avoid failures under normal conditions and postulated transient and accident conditions, including seismic events.

The inspectors reviewed program basis documents, implementing procedures, and work orders. In addition to the commitment implementation review, the inspectors reviewed attributes of the aging management program in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 28.

26. Water Chemistry Control – Primary and Secondary Water Chemistry Control Program, Commitment Item 29:

The Water Chemistry Control – Primary and Secondary Water Chemistry Control Program is an existing program. The program mitigates damage caused by corrosion and stress corrosion cracking. This Water Chemistry Program relies on monitoring and control of water chemistry based on EPRI Guidelines.

Commitment Item 29 specified the licensee would enhance the program by the period of extended operation by implementing the following changes:

- Revise the program controlling procedures to require individual implementing procedures to identify and prescribe any special collection and preservation needs of a sample.
- Bring the parameters monitored/inspected and acceptance criteria into clear alignment with the EPRI water chemistry guidelines.
- Include sulfate monitoring criteria for the refueling water storage tank (RWST) that are consistent with the EPRI Guidelines and the sulfate criteria for other systems impacted by RWST chemistry.

The inspectors reviewed individual implementing procedures, program-implementing procedures, program basis documents, and EPRI Topical Reports for primary and secondary water chemistry control.

In addition to the commitment implementation review, the inspectors reviewed attributes of the aging management program in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects. Specifically, the inspectors reviewed the existing primary and secondary Water Chemistry Monitoring Program procedures and inspection results; inspectors also interviewed current and past Heat Exchanger Program owners.

The inspectors identified one observation related to incorporating special collection needs and preservation needs of samples. The inspectors noted chemistry personnel are required to utilize procedures not referenced in the system implementing procedure. The licensee captured the inspectors' concerns in AR 2014-5978 and has taken steps to reference the appropriate instruction in the individual implementing procedures.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 29.

27. Water Chemistry Control – Chemistry One-Time Inspection Program, Commitment Item 30 and 39:

The Water Chemistry Control – Chemistry One-Time Inspection Program is a new program that the licensee committed to implement and complete prior to the period of extended operation. The program will verify the effectiveness of the Water Chemistry Control Program to ensure aging effects are effectively managed during the period of extended operation.

Commitment Item 30 specified the Chemistry One-Time Inspection program will be implemented and completed prior to the period of extended operation. Combinations of non-destructive examination (NDE), including visual, ultrasonic, and surface techniques, a representative sample of components that credit the Water Chemistry Control Program will be inspected.

Commitment Item 39 specified the following:

- The licensee will include auxiliary steam system copper heater coils, cast iron strainer housings, and carbon steel traps exposed to an internal steam environment in the Chemistry One-Time Inspection Program, which is described in LRA Section B.1.41.
- The licensee will include these 10 CFR 54.4(a)(2) components [i.e., components in the CONT, DRAIN, PASS, RMS, RWD, and SD systems that are subject to aging management review, and may be pressurized and contain raw or untreated water.] in the Chemistry One-Time Inspection Program.
- This one-time inspection will be performed near the end of the current operating term. The visual inspections will identify indications of loss of material. If loss of material is identified, an evaluation will be performed to confirm that the rate is sufficiently slow and that loss of intended function will not occur during the period

- of extended operation. For material and environment combinations with no evidence of loss of material or with very gradual loss of material, no further actions will be taken. For material and environment combinations with loss of material rates such that loss of intended function could occur during the period of extended operation, corrective actions will be taken in accordance with the CAP. Appropriate corrective actions may consist of component replacement or additional inspections for components with the material and environment combination in which the excessive loss of material is found.

The inspectors reviewed program basis document, implementing procedures, scheduled and completed work orders, and applicable ARs. The inspectors also accompanied the licensee staff on infield visual inspections of a carbon steel drain exposed to an internal steam environment. Additionally, the inspectors interviewed the Chemistry One-Time Inspection Program owner.

In addition to the commitment implementation review, the inspectors reviewed attributes of the Aging Management Program in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects.

At the time of this inspection, the licensee had not completed all of the actions designated to be finished prior to the extended period. The inspectors verified these actions have been scheduled. Commitment Items 30 and 39 will remain open until further review by regional inspectors to ensure licensee completion of remaining inspections.

28. Fatigue Monitoring Program, Commitment Item 31, 33, 34, 35 and 40:

Fatigue Monitoring Program is an existing program comparable to the program described in NUREG-1801, Section X.M1, Metal Fatigue of Reactor Coolant Pressure Boundary.

The Fatigue Monitoring Program monitors and tracks the number of critical thermal and pressure transients for selected RCS components in order not to exceed the design limit on fatigue usage. The program maintains the basis for component analyses containing explicit thermal cycle count assumptions. Components managed by this program are those shown to be acceptable by analyses that explicitly addressed thermal and pressure fatigue transient limits.

Commitment Item 31 specified the licensee would enhance the Fatigue Monitoring Program by performing one or more of the following prior to the period of extended operation for the pressurizer surge line:

- Further refine the fatigue analysis to lower the pressurizer surge line cumulative usage factors to below 1.0;
- Repair the affected locations;
- Replace the affected locations;

- Manage the effects of fatigue of the pressurizer surge line by an NRC-approved inspection program; and/or
- Review changes to ASME, B&PV Code actions relating to environmental fatigue. Any refined analysis will use the methodology approved by the ASME Committee and the NRC.

