

POST-APPROVAL SITE INSPECTION FOR LICENSE RENEWAL

PROGRAM APPLICABILITY: IMC 2516

71003-01 INSPECTION OBJECTIVES

01.01 To verify that license renewal programs and activities have been implemented in accordance with the requirements of Title 10 of the *Code of Federal Regulation*, Part 54, "Requirements for the Renewal of Operating Licenses for Nuclear Power Plants" (10 CFR Part 54), hereinafter referred to as the "rule", the conditions of licensee's renewed license, and the NRC's safety evaluation report.

01.02 To verify, on a sample basis, that outstanding commitments identified at the time a renewal license was granted (as documented in the plant-specific attachment to this IP) have been met. To meet this objective this Post-Renewal Inspection Program (PRIP) should be implemented either before or shortly after the commencement of the extended period of operation.

01.03 To verify, on a sample basis, whether the licensee has made any amendment to the original license renewal application (LRA) describing any changes that materially affect the contents of the original LRA. The licensee may make changes to satisfy issues raised during the SER process or raised during a previous license renewal inspection (LRI).

01.04 To verify, as appropriate, that the summary description of the aging management programs and activities are contained in the FSAR Supplement and the description of the programs are consistent with the program implemented by the licensee.

71003-02 INSPECTION REQUIREMENTS

02.01 General Inspection Requirements. The Post-renewal Inspections (PRIs) verify:

- a. Modifications to existing programs not previously verified during staff review of LRA, and LRIs conducted prior to approval of licensee's LRA.
- b. Licensee's program for managing commitments associated with LRA.

- c. Outstanding commitments identified during the LRA review process.
- d. FSAR Supplement.
- e. Addition or deletion, if any, of commitments identified during the LRA review process.

02.02 Specific Inspection Requirements

- a. Inspection Plan. The team leader, assigned by the responsible regional administrator or his/her designee, will prepare an inspection plan outlining the commitments to be verified, if not all, and any other items to be inspected. The inspection plan should delineate the duration of inspection, the resources required, and inspector selections.
- b. Outstanding Commitments in PRIP. Review the plant-specific attachment to this inspection procedure to identify the outstanding license renewal commitments, and verify that they have been resolved. If any issue has not been resolved, determine the licensee's plans to resolve the issue and coordinate with NRR to determine the acceptability of those plans. The Regional Administrator responsible for the PRI being conducted will determine at his/her discretion if any subsequent PRIs are required to verify the resolution of the outstanding issue.
- c. Annual Update Review. Select a sample of plant modifications and Current Licensing Basis (CLB) changes the licensee made since the date of the original LRA. Determine that these changes were included in an annual FSAR update. Verify that newly installed plant equipment required to be in the scope of license renewal are included in appropriate aging management programs.
- d. Limited Integrated Plant Assessment and Record Review. Determine if the licensee removed or added systems, structures, components or commodity groups from/to its aging management program based on a review of the annual update to its FSAR or by queries to the licensee; and verify that a basis for its removal or addition was established and documented in a retrievable record.
- e. License Renewal Commitment Management Program Assessment. Review the licensee's program for managing commitments associated with license renewal. Evaluate the completeness of the licensee's program by comparing the commitments being tracked under it to the commitments documented in the appropriate attachment of this inspection procedure. The licensee shall provide the necessary documents of all commitments for the inspection team to review. Reference to the initial license renewal inspection reports might be helpful to ensure that all commitments have been accounted for in the inspection plan.
- f. Final Safety Analysis Report (FSAR) Review. Perform a limited review of the FSAR Supplement and select representative items to verify that the facility is being operated in accordance with the FSAR supplement during the renewal term (extended period of operation).

71003-03 INSPECTION GUIDANCE

03.01 General Guidance

- a. The PRIP may be implemented prior to or shortly after the commencement of the extended period of operation. Subsequent inspection(s) may be necessary if outstanding commitments remain after the completion of the initial PRI. Any outstanding commitments, after the extended period of operation commences, will be subject to NRC enforcement action.
- b. The attachment to this procedure for each plant shall be completed prior to the period of extended operation. The attachment will be used to document any outstanding commitments that could not be reviewed or verified as resolved during the initial license renewal inspections implemented in accordance with Inspection Procedure 71002 "License Renewal Inspection." The purpose of each attachment is to preserve the list of aging management commitments that were not implemented at the time of issuance of the renewed license for a specific plant. This list of commitments must be reviewed and verified during the PRI(s).
- c. Inspectors should familiarize themselves with the requirements and guidance relating to license renewal. Inspectors should familiarize themselves specifically with the LRA and associated safety evaluations performed by the staff for the specific plant to be inspected. License renewal requirements and guidance documents that should be reviewed prior to an inspection include:
 1. 10 CFR Part 54, "Requirements for Renewal of Operating License for Nuclear Power Plants."
 2. The statement of consideration (SOC) published with the revision to the rule in the Federal Register, Vol. 60, No. 88, Monday, May 8, 1995, pages 22461 to 22495.
 3. Regulatory Guide 1-188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," July 3, 2001.
 4. Nuclear Energy Institute 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Revision 3, March, 2001.
 5. NRC approved positions relating to license renewal.
 6. NUREG - 1800, "Standard Review Plan for the Review of License Renewal Applications for Nuclear Power Plants," July, 2001.
 7. The Safety Evaluation Reports for the plant(s) to be inspected.
- d. During the resolution of outstanding commitments, the inspector should review the supporting documentation, and with the assistance of NRR/DRIP/RLEP staff,

determine if the licensee has taken the appropriate actions, including corrective action, to resolve a particular commitment.

- e. The PRI may require visual inspection of structures and components during the resolution of a particular commitment. Therefore portions of inspection may have to be performed during a unit outage to allow visual observation of those structures and components which are not accessible during power operation, i.e. inside containment, normal high radiation areas, etc. The inspector should request assistance from NRR/DRIP/RLEP staff if the visual observations require intricate knowledge of aging effects to a specific structure or component.
- f. The initial plan is for only one PRI, but if there are still outstanding commitments after the first PRI is completed then the Regional Administrator will at his discretion determine if another PRI is deemed appropriate.

71003-04 RESOURCE ESTIMATES

It has been estimated that the Post-renewal inspections will require approximately two weeks of inspection time onsite involving a team of four inspectors and a team leader. An additional week will be allocated each to inspection preparation, in-office review between two onsite weeks, and for documentation of the inspection results. The team leader will require an additional two weeks above each team member in order to finalize the inspection report. Based on these estimates, each PRI will require about .52 FTE.

END

Attachments:
Site-Specific List of Outstanding Commitments
For Post-Renewal Inspections

- 1.1 Summary of Initial License Expiration Dates
- 1.2 Calvert Cliffs
- 1.3 Oconee Nuclear Station
- 1.4 Arkansas Nuclear One Unit 1
- 1.5 Edwin I. Hatch Nuclear Plant
- 1.6 Turkey Point Nuclear Plant
- 1.7 North Anna Power Station
- 1.8 Surry Power Station
- 1.9 Peach Bottom Atomic Power Station
- 1.10 St. Lucie
- 1.11 Fort Calhoun Station
- 1.12 McGuire Nuclear Station
- 1.13 Catawba Nuclear Station
- 1.14 H.B. Robinson
- 1.15 R.E. Ginna Nuclear Power Plant
- 1.16 Virgil C. Summer Nuclear Station
- 1.17 Dresden Nuclear Power Station
- 1.18 Quad Cities Nuclear Power Station

INITIAL OPERATING LICENSE TERM EXPIRATION DATES

| Site | Unit | Expiration of Initial License |
|----------------|-------------|--------------------------------------|
| ANO 1 | Unit 1 | 05/20/2014 |
| Calvert Cliffs | Unit 1 | 07/31/2014 |
| | Unit 2 | 08/13/2016 |
| Catawba | Unit 1 | 12/06/2024 |
| | Unit 2 | 02/24/2026 |
| Dresden | Unit 2 | 12/22/2009 |
| | Unit 3 | 01/12/2011 |
| Fort Calhoun | | 08/09/2013 |
| Ginna | | 09/18/2009 |
| Hatch | Unit 1 | 08/06/2014 |
| | Unit 2 | 06/13/2018 |
| McGuire | Unit 1 | 06/12/2021 |
| | Unit 2 | 03/03/2023 |
| North Anna | Unit 1 | 04/01/2018 |
| | Unit 2 | 08/21/2020 |
| Oconee | Unit 1 | 02/06/2013 |
| | Unit 2 | 10/06/2013 |
| | Unit 3 | 07/19/2014 |
| Peach Bottom | Unit 2 | 08/08/2013 |
| | Unit 3 | 07/02/2014 |
| Quad Cities | Unit 1 | 12/14/2012 |
| | Unit 2 | 12/14/2012 |
| Robinson | Unit 2 | 07/31/2010 |
| St. Lucie | Unit 1 | 03/01/2016 |

| | | |
|--------------|--------|------------|
| | Unit 2 | 04/06/2023 |
| Summer | | 08/06/2022 |
| Surry | Unit 1 | 05/25/2012 |
| | Unit 2 | 01/29/2013 |
| Turkey Point | Unit 3 | 07/19/2012 |
| | Unit 4 | 04/10/2013 |

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT CALVERT CLIFFS**

Outstanding Commitments

| No. | Commitment | Implementation Schedule |
|-----|--|---|
| 1 | Thirteen of the systems within the scope of license renewal that contain piping supports are not subject to American Society of Mechanical Engineers (ASME) Section XI inservice inspections (ISIs). Therefore, additional sampling baseline walkdowns will be performed. These walkdowns will consist of a sampling of the supports within the scope of license renewal for the 13 systems. The sample approach will be comparable to the approach required by ASME Section XI for piping supports of ASME Class 3 systems. | Prior to the end of the initial operating license term. |
| 2 | The Seismic Verification Project found the current condition of vibration isolators inspected to be acceptable, except for those that support the Control Room HVAC air handler. Prior to the Seismic Verification Project walkdown, these supports were identified by the system engineer as requiring replacement, and a modification is planned to replace the elastomer isolators with spring-type isolators. After these isolators are replaced, follow-on inspections will be adequate to manage aging of elastomer vibration isolator component supports for other equipment. | Prior to the end of the initial operating license term. |
| 3 | Some CCNPP PM Program, MN-1-102, tasks (repetitive tasks) will be modified to look for the effects of specific aging mechanisms. These inspections will explicitly present inspection requirements for discovery of degraded coatings, material loss, or other indications of aging degradation. | Prior to the end of the initial operating license term. |
| 4 | Program for discovery of corrosion due to potential boric acid leakage for the piping supports associated with the spent fuel pool (SFP) demineralizer and filter. | Prior to the end of the initial operating license term. |
| 5 | Boric Acid Inspection Program (BACI) Program (MN-3-301) will be modified to specify examinations during refueling outages of: (a) the reactor vessel cooling shroud anchorage to the reactor vessel head for evidence of boric acid leakage; and (b) all reactor vessel cooling shroud structural support members for general corrosion/oxidation. | Prior to the end of the initial operating license term. |
| 6 | PM Program modified to explicitly present inspection requirements for discovery and management of general corrosion effects in carbon steel parts of the Spent Fuel Inspection Elevator, New Fuel Elevator, transfer machine jib crane, SFCHC, PC, ISSGC, and reactor vessel head lift rig, respectively, by performing visual inspections. | Prior to the end of the initial operating license term. |
| 7 | Procedure STP-M-663-1/2 provides instructions for the Containment Tendon Surveillance. These STPs discover and manage the effects of corrosion on the containment tendons by visual inspection and analysis of the filler grease and for discovery and management of the effects of weathering of grout by visual inspection. | Prior to the end of the initial operating license term. |

| | | |
|----|---|---|
| 8 | The Structure and System Walkdowns Program guidance will be added to assist in functional adequacy determinations and for authority to deviate from scope or schedule. Program will be modified to specify scope and control of periodic structure performance assessments. | Prior to the end of the initial operating license term. |
| 9 | Upcoming Baseline Inspections of Containment Structures will be used to verify that any freeze-thaw damage will not affect intended functions. | Prior to the end of the initial operating license term. |
| 10 | A new CCNPP Caulking and Sealant Inspection Program will provide requirements and guidance for the identification, inspection frequencies, and acceptance criteria for caulking and sealant used in the Turbine Building to ensure that their condition is maintained at a level that allows them to perform their intended functions. The new program will require a baseline inspection to determine the material condition of the caulking and sealants for the Turbine Building. If unacceptable degradation exists, corrective actions will be taken. | Prior to the end of the initial operating license term. |
| 11 | PM Program (MN-1-102) Repetitive Tasks 10092042, 10092043, 10092044, 10092045, 10092046, 10092047, 20092039, 20092040, 20092041, 20092042, 20092043, and 20092044 for Intake Structure Cavity Repairs and Cleaning during Refueling Outages tasks will be modified to include specific age-related degradation mechanisms (ARDMs) where they are not presently included and/or additional specified components/subcomponents where they are not presently inspected. | Prior to the end of the initial operating license term. |
| 12 | Repetitive Tasks for Inspection of Sluice Gates | Prior to the end of the initial operating license term. |
| 13 | Analysis of Neutron Absorbing Material in Spent Fuel Storage Racks, (Engineering Test Procedure 86-03R). The program will be modified to: (a) reevaluate the adequacy of the sampling intervals in monitoring Carborundum and Boraflex condition through the period of extended operation; and (b) refine the process for scheduling sample packet removal from the SFP. The modified program will ensure that degradation of neutron-absorbing material is identified and corrected such that the SFP storage racks will be capable of performing their intended functions consistent with CLB design conditions | Prior to the end of the initial operating license term. |
| 14 | A new program will be developed to manage the effects of thermal embrittlement by identifying those components that may be susceptible to the effects of thermal embrittlement. The CASS Evaluation Program will: (1) screen components; (2) review operating experience; (3) utilize enhanced VT-1 inspection [a visual examination capable of 1/2 mil resolution] (for reactor vessel internals [RVI] only); and (4) follow industry programs to evaluate thermal embrittlement and change the program accordingly. | Prior to the end of the initial operating license term. |

| | | |
|----|--|---|
| 15 | Alloy 600 Program will be modified to include RCS nozzle thermal sleeves and non-pressure boundary components. Welds and base metals are implicitly included in this program. The Alloy 600 Program will be modified to include all Alloy-600 components, not just those forming the pressure boundary. | Prior to the end of the initial operating license term. Volumetric inspections of the CEDM nozzles will occur no later than 2029 for Unit 1. |
| 16 | A one-time fatigue analysis will be performed for the reactor coolant pumps (RCPs), motor-operated valves (MOVs), and pressurizer RVs to determine if these components are bounded by components and transients currently included in the Fatigue Monitoring Program (FMP). If these components are not bounded they will be added to the FMP. The FMP will also assess the effect of the environment using statistical correlations developed by ANL in NUREG/CR-5704. The modified FMP will use the ANL statistical correlations to calculate an effective environmental factor to account for the reduction in fatigue life due to the reactor water environment. This factor will be applied to fatigue loads where the specified threshold criteria for strain rate and temperature have been exceeded. A factor of 1.5 will be used for evaluation of austenitic stainless steel components. | Prior to the end of the initial operating license term. |
| 17 | Age-Related Degradation Inspection (ARDI). NOTE: Susceptible locations near the RWT penetrations will be included in this program, as necessary, based on the results of an engineering review of SCC at the RWT penetrations. | Will be performed prior to, and near, the end of the current license period (e.g., no sooner than five years prior to expiration of the current license). |
| 18 | Comprehensive Reactor Vessel Surveillance Program (CRVSP) | Prior to the end of the initial operating license term. Unit 1 has two supplemental capsules that are designated for testing in 2000 and 2012. |
| 19 | The FMP will be modified to perform an engineering evaluation for CEDM/RVLS components to ensure that the components are bounded. | Prior to the end of the initial operating license term. |
| 20 | RVLS-2 will be modified to include statements that visual inspection of Grayloc clamps, the RVLS flanges, the associated studs and nuts, and seal plug, and drive nut are to be performed each time the RVLS housings are reassembled. Components of the RVLS will be replaced as necessary, based on the results of the inspection. | Prior to the end of the initial operating license term. |