Commitment Item 33 specified the licensee would enhance the Fatigue Monitoring Program by performing one or more of the following prior to the period of extended operation for the Class 1 charging and safety injection nozzles:

- Perform a plant-specific fatigue analysis of the Class 1 charging and safety injection nozzles, which includes environmental effects, to ensure that cumulative usage factors are below 1.0;
- Manage the effects of fatigue of the Class 1 charging and safety injection nozzles by an NRC-approved inspection program (e.g., periodic non-destructive examination of the affected locations at inspection intervals to be determined by a method accepted by the NRC). The inspections are expected to be able to detect cracking due to thermal fatigue prior to loss of function. Replacement or repair will then be implemented such that the intended function will be maintained for the period of extended operation;
- Repair portions of the Class 1 charging and safety injection nozzles at the affected locations, as necessary to ensure the intended function will be maintained for the period of extended operation;
- Replace portions of the Class 1 charging and safety injection nozzles at the affected locations, as necessary to ensure the intended function will be maintained for the period of extended operation; and/or
- Monitor ASME Code activities to use the environmental fatigue methodology approved by the ASME Code Committee and the NRC.

Commitment Item 34 specified the licensee will review the piping loads on the remaining hot penetrations to establish the base loads for the fatigue exemption provisions of ASME Section III, N-415.1. The licensee will group the penetrations based on their duty cycle during normal operations including inservice testing duty. The cycle loads and stresses will be added to the piping analysis loads as appropriate and the resultant loads will be compared to the fatigue exemption provisions of ASME Section III, N-415.1. Any penetration group that does not meet the exemption provisions will be analyzed for fatigue using the most limiting penetration to represent the group. This evaluation will be completed prior to entering the period of extended operation, and will be projected to the end of the period of extended operation.

Commitment Item 35 specified the licensee would enhance the Fatigue Monitoring Program by performing one or more of the following prior to the period of extended operation for the residual heat removal (RHR) piping:

- A plant-specific fatigue analysis of Class 1 portions of RHR piping, which includes environmental effects, will be performed to ensure that cumulative usage factors remain below 1.0;
- Repair the Class 1 portions of RHR piping at the affected locations;
- Replace the Class 1 portions of RHR piping at the affected locations;
- Manage the effects of fatigue of the Class 1 portions of RHR piping by an NRC-approved inspection program (e.g., periodic non-destructive examination of the affected locations at inspection intervals to be determined by a method accepted by the NRC). The inspections are expected to be able to detect cracking due to thermal fatigue prior to loss of function. Replacement or repair will then be implemented such that the intended function will be maintained for the period of extended operation; and/or
- Monitor ASME Code activities to use the environmental fatigue methodology approved by the ASME Code committee and NRC.

Commitment Item 40 specified the frequency noted on page 6-3 of WCAP-14070 for valve leakage is assumed to occur for each of the reactor years of operation for the plant. The cycles are assumed to be for 40 years of operation. Therefore, this frequency is time-dependent and constitutes a time-limited aging analysis (TLAA). The licensee will perform one or more of the following activities to address fatigue of the auxiliary spray line piping evaluated in WCAP-14070:

- Perform a plant-specific fatigue reanalysis of the auxiliary spray line piping prior to entering the period of extended operation to ensure that cumulative usage factors are below 1.0;
- Repair piping at the affected locations;
- Replace piping at the affected locations; and/or
- Manage the effects of fatigue of the auxiliary spray line piping by an NRC-approved inspection program (e.g., periodic non-destructive examination of the affected locations at inspection intervals to be determined by a method accepted by the NRC). It is expected that the inspections will be able to detect cracking due to thermal fatigue prior to loss of function. Replacement or repair, if necessary, will then be implemented such that the intended function will be maintained for the period of extended operation.”

The inspectors interviewed the program owner, reviewed implementing procedures, available fatigue analyses, and trending data for applicable components. For Commitment Items 31, 33 and 35, the licensee elected to perform plant-specific fatigue analyses. These analyses demonstrated that the cumulative usage factor for all components will remain below 1.0 during the period of extended operation. During this review, the licensee identified transients in the charging and letdown lines that were not tracked by the licensee’s procedure. The licensee initiated AR 2014-1430 to revise the site’s procedures to include the new transients for monitoring. The inspectors also reviewed the licensing and program basis

documents, work orders, ARs and interviewed the plant personnel responsible for the program.

In addition to the commitment implementation review, the inspectors reviewed attributes of the aging management program in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects. Specifically, the inspectors reviewed the license renewal application, the D. C. Cook SER, implementing documents and the licensee's evaluation of aging management program document for the Fatigue Monitoring Program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 31, 33, 35 and 40.

The inspectors noted the licensee had not completed the necessary evaluations to close Commitment Item 34. Therefore, this commitment remains open until further review by regional inspectors to ensure licensee completion of required actions.

29. Evaluate Fuse Holders, Commitment Item 32:

Commitment Item 32 referenced interim Staff Guidance Document ISG-5 which addresses fuse holders not part of a larger assembly, but support safety-related and non-safety-related functions in which a failure of a fuse precludes a safety function from being accomplished. Fuse holders that meet these requirements will be evaluated before the beginning of the period of extended operation for possible aging effects. The fuses will either be replaced, modified to remove the aging effects, or a program will be implemented to manage the aging effects. The aging management program (if needed) for fuse holders will consider the aging stressors for the metallic clips

The inspectors reviewed the evaluation related to Commitment Item 32 which concluded that all fuse holders are included in an active component or do not perform a license renewal intended function. Since all fuse holders screened out, Unit 1 does not require an aging management program for fuse holders.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 32.

b. Findings and Observations

The inspectors identified four observations.

(1) Implementing Procedure Did Not Address All Items Specified In Commitment 16

During the inspector's review of the implementing work orders for the inspection of the auxiliary feedwater room cooler, the inspectors noted the work order did not cover all the specified items outlined in the commitment. Specifically, the commitment stated inspections of the auxiliary feedwater pump room cooling units would include the internal evaporator tubes, valves and tubing. The inspectors identified the inspection procedure did not specify the visual inspection of the valves or tubing for degradation. In response to the inspectors' questions, the licensee stated that the final commitment closure documentation had to be reviewed for completion and implementation and this discrepancy would have to be identified during the final review. At the conclusion of this

inspection, the licensee had not finish implementing Commitment 16. The licensee entered this concern into the CAP as AR-2014-5414 and revised the model work order to include the missing items.