| | | |
|----|--|---|
| 21 | Analysis of CEA Shroud Bolts | Prior to the end of the initial operating license term. |
| 22 | The delta ferrite content will be determined for CCNPP's RVI components made from CASS, and the results will be compared to the acceptable thresholds. Initial investigations revealed that formal calculations should show delta ferrite levels are below the established thresholds for these components. The new calculations are expected to show that thermal aging is not plausible and would not affect the intended function of these components during the period of extended operation. If the new calculations show that thermal aging is plausible, then these components would be managed by the CASS Evaluation Program. | Prior to the end of the initial operating license term. |
| 23 | ISI of ASME Code Section XI Components, existing program implementing procedures (MN-3-110). Until the data and analyses become available confirming that IASCC or neutron embrittlement should not be considered a plausible ARDM, BGE will perform enhanced VT-1 inspections to detect cracks (if any occur) in the RVI components believed to be potentially most susceptible to IASCC. The inspections will be performed as part of the 10-year ISI program during the license renewal term. (The ISI Program is described in Section 3.1.) Plant-specific justification will be provided to the NRC in the event the analyses and data support elimination of the inspection. | Prior to the end of the initial operating license term. |
| 24 | A fatigue analysis will be performed to show that the stress ranges and expected number of transients for these components)CS (plates and ribs only), CSTR (tie rods, nuts, and set screws only), CSC, CSP) will be low enough that thermal fatigue will not impair their intended function during the period of extended operation. | Prior to the end of the initial operating license term. |
| 25 | Because the CEA shroud bolts and core shroud tie rod and bolts (CSTR) (tie rods, nuts, and set screws) are preloaded during initial installation, stress relaxation could affect their structural support function as a loss of preload, which could lead to vibrations and accelerated mechanical fatigue, resulting in cracking. For each of these types of components, an evaluation will be conducted to demonstrate that this ARDM will not occur for the stress levels and radiation conditions. | Prior to the end of the initial operating license term. |
| 26 | A new program for buried pipe will include AFW piping and will provide assurance that the piping will remain capable of maintaining the system pressure boundary under all CLB conditions. Representative samples of buried piping will be selected for inspection to ensure that the pipe wrapping/coatings are adequately protecting the pipe from the external environment. | Prior to the end of the initial operating license term. |
| 27 | Technical Procedure TURB-01, "Auxiliary Feedwater Pump Turbine Overhaul," disassembles the turbine to inspect for damage. Measurements are taken to assure critical tolerances are within acceptance criteria. Specific subcomponents are inspected for wear, erosion, pitting, and/or surface cracking. | Prior to the end of the initial operating license term. |

| | | |
|----|--|---|
| 28 | A new program for buried pipe inspection will include DFO and will provide assurance that the effects of aging are being effectively managed for the period of extended operation under CLB design loading conditions. This program will consider variations in environmental conditions (including cathodic protection) to select representative samples of the buried piping for inspection to ensure that the pipe coating/wrapping and cathodic protection system are adequately protecting the pipe from external ARDMs. | Prior to the end of the initial operating license term. |
| 29 | A new Tank Internal Inspection Program is intended to provide assurance that the effects of plausible aging are being effectively managed. Under this program, BGE will perform an internal inspection of the FOSTs at periodic intervals based on results of previous inspections. | Prior to the end of the initial operating license term. |
| 30 | Clean and Inspect EDG Air Start Distributor and CKVs (MPM13000) will be modified to inspect specifically for corrosion of piping and check for the presence of debris in valves that could indicate the piping in these systems is undergoing corrosion. | Prior to the end of the initial operating license term. |
| 31 | Clean/Inspect 2B, 1B, and 2A EDG Lube Oil "Y" Strainers and Baskets (MPM13003, MPM13004/MPM13005) will be modified to check for signs of corrosion on the "Y" strainer internal surfaces. | Prior to the end of the initial operating license term. |
| 32 | Disassemble, Inspect and Overhaul EDG CKV (MPM07006) will be modified to inspect specifically for corrosion of piping and check for the presence of debris in valves that could indicate the piping in these systems is undergoing corrosion. | Prior to the end of the initial operating license term. |
| 33 | Inspect EDG Air Intake Filters (MPM07117) will be modified to inspect the attached piping for signs of corrosion. | Prior to the end of the initial operating license term. |
| 34 | Inspect EDG Air Start Valves and Filters (MPM13002) will be modified to inspect specifically for corrosion of piping and check for the presence of debris in valves that could indicate the piping in these systems is undergoing corrosion. | Prior to the end of the initial operating license term. |
| 35 | Perform Visual Examination for EDG Exhaust Components (MPM13110) will be modified to look for signs of fatigue on the external surfaces of the EDG exhaust piping and exhaust mufflers. | Prior to the end of the initial operating license term. |
| 36 | Remove Relief Valve, Test and Reinstall (MPM01125) will be modified to inspect specifically for corrosion of piping and check for the presence of debris in valves that could indicate the piping in these systems is undergoing corrosion. | Prior to the end of the initial operating license term. |
| 37 | To fully address fatigue for license renewal, CCNPP has initiated an additional evaluation, in conjunction with EPRI, to evaluate the effects of low cycle fatigue on the FWS, the pressurizer surge line, and the charging/letdown lines. The evaluation will apply industry-developed methodologies to identify fatigue-sensitive component locations that may require further evaluation or inspection for license renewal, and evaluate environmental effects as necessary. The evaluation objective includes the development and justification of aging management practices for fatigue at various component locations for the renewal period. | Prior to the end of the initial operating license term. |

| | | |
|----|--|--|
| 38 | <p>In response to NRC Bulletin 88-08, "Thermal Stresses in Piping Connected to Reactor Coolant Systems," BGE identified the potential for thermal stratification in the piping between the SIT outlet CKVs and the loop inlet CKVs, and subsequently confirmed the natural convection phenomenon. Since the current piping analysis for the affected portions of the SI System does not include the additional stresses imposed by thermal stratification, BGE will complete an engineering review of the industry's task reports and determine: (a) any necessary changes to the piping analyses of record for the SI System; and (b) the impact of such changes on fatigue usage parameters used by the FMP.</p> | <p>Prior to the end of the initial operating license term.</p> |
| 39 | <p>BGE will therefore complete an engineering review of SCC at the RWT penetrations that will either confirm that detection of minor leakage from the telltale holes will adequately manage SCC prior to a challenge to the structural integrity of the penetrations under design basis conditions or that will include the RWT penetrations and associated welds in an ARDI Program to verify that unacceptable degradation due to SCC at these locations is not occurring.</p> | <p>Prior to the end of the initial operating license term.</p> |
| 40 | <p>PM Program (MN-1-102) For affected components:</p> <p><u>Repetitive tasks</u> 10122063 through 10122068; 10122096 through 10122102; 20122067 through 20122072; 20122100 through 20122106; 10122086 through 10122088; 10122107 through 10122110; and 20122092 through 20122094;</p> <p>242. <u>Checklists</u> MPM04194; MPM01180; and MPM01181, MPM05000 and MPM05101</p> <p>242. <u>Procedure</u> PUMP-03</p> <p>will be modified to include specific ARDMs where they are not presently included and/or additional specified components/ subcomponents where they are not presently inspected.</p> | <p>Prior to the end of the initial operating license term.</p> |
| 41 | <p>SRW Pump Overhaul (PUMP-15) will be modified to include inspections for general corrosion, crevice corrosion/pitting on the pump casing and bushings.</p> | <p>Prior to the end of the initial operating license term.</p> |
| 42 | <p>Repetitive Task 10672001 will be modified to explicitly call for inspection of the components for signs of boric acid corrosion.</p> | <p>Prior to the end of the initial operating license term.</p> |
| 43 | <p>Repetitive Tasks 00672007, 00672008 will be modified to explicitly present inspection requirements.</p> | <p>Prior to the end of the initial operating license term.</p> |
| 44 | <p>Cables Aging Management Program</p> | <p>Prior to the end of the initial operating license term.</p> |

| | | |
|----|--|---|
| 45 | PM Program (MN-1-102) Certain existing repetitive tasks will be modified to include specific ARDMs where they are not presently included and/or additional specified components/ subcomponents where they are not presently inspected. | Prior to the end of the initial operating license term. |
|----|--|---|

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 1 - 7/31/1974; Unit 2 - 8/13/1976
Date New License Expires: Unit 1 - 7/31/2034; Unit 2 - 8/13/2036
Date Initial License Expires (prior to Period of Extended Operation):
Unit 1 - 7/31/2014; Unit 2 - 8/13/2016
- B. Safety Evaluation Report (SER) NUREG Number: 1705
- C. Initial license renewal inspection reports numbers: 50-317/99-02, 50-318/99-02, 50-317/99-04, 50-318/99-04, 50-317/99-12, 50-318/99-12

SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT OCONEE NUCLEAR STATION

Outstanding Commitments

| No. | Commitment | Implementation Schedule |
|-----|--|---|
| 1 | Conduct a one-time Cast Iron Selective Leaching Inspection | Prior to the end of the initial operating license term. |
| 2 | Conduct a one-time Galvanic Susceptibility Inspection | Prior to the end of the initial operating license term. |
| 3 | Keowee Air and Gas Systems Inspection (The inspection program consists primarily of volumetric examinations (e.g., ultrasonic testing) for the discharge piping low-elevation point of the carbon dioxide system, the piping between the control valves and the Keowee unit turbine head cover in the depressing air system, and the piping between the air receiver tank and governor oil pressure tank in the governor air system. | Prior to the end of the initial operating license term. |
| 4 | Conduct a Once Through Steam Generator Upper Lateral Support Inspection | Prior to the end of the initial operating license term. |
| 5 | Pressurizer Examinations, including cladding, spray line, spray head, and heater bundle penetration welds | Prior to the end of the initial operating license term. |
| 6 | Reactor Building Spray System Inspection | Prior to the end of the initial operating license term. |
| 7 | Reactor Coolant Pump Motor Oil Collection System Inspection | Prior to the end of the initial operating license term. |
| 8 | Conduct a Small Bore Piping Inspection | Prior to the end of the initial operating license term. |
| 9 | Conduct a Treated Water System Stainless Steel Inspection | Prior to the end of the initial operating license term. |

| | | |
|----|--|---|
| 10 | Implement Alloy 600 Aging Management Program to manage cracking due to PWSCC of Alloy 600 and Alloy 82/182 locations, including the Alloy 82/182 cladding in the hot leg flowmeter element. | Prior to the end of the initial operating license term. |
| 11 | Reactor Vessel Internal Inspection: Committed to participate in the B&W Owners Group Reactor Vessel Internals Aging Management Program and other industry programs, as appropriate. The scope of this inspection program covers cracking due to irradiation-assisted stress corrosion cracking and SCC, reduction of fracture toughness due to irradiation embrittlement and thermal embrittlement, dimensional changes due to void swelling, and loss of closure integrity due to stress relaxation. | Prior to the end of the initial operating license term. |
| 12 | Implement Insulated Cables and Connections Aging Management Program | Prior to the end of the initial operating license term. |
| 13 | A plant-specific analysis will be performed to demonstrate that, under loss-of-coolant-accident (LOCA) and seismic loading, the internals have adequate ductility to absorb local strain at the regions of maximum stress intensity and that irradiation accumulated at the expiration of the renewal license will not adversely affect deformation limits. Data will be developed to demonstrate that the internals will meet the deformation limits at the expiration of the renewal license. | Prior to the end of the initial operating license term. |
| 14 | The Oconee Thermal Fatigue Management Program will be modified to incorporate a plant-specific resolution of Generic Safety Issue (GSI)- 190, "Fatigue Evaluation of Metal Components for 60-year Plant Life." Plant-specific actions will be taken either in the manner that was described in Duke letter to the NRC dated October 15, 1999, "Safety Evaluation Report - Oconee Nuclear Station License Renewal Application, Comments and Responses to Open items and Confirmatory Items, Response to Open Item 4.2.3-2," or by using another approach that is acceptable to the NRC staff. | Prior to the end of the initial operating license term. |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 1 - 2/6/1973; Unit 2 - 10/6/1973; Unit 3 - 7/19/1974
Date New License Expires: Unit 1 - 2/6/2033; Unit 2 - 10/6/2033; Unit 3 - 7/19/2034
Date Initial License Expires (prior to Period of Extended Operation): Unit 1 - 2/6/2013; Unit 2 - 10/6/2013; Unit 3 - 7/19/2014
- B. Safety Evaluation Report (SER) NUREG Number: 1723
- C. Initial license renewal inspection reports numbers: 50-269/99-11, 50-270/99-11, 50-287/99-11; 50-269/99-12, 50-270/99-12, 50-289/99-12; 50-269/2000-03, 50-270/2000-03, 50-289/2000-03

SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT ARKANSAS NUCLEAR ONE UNIT 1

Outstanding Commitments

| No. | Commitment | Implementation Schedule |
|-----|---|---|
| 1 | Implement Buried Piping Inspection | Prior to the end of the initial operating license term. |
| 2 | Implement Electrical Component Inspection | Prior to the end of the initial operating license term. |
| 3 | Implement Heat Exchanger Monitoring | Prior to the end of the initial operating license term. |
| 4 | Implement Pressurizer Heater Bundle Penetration Welds Examination | Prior to or during the period of extended operations. |
| 5 | Implement Reactor Vessel Internals Aging Management | Begin during period of extended operations. |
| 6 | Implement Spent Fuel Pool Monitoring | Prior to the end of the initial operating license term. |
| 7 | Implement Wall Thinning Inspection | Prior to the end of the initial operating license term. |
| 8 | Conduct one-time ASME IWB Inspection of RCP casings | Prior to the end of the initial operating license term. |
| 9 | Augmented Inspections of: welds on piping wetted by reactor building sump water; "Q" stainless piping of main steam system; a one-time inspection of the penetration 68 piping and components and the decay heat pump room drain valves to ensure the seismic qualification is maintained to manage the aging effects of loss of material and cracking; penetrations 10, 47, 58 and 64 to verify that there is no cracking in these penetrations. | Prior to the end of the initial operating license term. |

| | | |
|----|--|---|
| 10 | Incorporate additional guidance for coatings inspections as part of existing system and structural walkdowns during next revision of System Engineering Desk Guide | Prior to the end of the initial operating license term. |
| 11 | New preventive maintenance activities that address inspection criteria for aging effects will be incorporated into existing preventive maintenance procedures | Prior to the end of the initial operating license term. |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued:5/21/1974
Date New License Expires:5/20/2034
Date Initial License Expires (prior to Period of Extended Operation):
5/20/2014