(2) Inadequate Non-Destructive Examinations and Sampling of Small Bore Piping Welds

During review of the Small Bore Piping Program, the inspectors identified a concern related to the adequacy of the non-destructive examinations (NDEs) of the small piping welds. The program required the licensee to perform One-Time volumetric examination of susceptible items in selected locations of Class 1 small bore piping at or near the end of the initial operating period. The Class 1 small piping in the plant includes butt welds as well as socket weld fittings. At the time the renewed license was approved, techniques were not available for volumetric examination of the socket weld fittings. In addition, the examination sample size was not defined in the program or the available Generic Aging Lessons Learned (GALL), Revision 0, at the time. Consequently, based on the techniques available at the time, the licensee's volumetric NDEs for socket welds were limited to the piping base metal only. The inspectors noted the licensee examined 20 of the 98 butt welds identified as within scope and examined the base metal at 2 of the 243 in-scope socket welds.

However, the inspectors noted Revision 2 of the GALL specified full NDE of the socket weld and specified a 3 percent sample size for each type of welds. This change to the GALL incorporated recent operating experience as well as the availability of reliable techniques for volumetric examination of small bore socket weld fittings. Based on discussions with the NRC staff, the inspectors concluded the licensee needed to address the operating experience as documented in Revision 2 of the GALL. The licensee captured the concern in their corrective action program as AR 2014-6020 for further review and appropriate actions.

(3) Concerns with in Implementation and Tracking of License Renewal Walkdowns

During review of the Structural Monitoring Program (SMP), the inspectors identified a concern regarding effectiveness of the methods for tracking completion of license renewal walkdowns, and the level of details in several of the walkdown reports. The licensee used individually controlled spreadsheets to track completion of walkdowns. Some of the walkdown records reviewed by the inspectors did not include sufficient details to demonstrate that various components such as masonry walls, seismic gaps, component supports, etc., within the scope of the program had been inspected. The licensee indicated that they were in the process of enhancing the implementation process with open actions per AR 2014-2799 for establishing a controlled and scheduled method of performing the SMP inspections via the work control process. The licensee captured the concern in their Corrective Actions Program as AR 2014-5478 and initiated actions for ensuring more detailed accounting of structures and components in the scheduling process as well as in documentation. Based on the enhancements in progress, the new initiated actions, and the no significant structural degradation identified during the NRC inspectors' walkdowns, the inspectors determined the issue was of minor significance.

(4) Failure to Establish Acceptance Criteria to Detect Loss of Material Due to Erosion for the Centrifugal Charging Pumps Minimum Flow Orifices

As part of the renewed license, the licensee established that the existing program known as System Testing Program would be used to manage the effects of aging of a number of systems. Commitment Item 26 stated, in part, that the licensee would enhance the System Testing Program, prior to the period of extended operation, by developing a periodic surveillance for the centrifugal charging pumps minimum flow orifices to detect internal erosion. The program, as stated in the licensee's basis document LRP-EAMP-01, "D. C. Cook License Renewal Evaluation of Aging Management Programs," is credited with verifying that the orifices have not experienced loss of material to the extent of impacting the ability of the pump to provide the required flow. Additionally, the program states that acceptance criteria is tailored for each component and are provided in the governing procedure (i.e. surveillance procedure, log reading, etc.). The need for acceptance criteria is also stated in the D. C. Cook Safety Evaluation Report (NUREG-1831).

During this inspection, the inspectors reviewed quarterly surveillance Procedures 1-OHP-4030-103-052E "East Centrifugal Charging Pump Operability Test" and 1-OHP-4030-103-052W "West Centrifugal Pump Operability Test, which were the credited surveillances used to detect loss of material in the minimum flow lines. The inspectors noted that the Step 4.6 of Attachment 2, which verified flow through the orifice, specified that the acceptable parameter was "Flow greater than 57 gpm [gallons per minute]." As written, the acceptance criteria would allow any flow greater than 57 gpm to be satisfactory; however, loss of material due to erosion would manifest itself by increased flow through the orifice. For this reason, the inspectors were concerned the acceptance criteria specified in the procedure would not detect or prompt action to identify erosion. The inspectors also noted the program document EHI-5054-SYS, "System Testing Program," required the licensee evaluate trending of the quarterly data every 5 years and no threshold for evaluation had been established. The inspectors were concerned the weaknesses in the program would challenge the licensee's ability to effectively detect and manage aging effects.

The inspectors discussed their concern with the licensee. The licensee stated the degradation would likely be identified when investigating a failed surveillance due to low flow into the vessel. However, with respect to the appropriate acceptance criteria, the licensee performed a sensitivity analysis using Proto Flow (a flow model of record) to determine the maximum acceptable diverted flow (thru the minimum flow line) without affecting the required flow needed to be delivered to the vessel for the most limiting scenario. The licensee determined the most limiting scenario was one charging pump providing emergency boration to the vessel, which required 60 gpm of injection. Using the model, the licensee determined a maximum acceptable diverted flow of about 100 gpm would result in the required 60 gpm flowing into the vessel. The 100 gpm correlated to about 70.5 percent degradation in the minimum line. The inspectors concluded the licensee's failure to establish an upper band of acceptance criteria was a performance deficiency and this failure was contrary to the requirements of 10 CFR Appendix B Criterion V "Instructions, Procedures, and Drawings." The inspectors determined this issue was of minor significance due to the material involved and the anticipated rate of degradation coupled with the current condition of the orifice.