- B. Safety Evaluation Report (SER) NUREG Number:1743

- C. Initial license renewal inspection reports numbers: 50-313/00-17,
50-313/01-03

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT EDWIN I. HATCH NUCLEAR PLANT**

Outstanding Commitments

| No. | Commitment | Implementation Schedule |
|-----|---|---|
| 1 | Fire protection activities will be enhanced to include periodic inspection of water suppression system strainers which will be inspected for flow blockage and loss of material due to mechanisms such as corrosion. | Prior to the end of the initial operating license term. |
| 2 | The enhanced examination methods and frequencies for the Flow Accelerated Corrosion Program will be based on industry and plant specific operating experience as opposed to computer modeling. Examinations to detect erosion, erosion corrosion, as well as FAC, will be performed as part of the enhanced program. For both units, the Flow Accelerated Corrosion Program will be expanded to include additional piping for certain systems that are already included in the current program. For Unit 2 only, portions of the radioactive decay holdup volume (main steam and steam line drains, and condensate drains) will also be included. | Prior to the end of the initial operating license term. |
| 3 | The Protective Coatings Program will be expanded to include the external surfaces of carbon steel commodities in-scope for License Renewal that are exposed to inside, outside, submerged, and buried environments as made accessible. The Protective Coatings Program will be revised to require periodic inspections of in-scope components to ensure that they are properly coated and free of significant age-related degradation. | Prior to the end of the initial operating license term. |
| 4 | The Equipment and Piping Insulation Monitoring Program will be expanded to include inscope portions of inside equipment and piping insulation. Insulation will be periodically examined for holes, tears, compaction, and material separation, wetting, missing insulation and general deterioration, using appropriate visual inspection techniques. Aluminum and galvanized steel insulation jackets and their binders will be visually inspected for cracking and loss of material. | Prior to the end of the initial operating license term. |

| | | |
|----|---|---|
| 5 | <p>The scope of the Structures Monitoring Program, SMP will be expanded to include visual inspections of the following structures and components:</p> <ul style="list-style-type: none"> • Sealants in the joints between the reactor building exterior precast siding panels. • Seismic Category I and Seismic Category II/I piping supports and tube tray supports. • Seismic Category I HVAC duct supports. • Seismic Category I and Seismic Category III/I cable trays and cable tray supports. • Seismic Category I and Seismic Category II/I conduits and conduit supports. • Seismic Category I Control room panels, racks and supports. • Seismic Category I Auxiliary panels, racks and supports. • Reactor building tornado vents. <p>The frequency of enhanced visual inspections will be based on specific plant experience, commensurate with prudent concern for adequately managing aging. Additional emphasis will be placed on the importance of inspecting and documenting the condition of normally inaccessible (underground or embedded) structures.</p> | Prior to the end of the initial operating license term. |
| 6 | Galvanic Susceptibility Inspections will provide for condition monitoring via one time inspections that will provide objective evidence that galvanic susceptibility is being managed for specific components within the scope of license renewal. | Prior to the end of the initial operating license term. |
| 7 | The plant Treated Water Systems Piping Inspections will provide for condition monitoring via one time examinations intended to provide objective evidence that existing Chemistry Control is managing aging in piping that is not examined under another inspection program. | Prior to the end of the initial operating license term. |
| 8 | Gas Systems Component Inspections will provide for condition monitoring via one time condition monitoring aging management activities designed to provide objective evidence that the aging effects predicted for systems with gases as internal environments are being adequately managed. | Prior to the end of the initial operating license term. |
| 9 | Condensate Storage Tank (CST) Inspections will provide for condition monitoring via one time inspections intended to provide objective evidence that the aging effects predicted for the CST internal environments are adequately managed by programs credited for the renewal term. | Prior to the end of the initial operating license term. |
| 10 | The passive component inspection activities will be designed to collect, report and trend age-related data. This activity will verify the effectiveness of preventive or mitigative programs/activities credited for aging management. | Prior to the end of the initial operating license term. |
| 11 | <p>Residual Heat Removal (RHR) Heat Exchanger Augmented Inspection and Testing Program is a condition monitoring program that will provide enhanced aging management of both the shell and tube sides of the Unit 1 and Unit 2 RHR heat exchangers.</p> <p>The RHR heat exchangers will be visually inspected, and eddy current testing will be done on a regular basis.</p> | Prior to the end of the initial operating license term. |

| | | |
|----|--|---|
| 12 | The Torus Submerged Components Inspection Program is a condition monitoring activity that will provide a means for evaluating the effectiveness of the current suppression pool chemistry control in preventing loss of material and cracking in the components within the scope of license renewal. | Prior to the end of the initial operating license term. |
|----|--|---|

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 1 - 8/6/1974; Unit 2 - 6/13/1978
Date New License Expires: Unit 1 - 8/6/2034; Unit 2 - 6/13/2038
Date Initial License Expires (prior to Period of Extended Operation):
Unit 1 8/6/2014; Unit 2 - 6/13/2018
- B. Safety Evaluation Report (SER) NUREG Number: 1803
- C. Initial license renewal inspection reports numbers: 50-321/00-09, 50-366/00-09, 50-321/00-10, 50-366/00-10

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT TURKEY POINT NUCLEAR PLANT**

Outstanding Commitments

| No. | Commitment | Implementation Schedule |
|-----|---|---|
| 1 | Auxiliary Feedwater Pump Oil Coolers Inspection. A one-time visual inspection will be performed on one of the cast iron bonnets of the auxiliary feedwater pump lube oil coolers to assess the extent of loss of material due to corrosion. | Prior to the end of the initial operating license term. |
| 2 | Implement Auxiliary Feedwater Steam Piping Inspection Program | Prior to the end of the initial operating license term. |
| 3 | A one-time volumetric examination of a sample of emergency containment coolers (ECC) tubes will be performed to determine the extent of loss of material due to erosion in the ECC tubes. | Prior to the end of the initial operating license term. |
| 4 | A one-time visual inspection to determine the extent of corrosion on the internal surfaces of the field erected tanks for both units -- including the Condensate Storage Tanks, the Demineralized Water Storage Tank, and the Refueling Water Storage Tanks -- will be performed. | Prior to the end of the initial operating license term. |
| 5 | Implement Galvanic Corrosion Susceptibility Inspection Program | Prior to the end of the initial operating license term. |
| 6 | Implement Reactor Vessel Internals Inspection Program | Prior to the end of the initial operating license term. |
| 7 | A volumetric inspection of a sample of small bore Class 1 piping and nozzles will be performed to determine if cracking is an aging effect requiring management during the period of extended operation. This one-time inspection will address Class 1 piping less than 4 inches in diameter. | Prior to the end of the initial operating license term. |
| 8 | The Boraflex Surveillance Program will be enhanced to provide for density testing (or other approved testing methods if available) of the encapsulated Boraflex material in the spent fuel storage racks. | Prior to the end of the initial operating license term. |
| 9 | The scope of the Boric Acid Wastage Surveillance Program will be enhanced to include systems and components outside containment. | Prior to the end of the initial operating license term. |
| 10 | The scope of the Fire Protection Program will be enhanced to include inspection of additional components. | Prior to the end of the initial operating license term. |

| | | |
|----|--|---|
| 11 | The Flow Accelerated Corrosion Program will be enhanced to address internal and external loss of material of steam trap lines due to flow accelerated corrosion and general corrosion, respectively. | Prior to the end of the initial operating license term. |
| 12 | The Intake Cooling Water System Inspection Program will be enhanced to improve documentation of scope and frequency of the intake cooling water piping crawl-through inspections and component cooling water heat exchanger tube integrity inspections. | Prior to the end of the initial operating license term. |
| 13 | Specific enhancements to the scope and documentation of some inspections performed under the Periodic Surveillance and Preventive Maintenance Program will be implemented. | Prior to the end of the initial operating license term. |
| 14 | Program documentation will be enhanced to integrate all aspects of the Reactor Vessel Integrity Program. | Prior to the end of the initial operating license term. |
| 15 | The Systems and Structures Monitoring Program will be enhanced by restructuring it to address inspection requirements to manage certain aging effects in accordance with 10 CFR 54, modifying the scope of specific inspections, and improving documentation requirements. | Prior to the end of the initial operating license term. |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 3 - 7/19/1972; Unit 4 - 4/10/1973
Date New License Expires: Unit 3 - 7/19/2032; Unit 4 - 4/10/2033
Date Initial License Expires (prior to Period of Extended Operation): Unit 3 - 7/19/2012; Unit 4 - 4/10/2013
- B. Safety Evaluation Report (SER) NUREG Number: 1759
- C. Initial license renewal inspection report numbers: 50-250/01-09, 50-252/01-09, 50-250/01-11, 50-252/01-11

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT NORTH ANNA POWER STATION**

| No. | Commitment | Implementation Schedule |
|------------|--|--|
| 1 | Develop and implement an inspection program for buried piping and valves. | One-Time between years 30-40. Additional inspections based on results. |
| 2 | Add PZR surge line to Augmented Inspection Program. | Prior to PEO |
| 3 | Add core barrel hold-down spring to Augmented Inspection Program. | Prior to PEO |
| 4 | Expand scope of Civil Eng Structural Inspection to cover LR requirements. | Prior to PEO |
| 5 | Revise plant documents to use inspection opportunities when inaccessible areas become accessible during work activities. | Prior to PEO |
| 6 | Incorporate NFPA-25, Section 2-3.1.1 for sprinklers. | Prior to year 50. If testing used, repeat every 10 years. |
| 7 | Develop inspection criteria for non-ASME supports and doors. | Prior to PEO |
| 8 | Develop procedural guidance for inspection criteria that puts focus on aging effects. | Prior to PEO |
| 9 | Develop and implement inspection program for infrequently accessed areas. | One-Time between years 30-40. Additional inspections based on results. |
| 10 | Develop and implement inspection program for tanks. | One-Time between years 30-40. Additional inspections based on results. |
| 11 | Inspect representative sections of polar crane box girders. | One-Time between years 30-40. Additional inspections based on results. |

| | | |
|----|--|---|
| 12 | Follow industry activities related to RV internals issues such as void swelling, thermal and neutron embrittlement, etc. Evaluate industry recommendations. Inspect accordingly. | One-Time inspection between years 30-40 on most susceptible single unit (SPS or NAPS). Additional inspections based on results. |
| 13 | Implement changes into procedures to assure consistent inspection of components for aging effects during work activities. | Prior to PEO |
| 14 | Incorporate groundwater monitoring into the civil engineering structural monitoring program. Consider groundwater chemistry in engineering evaluations of deficiencies | Prior to PEO |
| 15 | Incorporate management of concrete aging into the civil structural monitoring program and the infrequently accessed area inspection programs. | Prior to PEO |
| 16 | Incorporate management of elastomers into the work control activities. | Prior to PEO |
| 17 | Develop and implement inspection program for Non-EQ cables. | One-Time between years 30-40. Additional inspections every 10 years thereafter. |
| 18 | Inspectors credited in the Work Control Process will be QMR or VT qualified. | Prior to PEO |
| 19 | Perform audit of work control inspections to ensure representation by all in-scope LR systems and to determine need for supplemental inspections. | Prior to PEO and every 10 years thereafter. Supplemental inspections within 5 year of audit. |
| 20 | Measure the sludge buildup in the SW reservoir at NAPS. | One-Time between years 35 and 40 |
| 21 | Provide inspection details for PZR surge line inspections to the NRC for review and approval | Prior to PEO |
| 22 | Provide inspection details for SI and charging line inspections to the NRC for review and approval. | Prior to PEO |
| 23 | Address NRC staff final guidance regarding fuse holders when issued. | When issued or prior to PEO, whichever is later. |
| 24 | Develop and implement a program to control water intrusion into manholes at SPS. | Prior to PEO |
| 25 | Revise procedures for groundwater testing to account for possible seasonal variations. | Prior to PEO |

| | | |
|----|---|--------------|
| 26 | Inspect similar material/environment environmental/operational and outside the system, if aging identified in a location within a system cannot be explained by environmental/operational conditions at that specific location. | Prior to PEO |
| 27 | Supplement the NFPA pressure and flowrate testing credited in each LRA as part of the fire protection program activity with the work control process activity in order to manage aging effects for the fire protection system piping. | Prior to PEO |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 1 - 4/1/1978; Unit2 - 8/21/1980
Date New License Expires: Unit 1 - 4/1/2038; Unit 2 - 8/21/2040
Date Initial License Expires (prior to Period of Extended Operation):
Unit 1 - 4/1/2018; Unit 2 - 8/21/2020
- B. Safety Evaluation Report (SER) NUREG Number: 1766
- C. Initial license renewal inspection report numbers: 50-338/02-06, 50-339/02-06, 50-338/02-09, 50-339/02-09

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT SURRY POWER STATION**

| No. | Commitment | Implementation Schedule |
|------------|--|--|
| 1 | Develop and implement an inspection program for buried piping and valves. | One-Time between years 30-40. Additional inspections based on results. |
| 2 | Add PZR surge line to Augmented Inspection Program. | Prior to PEO |
| 3 | Add core barrel hold-down spring to Augmented Inspection Program. | Prior to PEO |
| 4 | Expand scope of Civil Eng Structural Inspection to cover LR requirements. | Prior to PEO |
| 5 | Revise plant documents to use inspection opportunities when inaccessible areas become accessible during work activities. | Prior to PEO |
| 6 | Incorporate NFPA-25, Section 2-3.1.1 for sprinklers. | Prior to year 50. If testing used, repeat every 10 years. |
| 7 | Develop inspection criteria for non-ASME supports and doors. | Prior to PEO |
| 8 | Develop procedural guidance for inspection criteria that puts focus on aging effects. | Prior to PEO |
| 9 | Develop and implement inspection program for infrequently accessed areas. | One-Time between years 30-40. Additional inspections based on results. |
| 10 | Develop and implement inspection program for tanks. | One-Time between years 30-40. Additional inspections based on results. |
| 11 | Inspect representative sections of polar crane box girders. | One-Time between years 30-40. Additional inspections based on results. |

| | | |
|----|--|---|
| 12 | Follow industry activities related to RV internals issues such as void swelling, thermal and neutron embrittlement, etc. Evaluate industry recommendations. Inspect accordingly. | One-Time inspection between years 30-40 on most susceptible single unit (SPS or NAPS). Additional inspections based on results. |
| 13 | Implement changes into procedures to assure consistent inspection of components for aging effects during work activities. | Prior to PEO |
| 14 | Incorporate groundwater monitoring into the civil engineering structural monitoring program. Consider groundwater chemistry in engineering evaluations of deficiencies | Prior to PEO |
| 15 | Incorporate management of concrete aging into the civil structural monitoring program and the infrequently accessed area inspection programs. | Prior to PEO |
| 16 | Incorporate management of elastomers into the work control activities. | Prior to PEO |
| 17 | Develop and implement inspection program for Non-EQ cables. | One-Time between years 30-40. Additional inspections every 10 years thereafter. |
| 18 | Inspectors credited in the Work Control Process will be QMR or VT qualified. | Prior to PEO |
| 19 | Perform audit of work control inspections to ensure representation by all in-scope LR systems and to determine need for supplemental inspections. | Prior to PEO and every 10 years thereafter. Supplemental inspections within 5 year of audit. |
| 20 | Measure the sludge buildup in the SW reservoir at NAPS. | One-Time between years 35 and 40 |
| 21 | Provide inspection details for PZR surge line inspections to the NRC for review and approval | Prior to PEO |
| 22 | Provide inspection details for SI and charging line inspections to the NRC for review and approval. | Prior to PEO |
| 23 | Address NRC staff final guidance regarding fuse holders when issued. | When issued or prior to PEO, whichever is later. |
| 24 | Develop and implement a program to control water intrusion into manholes at SPS. | Prior to PEO |
| 25 | Revise procedures for groundwater testing to account for possible seasonal variations. | Prior to PEO |