The licensee captured the inspectors' concern in their CAP as AR 2014–5950. The corrective action considered at the time of this inspection to restore compliance was to develop acceptance criteria that would assure degradation is detected and evaluated prior to loss of function. Additionally, the licensee stated they would review the procedures credited in the System Testing Program to ensure appropriate acceptance criteria is included on each procedure.

4OA6 Management Meetings

.1 Exit Meeting Summary

On May 16, 2014, the inspectors presented the inspection results to Mr. Joel Gebbie and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. Gebbie, Vice President, D. C. Cook
C. Hutchinson, Acting Plant Manager, D. C. Cook
L. Baun, Director, Performance Assurance
M. Carlson, Director, Nuclear Technical Projects
D. Cantul, Director, Operations
B. Kalinowski, Program Owner, License Renewal
J. McClellan, Acting Director, Engineering
B. Neuendorf, Team Lead, License Renewal
M. Scarpello, Manager, Regulatory Assurance
P. Schoraf, Director, Projects
R. Wynegar, Regulatory Affairs

Nuclear Regulatory Commission

A. M. Stone, Chief, Engineering Branch 2
J. Ellegood, Senior Resident Inspector, D. C. Cook

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened, Closed, and Discussed

None

LIST OF DOCUMENTS REVIEWED

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

4OA5 Other Activities

General Licensing Documents

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
PMP-2350-CMS-001	Commitment Management	7

Action Requests Generated as a Result of the Inspection

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
2014-5414	Wrong PMIDs Referenced on Commitment Closure	5/1/14
2014-5425	2-QT-506, Bent Limit Switch Plate	5/1/14
2014-5478	NRC Comments on Structural Monitoring Program	5/2/14
2014-5582	UFSAR Update Missed when Commitment was Revised	5/6/14
2014-5870	12-FP-662, Small Leak on Pegging Pump Discharge Crosstie Valve	5/13/14
2014-5903	System Walkdown Criteria not Met During System Walkdown	5/14/14
2014-5950	System Testing Program for License Renewal	5/15/14
2014-5978	Revise Procedure to Incorporate NRC Commitment	5/15/14
2014-5985	EDG Exhaust Silencer Safety Class	5/15/14
2014-6008	Personnel May Not Fully Appreciate Age Management of SSCs	5/16/14
2014-6011	Lack of Detail in Aging Management Instructions	5/16/14
2014-6020	NRC Position on Small Bore Piping	5/16/14
2011-0206	2W RHR Pump Cover Bolts With Boric Acid Deposits on Top	1/06/11
2012-15864	Damaged Coating on Buried Piping	12/20/12
2013-12968	Coating Degradation on Buried Storm Drain Piping	9/3/13
2013-3142	Water Leaking from Under Walkway into Security Diesel Fill Berm	3/3/13
2011-12437	Possible Through Wall Leak Near 1-NFP-222-V2	10/23/2011

Action Requests Reviewed During the Inspection

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
2014-5909	Minor Crack Identified on Unit 1 Exterior Containment Dome	5/14/14
2010-12524	EHI-5054-SWD-001 System Walkdowns Procedure Violation	11/19/10
2011-1060	GL 89-13 Inspection of 1HV-AFP-T2AC	1/25/11
2011-7071	Preventive Maintenance	6/14/11
2011-8350	2-TK-39-DN Dew Point Not Meeting Acceptable Criteria	7/20/11
2012-11070	System Walkdown not Being Performed Per Procedure	9/07/12
2012-11435	GL 89-13 Inspection on 2HV-AFP-WAC	6/13/12
2012-13374	Oxidizing Auxiliary Feedwater Piping	10/25/12
2012-7265	Paint Peeling off AFW Suction Piping	6/07/12
2012-8312-1	Tank 1-QT-141-CD1; Tanks Inside Protective Coating Failed	7/25/12
2013-4145	Procedure Does Not Implement All Elements Of NRC Commitment	3/22/13
2014-0497	1-HV-AFP-EAC GL 89-13 Inspection Satisfactory	1/10/14
2014-1430	Revise 12-EHP-5040-TMC-001 to Address Environmental Fatigue	1/30/14
GT 00861303	Actions for Maintenance Rule Structural Inspections	10/31/11
GT 2011-1701-7	License Renewal Implementation (Y10)Crane Inspections	3/21/11
GT 2011-1704	License Renewal Implementation (Y10) Masonry Wall Program	3/21/11
GT 2011-1717-7	License Renewal Implementation (Y10) Fatigue Monitoring	3/21/11
GT 2014-2799	Create P for LR Walkdowns/Report	2/26/14
GT00846697-47	Submit Commitment Closure Documentation for CMSR 8576	4/24/13

Commitment No. 1, No. 2, and No. 3

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
EHI-5070-ALLOY600	Alloy 600 Material Management Program	4

Commitment No. 4

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
1-OHP-4030-001-002	Containment Inspection Tours	37
GT 2011-14985	Assessment of Boric Acid Program	12/29/11
GT 2012-10078	Evaluation of NRC IN 2012-15	8/16/12
PMI-5032	Boric Acid Corrosion Control Program	5
PMP-5030-001	Boric Acid Corrosion Control	17
WO 55336583	Examine 1 West RHR Pump Bolts for Boric Acid Leak	4/2/12
WO 55354409	Perform Containment Inspection Tours IAW 1-OHP-4030-001-002	9/21/11

Commitment No. 5

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
12-EHP-5070-UPTI-001	Underground Piping and Tanks Integrity Program Implementation	3
EHI-5070-UPTI	Underground Piping and Tanks Integrity Program	3
PMP-5020-001-001	Maintenance Permits	32
WO 55343079	Perform Leak Test for the Security Diesel Fuel Oil Storage Tank	5/27/10
WO 55356993	Work/Installation of EC-50429, Excavate Garden Area East	1/22/10