| | | |
|----|---|--------------|
| 26 | Inspect similar material/environment environmental/operational and outside the system, if aging identified in a location within a system cannot be explained by environmental/operational conditions at that specific location. | Prior to PEO |
| 27 | Supplement the NFPA pressure and flowrate testing credited in each LRA as part of the fire protection program activity with the work control process activity in order to manage aging effects for the fire protection system piping. | Prior to PEO |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 1 - 5/25/1972; Unit 2 - 1/29/1973
Date New License Expires: Unit 1 - 5/25/2032; Unit 2 - 1/29/2033
Date Initial License Expires (prior to Period of Extended Operation): Unit 1 - 5/25/2012; Unit 2 - 1/29/2013
- B. Safety Evaluation Report (SER) NUREG Number: 1766
- C. Initial license renewal inspection report numbers: 50-280/02-06, 50-281/02-06, 50-280/02-09, 50-281/02-09

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT PEACH BOTTOM ATOMIC POWER STATION**

Outstanding Commitments

| No. | Commitment | Implementation Schedule |
|------------|--|--|
| 1 | Evaluate any age related degradation found during recirculation system ISI inspections for applicability to the NSR portions of the recirculation system that was included in the scope of license renewal for NSR/SR. | Prior to period of extended operation. |
| 2 | Notify the NRC whether Integrated Surveillance Program per BWRVIP-78 or plant specific program will be implemented | Prior to period of extended operation. |
| 3 | Perform Inspection of carbon steel Component Supports (Other than ASME Class 1, 2, 3, and ASME Class MC component supports) | Prior to period of extended operation and every 4 years thereafter |
| 4 | Perform Inspection of SBO structural components | Prior to period of extended operation and every 4 years thereafter |
| 5 | Perform inspection of outer sluice gates in the circulating water pump structure | Prior to period of extended operation. |
| 6 | Perform inspection of hazard barrier doors in a sheltered environment for loss of material | Prior to period of extended operation and every 4 years thereafter |
| 7 | Perform inspection of RPV top guide | Prior to period of extended operation. |
| 8 | Perform ultrasonic testing to detect wall thinning at susceptible locations in the ESW system stagnant piping in ECCS rooms | Prior to period of extended operation. |
| 9 | Perform one-time inspection of a cast iron fire protection component for selective leaching | Prior to period of extended operation. |
| 10 | Perform functional testing of sprinkler heads | Prior to year 50 of sprinkler service life |
| 11 | Perform inspection of electrical conduits in outdoor environment | Prior to period of extended operation. |
| No. | Commitment | Implementation Schedule |

| | | |
|------------|---|---|
| 12 | Perform one-time inspection of wall thickness of selected torus piping | Prior to period of extended operation. |
| 13 | Perform inspection of PVCinsulated Fire Safe Shutdown cables in drywell | Prior to period of extended operation. |
| 14 | Implement inspection program for Non-EQ accessible cables and connections, including fuse blocks | Prior to period of extended operation and every 10 years thereafter |
| 15 | Perform one-time piping inspection activities for standby liquid control system, auxiliary steam system, plant equipment and floor drain system, service water system, radiation monitoring system | Prior to period of extended operation. |
| 16 | Perform one-time inspection of susceptible locations for loss of material in fuel pool cooling system to verify effectiveness of fuel pool chemistry activities | Prior to period of extended operation. |
| 17 | Perform one-time inspection of carbon steel piping for loss of material in RPV instrumentation and Reactor Recirculation system | Prior to period of extended operation. |
| 18 | Perform testing of inaccessible medium voltage cables | Prior to period of extended operation. |
| 19 | Implement the final version of the fuse holder interim staff guidance when issued by the NRC. | Prior to period of extended operation. |
| 20 | Implement fatigue management program | Prior to period of extended operation. |
| 21 | Submit RPV P-T curves for 54 EFPY as license amendment | Prior to period of extended operation. |
| 22 | Submit RPV circumferential weld examination relief request for 60 years | Prior to period of extended operation. |
| 23 | Implement BWRVIP-76 when approved by the NRC and accepted by BWRVIP Committee | Prior to period of extended operation. |
| 24 | Obtain NRC review and approval for an inspection program if used, to manage the effects of fatigue for RPV studs when CUF approaches 1.0 | Prior to period of extended operation. |
| No. | Commitment | Implementation Schedule |
| 25 | Perform plant specific calculations for locations identified in NUREG/CR-6260 for older vintage plants to manage the effects of environmental fatigue. If position is modified based on industry activities, obtain NRC approval prior to implementation. | Prior to period of extended operation. |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 2 - 8/8/1973; Unit 3 - 7/2/1974
Date New License Expires: Unit 2 - 8/8/2033; Unit 3 - 7/2/2034
Date Initial License Expires (prior to Period of Extended Operation):
Unit 2 - 8/8/2013; Unit 3 - 7/2/2014
- B. Safety Evaluation Report (SER) NUREG Number: 1769
- C. Initial license renewal inspection reports numbers: 50-277/02-09, 50-278/02-09, 50-277/02-10, 50-278/02-10, 50-277/02-12, 50-278/02-12

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT ST. LUCIE, UNITS 1 AND 2**

License Renewal Commitment Listing for St. Lucie Unit 1

| No. | Commitment | Implementation Schedule |
|-----|---|---|
| 1 | Perform a visual inspection to determine the extent of loss of material due to pitting and microbiologically induced corrosion on the external surfaces of the buried pipe that connects the St. Lucie Units 1 and 2 Condensate Storage Tanks. | Prior to the end of the initial operating license term. |
| 2 | Perform inspections on the surfaces of piping and components to determine if galvanic corrosion is active in systems where it is not expected. | Prior to the end of the initial operating license term; additional inspections based on results. |
| 3 | Perform examinations using volumetric techniques of the internal surfaces of stainless steel Auxiliary Feedwater piping downstream of the recirculation orifices. | Prior to the end of the initial operating license term. |
| 4 | Submit a report summarizing the aging effects applicable to reactor vessel internals including a description of the inspection plan. | Prior to the end of the initial operating license term. |
| 5 | Perform a one-time inspection of the reactor vessel internals. | During the period of extended operation. |
| 6 | Submit a report summarizing the inspection plan for small bore Class 1 piping prior to implementation. | Prior to the end of the initial operating license term. |
| 7 | Perform volumetric inspections of a sample of small bore Class 1 piping. | Prior to the end of the initial operating license term. |
| 8 | Implement the Thermal Aging Embrittlement of CASS Program. | Prior to the end of the initial operating license term. |
| 9 | Enhance the ASME Section XI Subsection IWB, IWC, IWD Inservice Inspection Program to: - Perform VT-1 inspections of the core stabilizing lugs and core support lugs, and - Evaluate pressurizer surge line flaws (if identified) with regard to environmentally assisted fatigue. | Prior to the end of the initial operating license term. |
| 10 | Revise the Boraflex Surveillance Program to include areal density testing (in lieu of blackness testing) of the encapsulated Boraflex material in the spent fuel storage racks. | Prior to the end of the initial operating license term. |
| 11 | Expand the scope of the Boric Acid Wastage Surveillance Program to include Waste Management components in the scope of license renewal. | Prior to the end of the initial operating license term. |