Commitment No. 6

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
GT 00846695	License Renewal Implementation (Y10) for the ISI Program	2/6/2012
EID-5070-CASS	Cast Austenitic Stainless Steel Evaluation Program	1

Commitment No. 7

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
12-EHP-4030-066-001	Fire Pump Performance and Starting Sequence Tests	2
12-FPP-4030-066-007	Control Room Cable Vault Halon Bottle Surveillance	7
12-FPP-4030-066-017	Inspection of Fire Barrier Penetration Seals	5
12-OHP-4030-066-121FD	Diesel Fire Pump Operability Test	14

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
1-EHP-4030-166-010	Unit 1 Control Room Cable Vault Low Pressure CO2 Fire Suppression System Surveillance	8
1-EHP-4030-166-020	Unit 1 Auxiliary Cable Vault CO2 Fire Suppression Test	7
1-EHP-4030-166-224	Unit 1 Control Room Cable Vault Halon Fire Protection System Test	4
GT 00860170	OE 29697 Conduits have Insufficient Fire Qualification Documentation	11/06/09
GT 00861371	NRC IN 2009-29; Potential Failure of Fire Water Supply Pumps to Automatically Start due to a Fire	02/14/10
WO 55377237	Perform Unit 1 Control Room Cable Vault Halon System Test	02/03/12
WO 55408271	Perform Unit 1 Control Room Cable Vault Low Pressure CO2 Fire Suppression System Surveillance.	12/16/13
WO 55416850	Perform Unit 1 Control Room Cable Vault Halon Weighing Surveillance	07/12/13

Commitment No. 8

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
12-FPP-4030-066-005	FP Water System Unobstructed Flow Test	2
12-PPP-4030-066-006	Three Year FP Water System Unobstructed Flow Test	5
1-EHP-4030-166-004	FP Water System Open Head Deluge Air Flow Tests	2
AR 2012-9629	FP Piping Wall Thickness Degraded	08/7/12
AR 2013-7845	FP Piping Plugged	05/28/13
EHI-5054-FPP	Fire Piping UT Inspection	1
GT 2011-12576	OE Intake Sprinkler Piping Plugged with Clay like Debris (Monticello)	10/25/11
GT 2012-9419	License Renewal Implementation Readiness	8/1/12
WO 55369539	UT Inspect FP Piping in the East Diesel Driven Fire Pump Room	1/8/13
WO 55396113	Perform Plant Yard FP Water System Unobstructed Flow Test	2/10/12
WO 55414449	UT Inspect FP Piping Near Unit 1 Auxiliary Building 609 Elevation	4/16/14
WO 55414452	UT Inspect FP Piping in Electric Fire Pump Room	4/16/14

Commitment No. 9

Number	Description or Title	Date/Revision
12-EHP-2070-TRN-003	Perform Heat Exchanger Inspections	Revision 2
12-EHP-8913-001-001	Program for Implementing GL 89-13 Inspections	Revision 5
12-EHP-8913-001-002	Heat Exchanger Inspection	Revision 7
AR 2011-94344	AFI CY.1-1 – Ingress of Iron/Impurities in Steam Generator	7/31/12
EHI-5054-HXM	Heat Exchanger Monitoring	Revision 5
LR-HXMP-001	Heat Exchanger Monitoring Program Basis Document	Revision 0
LRP-EAMP-01	Heat Exchanger Monitoring Program	Revision 4
MDS-607	Heat Exchanger Tube Plugging	Revision 10
WO 55226853	1-QT-131-AB; Perform Eddy Current Inspection	
WO 55398798	Heat Exchanger Inspection – TDAFW Room Cooler	2/10/12
WO 55411983	Unit 1 Turbine Driven Aux Feed Pump Room Cooler	11/19/13
WO 55418079	1-HV-AFP-T1AC Open Ends for Inspection	2/4/14
WO 55420258	1-HE-18W; Open Shell Side of Heat Exchanger	4/1/13

Commitment No. 10

Number	Description or Title	Date/Revision
WO 55405113	Perform Non-Intrusive CTS LR Examination	3/18/13
WO 55365731	U1 License Renewal Examinations for EISI Volumetric Welds Exams Downstream East Containment Spray to Lower Comp	9/7/12

Commitment No. 11

Number	Description or Title	Date/Revision
	License Renewal Application: B.1.19 Instrument Air Quality	10/3
	Control Air Dew Point Trending Results Graph	1/1/12-1/1/14
01-OHL-4030-SOM-048	Unit 1 Tours – U1 Turb Tech Spec Tour	Revision 12
12-THP-6040-PER-005	Control Air Performance Monitoring	Revision 14
GT-2011-1619-7	Document a review of NUREG 1801 Generic Aging Lessons Learned (GALL) Revision 2	1/30/12
ISA-S7.3-1975	Quality Standard for Instrument Air	11/16/81

Number	Description or Title	Date/Revision
LRP-EAMP-01	Evaluation of Aging Management Program: Instrument Air Quality Program	Revision 4
NUREG-1831	Safety Evaluation Report: License Renewal Application for the D. C. Cook Nuclear Plant, Units 1 and 2	
PMP-2350-CMS-001	Control Air Performance Monitoring Commitment Program Management Implementation/Closure Form	4/8/14
WO-55440269-01	12-THP-6040-PER-005 Weekly Control Air EPDM	2/5/14
WO-55440819-01	12-THP-6040-PER-005 Weekly Control Air EPDM	2/12/14
WO-55441218-01	12-THP-6040-PER-005 Weekly Control Air EPDM	2/19/14
WO-55441624-01	12-THP-6040-PER-005 Weekly Control Air EPDM	2/21/14
WO-55443230-01	12-THP-6040-PER-005 Weekly Control Air Dew Points	3/20/14
WO-55443502-01	12-THP-6040-PER-005 Weekly Control Air Dew Points	3/27/14
WO-555438170-01	12-THP-6040-PER-005 Weekly Control Air Dew Points	12/26/13

Commitment No. 12

Number	Description or Title	Date/Revision
EHI-5054-IMV	Non-EQ Inaccessible Medium-Voltage Cable Program	1
MHI-5097	Medium Voltage Cable Testing	2
PMP-7030-OE-001	Operating Experience Program	21
WO 000009225	12-52-12AB Testing of Cables From BR 1-89-TR101AB	9/27/11
WO 55361983	Replace Cable H1107	10/20/10
WO 55434887	Quarterly Manhole Inspection for Water	1/31/14

Commitment No. 13 and No. 38

Number	Description or Title	Date/Revision
01-IHP-4030-113-032A	Containment Upper Compartment Train "A" High Range Radiation Monitor VRA-1310 Channel Calibration	7
12-EHP-5030-CAR-001	Characterization Testing Program	7
1-IHP-4030-113-130	Nuclear Instrumentation Intermediate Range Channel Operational Test and Calibration (1-NRI-35/1-NRI-36)	2
EHI-5054-ICT	Non-EQ Instrumentation Circuits Test Review Program	1

Commitment No. 14

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
12-EHP-5040-ICC-001	Non-EQ Insulated Cables and Connections Program Implementation	2
EHI-5040-ICC	Non-EQ Insulated Cables and Connections Program	1
EHI-5054-SWD-001	System Walkdowns	2
PMID-RQ: 00125098-01	1-OME-4, Containment Cable Assessment Walkdown	11/7/14
WO55394233	1-OME-4, Containment Cable Assessment Walkdown	8/31/13

Commitment No. 15

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
WO 55321182	Perform ISI Examinations on Pressurizer	9/20/11

Commitment No.16 and No. 37

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AEP-NRC-2010-61	10 CFR 50.71 (e) Update and Related Site Changes Report	10/08/10
AEP-NRC-2013-15	Revision to Regulatory Commitments Associated with Application for Renewed Operating Licenses	3/1/13
AEP-NRC-2013-66	Response to Request for Additional Information Concerning Revisions to Regulatory Commitments Associated with Preventive Maintenance and Structures Monitoring Program	8/22/13
GT-2011-1695-7	Review of NUREG-1801 Generic Aging Lessons Learned (GALL) Revision 2	2/24/12
LRP-EAMP-01	Evaluation of Aging Management Program: Preventive Maintenance Program	Revision 4
Model WO-5526517-01	Perform Inspection 1-HV-AFP-T1AC	
Model WO-55275799-01	1-HV-AFP-EAC; Perform Inspection	
Model WO-55275800-01	1-HV-AFP-WAC: Perform Inspection	
Model WO-55275802-01	1-HV-AFP-T2AC; Perform Inspection	
NUREG-1831	Safety Evaluation Report: License Renewal Application for the D. C. Cook Nuclear Plant, Units 1 and 2	
PMP-2350-CMS-001	Commitment Evaluation/Change	9/27/12
PMP-5030-001-003	Preventive Maintenance	Revision 33

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
WO-55250358-01	1-TK-253-3,5,7 Replace Hoses	11/29/06
WO-55261772-01	1-PP-45-1,2,3,4 – Replace Tygon Tube in U-1 RCP Motor Spill Systems	03/31/10
WO-55400043-01	1-HV-DOX-1, Perform Internal and External Inspection of Elastomers	1/25/13
WO-55418079-01	1-HV-AFP-T1AC – Open Both Ends of Heat Exchanger for Inspection	12/18/13
WO-55418482-01	1-HV-AFP-EAC – Open Both Ends of Heat Exchanger for Inspection	11/20/13
WO-55418516-01	1-HV-AFP-WAC – Open Both Ends of Heat Exchanger for Inspection	12/27/13

Commitment No. 17

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
EID-5054-RPV	Reactor Vessel Integrity	1
WO 55386035	Work Request for Unit 1 Standby Surveillance Capsule Testing	planned

Commitment No. 19

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 2010-10940	Debris Found in 2-OME-1 on the Core Plate	11/6/10
AR 2010-1804	Reactor Vessel Core Support Lug Bolting Anomalies	3/21/10
EC-000051640	Reactor Vessel Lower Radial Support System (LRSS) Clevis Replacement Bolting for Unit 1	0
WO55440165	Perform Unit 1 Reactor Vessel Internal Inspections IAW Procedure EHI-5054-RVI	2/6/14

Commitment No. 20

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AEP-NRC-2012-82	Letter, AEP to NRC	10/1/12
-	Reactor Vessel Internals Aging Management Program	0
EHI-5054-RVI	Procedure: Reactor Vessels Inspections	1
-	Commitment Number Report, Commitment 8259	4/9/14
WO55440165	1-OME-1, Reactor Vessel Internals Aging Management Inspection	4/16/14

Commitment No.21 and No. 41

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
	Raw Water Plan	1
12-EHP-8913-001-001	Program for Implementing GL 89-13 Inspections	5
12-EHP-8913-001-002	Heat Exchanger Inspection	8
12-THP-6020-CHM-105	Boric Acid Storage Tanks	12
EHI-8913	Program for Implementing Generic Letter 89-13 (Service Water Reliability)	9
LRP-EAMP-01	DC Cook License Renewal Evaluation of Aging Management Programs	4
LR-SLM-001	License Renewal, Selective Leaching Management	0
PMP-5030-001-005	Essential Service Water System Inspection	3
THI-6020-ADM-001	Quality Control	6

Commitment No. 22

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
EHI-5070-SBP	Procedure: Small Bore Piping	Revision 2
OE 12-02162	Operating Experience Review	6/7/12
OE 12-02659	Operating Experience Review	7/18/12
PMI-5070	Procedure: Inservice Inspection	Revision 21
WO5524771 8-01	Perform ISI NDE on 1-CS-96-59S Report No. UT-06-043	10/21/06
WO5524771 8-08	Perform ISI NDE on 1-CS-96-59S Report No. UT-06-058	10/21/06

Commitment No. 23 and No. 25

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
	System Walkdown Report, Turbine Building, Screenhouse	12/21/11
	Plant Structure Performance Evaluation and Monitoring Program Observations Report – 2007-2011, Maintenance Rule	
AEP-NRC-2010-61	Letter, AEP to NRC, 10 CFR 50.71€ Update and Related Site Change Reports	10/8/10
AEP-NRC-2013-15	Commitment change letter, AEP to NRC (ML13073A110)	3/1/13
12-EHP-5035-SMP-001	Plant Structure Performance Evaluation and Monitoring Program	Revisions 9, 10
8263	Commitment Evaluation/Change	1/18/13

Commitment No. 24

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
LRP-EAMP-01	Structural Monitoring – Crane Inspection Program (pages 360-372)	Revision 4
12-EHP-5035-SMP-001	Plant Structure Performance Evaluation and Monitoring Program	Revisions 9, 10
12-IHP-5021-EMP-060	Auxiliary Building Crane East (12-QM-3E) Inspection and Maintenance	Revision 9
00102723-01	PMID-RQ, PMRQ Data, 1-QM-85, Inspect and Lube Crane, Due date 8/7/15	
00103087-01	PMID-RQ, PMRQ Data, 1-QM-24, Inspect and Lube Crane, Due date 11/25/14	

Commitment No. 26

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
	West Centrifugal Pumps Miniflow Orifice trending data	11/6/09-4/23/14
	East Centrifugal Charging Pumps Miniflow Orifice trending data	12/28/09-3/6/14
12-EHP-4030-128-230	Spent Fuel Pool Exhaust Ventilation System Surveillance	Revision 16
1-EHP-4030-0128-228A	1-HV-AES-1, Engineering Safety Feature Ventilation Surveillance	Revision 19
1-EHP-4030-128-228B	1-HV-AES-2, Engineering Safety Feature Ventilation Surveillance	Revision 18
1-EHP-4030-128-229	U1 Control Room Emergency Ventilation Surveillance	Revision 16
1-OHP-4030-103-052W	West Centrifugal Charging Pump Operability Test	Revision 14
1-OHP-4030-103-52E	East Centrifugal Charging Pump Operability Test	Revision 15
AEP-NRC-2011-38	Revision to Regulatory Commitment Associated with Application for Renewed Operating Licenses	
EHI-5054-SYS	System Testing Program	Revision 2
Figure 1-15.1	Safety Related Pump Inservice Test Hydraulic Reference	Revision 125
GT-2013-2037	License Renewal GT to Perform Att. 2 of EHI-5054 5 year Frequency Evaluation	2/13/13
LRP-EAMP-01	Evaluation of Aging Management Program: System Testing Program	Revision 4

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
NUREG-1831	Safety Evaluation Report: License Renewal Application for the D. C. Cook Nuclear Plant, Units 1 and 2	
OP-1-5104B-7	Composite Flow Diagram Chemical and Volume Control Unit 1	Revision 7
PMP-2350-CMS-001	System Testing Monitoring Program Management Implementation/Closure Form	7/8/13
PMP-2350-cms-001	Commitment Change Evaluation	5/26/09

Commitment No. 27

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
GT-2013-4211	License Renewal Activities – Unit 1 System Walkdowns	3/24/13
EHI-5054-SWD-001; Att. 1	System Walkdown Report; AFW Unit1	12/28/10
EHI-5054-SWD-001; Att. 1	System Walkdown Report; AFW Unit1	3/14/11
EHI-5054-SWD-001; Att. 1	System Walkdown Report; AFW Unit1	11/10/11
EHI-5054-SWD-001; Att. 1	System Walkdown Report; AFW Unit1	12/21/11
EHI-5054-SWD-001; Att. 1	System Walkdown Report; AFW Unit1	11/20/12
EHI-5054-SWD-001; Att. 1	System Walkdown Report; AFW Unit1	3/12/13
EHI-5054-SWD-001; Att. 1	System Walkdown Report; EDG Unit 1	4/1/13
EHI-5054-SWD-001; Att. 1	System Walkdown Report; EDG Unit1	3/31/13
EHI-5054-SWD-001; Att. 1	System Walkdown Report: EDG Unit1	12/17/13
EHI-5054-SWD-001; Att. 1	System Walkdown Report; Containment Spray Unit 1	1/30/13
EHI-5054-SWD-001; Att. 1	System Walkdown Report; ECCS, RHR and CTS Unit 1	4/08/13
EHI-5054-SWD-001; Att. 1	System Walkdown Report; CCW, CTS, ECCS Unit 1	4/14/13
EH-5054-SWD-001`	System Walkdowns	Revision 4
PMP-2350-CMS-001	Commitment Evaluation/Change	1/30/12
PMP-2350-CMS-001	System Walkdown Program Enhancement Commitment Management Implementation/Closure Form	8/19/13
AEP-NRC-2013-60	10 CFR 50.71 (e) Update and Related Site Changes Report	10/30/13
NUREG-1831	Safety Evaluation Report: License Renewal Application for the D. C. Cook Nuclear Plant, Units 1 and 2	

Number	Description or Title	Date/Revision
LRP-EAMP-01	Evaluation of Aging Management Program: System Walkdown Program	Revision 4

Commitment No. 28

Number	Description or Title	Date/Revision
EHI-5054	Wall Thinning Monitoring Program	0
LR-WTMPB	Wall Thinning Monitoring Program Basis Document	1

Commitment No. 29

Number	Description or Title	Date/Revision
01-OHP-4030-117-050E	East Residual Heat Removal Train Operability Test Modes 1-4	
GT-2011-14893	Assessment for Primary Chemistry Program	12/29/2011
THI-6020-ADM-001	Quality Control	Revision 6
CLG-101	Chemistry Lab Guide for Optima 4300 DV ICP-OES	Revision 3
12-THP-6020-CHM-101	Reactor Coolant System	Revision 36
12-THP-6020-CHM-104	Refueling Water Storage Tank	Revision 12
12-THP-6020-CHM-107	Residual Heat Removal	Revision 11
12-THP-6020-CHM-111	Primary Water Storage Tank and CVCS Monitor Tank No. 1 and No.2	Revision 11
12-THP-6020-CHM-213	Unit 1 Hotwells	Revision 1
WO 55273046	1-XJ-54W Replace Expansion Joint	3/9/2010
WO 55379030	1-XJ-54E Replace Expansion Joint	10/16/2011

Commitment No. 30 and No. 39

Number	Description or Title	Date/Revision
12-EHP-5070-COT-001-Basis	Chemistry One Time Inspection Program Basis Document	
AR-2012-11369	12-TK-71, Chemistry One Time Inspection test Failure	9/12/2012
GT 2012-12916	PMCR Steam Heater Periodic Replacement / License Renewal	10/16/2012
AR 2013-5383	1-OME-5, Pressurizer Relief Tank – Minor Corrosion	
AR 2013-4635	1-HV-SHK-90, Failed the Chemistry One Time Inspection	3/31/2013;
AR 2014-1281	1-DG-189A (Piping) – Minor Corrosion	
12-EHP-5070-COT-001	Chemistry One-Time Inspection Program	Revision 3
WO 55344124	Perform Inspection of 1-XJ-54W IWA P	6/22/2010
WO 55350258	Perform a Visual Inspection Piping	9/20/2011
WO 55375468	Perform a Visual Inspection on Piping	12/5/2012

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
WO 55395309	1-OME-5, Pressurizer Relief Tank	
WO 55405502	1-SI-165-3 Chemistry One Time	4/3/2013
WO 55427080-01	Chemistry One Time Inspection AB1, AB Emergency Diesel Generator Room	1/24/2014
WO 55427080	1-DG-189A	1/22/2014
WO 55428705	Chemistry One Time Inspection Program	
WO 55434538	COT Inspection on the 6 inch Drip Pot	5/14/2014

Commitment No. 31, No. 33, No. 34, No. 35, No. 40

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
12-EHP-5040-TCM-001	Transient and Thermal Cycle Monitoring Program	Revision 3
12-THP-5040-TCM-001	Transient and Thermal Cycle Monitoring Program	Revision 3
AEP-04-76	Westinghouse Letter to AEP' Resolution of WCAP-14070 Auxiliary Spray Line Question, Revision 2	4/5/14
GT 2011-1717-7	Ensure Appropriate Operating Experience Has Been Incorporated Into The Fatigue Monitoring	
LRP-EAMP-01	Evaluation of Aging Management Program: Fatigue Monitoring Program	Revision 4
NUREG-1831	Safety Evaluation Report; License Renewal Application for the D. C. Cook Nuclear Plant, Units 1 and 2	
PMP-2350-CMS-001	Commitment Program Management Implementation/Closure Form for Commitment 8271	5/13/14
PMP-2350-CMS-001	Commitment Program Management Implementation/Closure Form for Commitment 8282	1/24/14
PMP-2350-CMS-001	Commitment Program Management Implementation/Closure Form for Commitment 8292	2/25/14
TACDS-1-013	Total Accumulated Cycle Data Sheet	Revision 0
WCAP-14070-NP	Evaluation of D. C. Cook Units 1 and 2 Auxiliary Spray Piping per NRC Bulletin 88-08	Revision 0
WCAP-16525	Environmental Fatigue Evaluation for D. C. Cook Nuclear Plant	Revision 1
WCAP-16525	Environmental Fatigue Evaluation for D. C. Cook Nuclear Plant	Revision 2

Commitment No. 32

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ISG-05, Enc. 1	Interim Staff Guidance on the Identification and Treatment of Electrical Fuse Holders for License Renewal	3/10/03
LRP-EAMR-01, Att 2	Aging Management Review for Electrical Systems. Electrical Fuse Holder Review Logic for License Renewal	3

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
AEP	American Electric Power
AMP	Aging Management Program
AR	Action Request
ASME	American Society of Mechanical Engineers
B&PV	Boiler and Pressure Vessel
CASS	Cast Austenitic Stainless Steel
CAP	Corrective Action Program
CFR	Code of Federal Regulations
DLR	Division of License Renewal
EDG	Emergency Diesel Generator
ESW	Emergency Service Water
EPRI	Electric Power Research Institute
EQ	Environmental Qualification
EFPY	Effective Full-Power Years
FSAR	Final Safety Analysis Report
GALL	Generic Lessons Learned
GL	Generic Letter
IR	Inspection Report
ISG	Interim Staff Guidance
ISI	Inservice Inspection
LRA	License Renewal Application
MRP	Materials Reliability Program
NCV	Non-Cited Violation
NDE	Non-Destructive Examination
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Act
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
PM	Preventive Maintenance
PWR	Pressurized Water Reactor
PWSCC	Primary Water Stress Corrosion Cracking
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RVI	Reactor Vessel Internals
RWST	Refueling Water Storage Tank
SER	Safety Evaluation Report
SMP	Structures Monitoring Program
SSC	Structures, System, and Components
TDR	Time Domain Reflectometry
TLAA	Time-Limited Aging Analysis
UFSAR	Updated Final Safety Analysis Report
VT	Visual Testing
WO	Work Order

L. Weber

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Sincerely,

/RA/

Ann Marie Stone, Chief
Engineering Branch 2
Division of Reactor Safety

Docket Nos. 50-315
License Nos. DPR-58

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