| No. | Commitment | Implementation Schedule |
|-----|--|---|
| 12 | Revise procedures to provide guidance in the event that fatigue design cycle limits are approached. | Prior to the end of the initial operating license term. |
| 13 | Incorporate NFPA-25 testing of wet pipe sprinklers into the Fire Protection Program. | Prior to 50 years from initial operating license. |
| 14 | Expand the scope of the Flow Accelerated Corrosion Program to include internal and external loss of material of drain lines and selected steam traps. | Prior to the end of the initial operating license term. |
| 15 | Enhance the Periodic Surveillance and Preventive Maintenance Program to include components such as filter housings, radiator fins, flexible hoses, door seals, and expansion joints. | Prior to the end of the initial operating license term. |
| 16 | Program documentation will be enhanced to integrate all aspects of the four subprograms that makeup the Reactor Vessel Integrity Program. | Prior to the end of the initial operating license term. |
| 17 | Enhance the Systems and Structures Monitoring Program to include: <ul style="list-style-type: none"> - Monitoring of the interior surfaces of below groundwater concrete, and examination of a representative sample of below groundwater concrete, when excavated for any reason, - Aging management of inaccessible concrete, inspection of insulated equipment and piping, and evaluating masonry wall degradation and uniform corrosion, and - Aging management of accessible reinforced concrete and reinforced masonry block walls. | Prior to the end of the initial operating license term. |
| 18 | Establish an aging management program to address non-EQ cables and connections in the Containment. The non-EQ cables and connections managed by this program will include those associated with sensitive, low-level signal circuits (source, intermediate, and power range neutron detectors). Complete the first inspection described in the aging management program. | Prior to the end of the initial operating license term. |
| 19 | Address environmentally assisted fatigue of the pressurizer surge line using one or more of the following approaches: <ul style="list-style-type: none"> - Further refinement of the fatigue analysis to lower the CUF(s) to below 1.0, or - Repair of the affected locations, or - Replacement of the affected locations, or - Manage the effects of fatigue by an NRC approved inspection program. | Prior to the period of extended operation. |

| No. | Commitment | Implementation Schedule |
|-----|--|--|
| 20 | <p>Implement all reasonable alternative inspection/evaluation methods that may be required by the NRC, as appropriate, as conditions for approval of the relief request. Subsequent to the disposition of the relief request and prior to the period of extended operation, the TLAA's for the St. Lucie Units 1 and 2 half-nozzle replacement designs will be dispositioned pursuant to 10 CFR 54.21(c)(1). These TLAA's shall address: 1) the potential growth of the original flaw due to thermal or mechanical cycling, and 2) the potential wastage of the ferritic material that is adjacent to the half-nozzle configuration and exposed to boroated reactor coolant. If acceptability of the St. Lucie Units 1 and 2 half-nozzle designs cannot be demonstrated for the period of extended operation pursuant to 10 CFR 54.21(c)(1)(i) or 54.21(c)(1)(ii), then these TLAA's will be dispositioned in accordance with 10 CFR 54.21(c)(1)(iii) which may include appropriate nozzle replacement to comply with ASME Section III and ASME Section XI replacement criteria.</p> | <p>Prior to entering the license renewal period for each unit.</p> |

License Renewal Commitment Listing for St. Lucie Unit 2

| No. | Commitment | Implementation Schedule |
|-----|---|---|
| 1 | <p>Perform inspections on the surfaces of piping and components to determine if galvanic corrosion is active in systems where it is not expected.</p> | <p>Prior to the end of the initial operating license term, additional inspections based on results.</p> |

| No. | Commitment | Implementation Schedule |
|-----|---|---|
| 2 | Perform examinations using volumetric techniques of the internal surfaces of stainless steel Auxiliary Feedwater piping downstream of the recirculation orifices and carbon steel Component Cooling Water piping associated with the control room air conditioning. | Prior to the end of the initial operating license term. |
| 3 | Submit a report summarizing the aging effects applicable to reactor vessel internals including a description of the inspection plan. | Prior to the end of the initial operating license term. |
| 4 | Perform a one-time inspection of the reactor vessel internals | During the period of extended operation. |
| 5 | Submit a report summarizing the inspection plan for small bore Class 1 piping prior to implementation. | Prior to the end of the initial operating license term. |
| 6 | Perform volumetric inspections of a sample of small bore Class 1 piping. | Prior to the end of the initial operating license term. |
| 7 | Implement the Thermal Aging Embrittlement of CASS Program. | Prior to the end of the initial operating license term. |
| 8 | Enhance the ASME Section XI Subsection IWB, IWC, IWD Inservice Inspection Program to: - Perform VT-1 inspections of the core stabilizing lugs and core support lugs, and - Evaluate pressurizer surge line flaws (if identified) with regard to environmentally assisted fatigue. | Prior to the end of the initial operating license term. |
| 9 | Expand the scope of the Boric Acid Wastage Surveillance Program to include Waste Management components in the scope of license renewal. | Prior to the end of the initial operating license term. |
| 10 | Revise procedures to provide guidance in the event that fatigue design cycle limits are approached. | Prior to the end of the initial operating license term. |
| 11 | Incorporate NFPA-25 testing of wet pipe sprinklers into the Fire Protection Program. | Prior to 50 years from initial operating license. |
| 12 | Expand the scope of the Flow Accelerated Corrosion Program to include internal and external loss of material of selected steam traps. | Prior to the end of the initial operating license term. |

| No. | Commitment | Implementation Schedule |
|-----|--|---|
| 13 | Enhance the Periodic Surveillance and Preventive Maintenance Program to include components such as filter housings, radiator fins, flexible hoses, door seals, and expansion joints. | Prior to the end of the initial operating license term. |
| 14 | Program documentation will be enhanced to integrate all aspects of the four subprograms that makeup Reactor Vessel Integrity Program. | Prior to the end of the initial operating license term. |
| 15 | Enhance the Systems and Structures Monitoring Program to include: <ul style="list-style-type: none"> - Monitoring of the interior surfaces of below groundwater concrete, and examination of a representative sample of below groundwater concrete, when excavated for any reason, - Aging management of inaccessible concrete, inspection of insulated equipment and piping, and evaluating masonry wall degradation and uniform corrosion, and - Aging management of accessible reinforced concrete and reinforced masonry block walls. | Prior to the end of the initial operating license term. |
| 16 | Establish an aging management program to address non-EQ cables and connections in the Containment. The non-EQ cables and connections managed by this program will include those associated with sensitive, low-level signal circuits (source, intermediate, and power range neutron detectors). Complete the first inspection described in the aging management program. | Prior to the end of the initial operating license term. |
| 17 | Address environmentally assisted fatigue of the pressurizer surge line using one or more of the following approaches: <ul style="list-style-type: none"> - Further refinement of the fatigue analysis to lower the CUF(s) to below 1.0, or - Repair of the affected locations, or - Replacement of the affected locations, or Manage the effects of fatigue by an NRC approved inspection program. | Prior to the period of extended operation. |
| 18 | Implement all reasonable alternative inspection/evaluation methods that may be required by the NRC, as appropriate, as conditions for approval of the relief request. Subsequent to the disposition of the relief request and prior to the period of extended operation, the TLAA's for the St. Lucie Units 1 and 2 half-nozzle replacement designs will be dispositioned pursuant to 10 CFR 54.21(c)(1). These TLAA's shall address: 1) the potential growth of the original flaw due to thermal or mechanical cycling, and 2) the potential wastage of the ferritic material that is adjacent to the half-nozzle configuration and exposed to borated reactor coolant. If acceptability of the St. Lucie Units 1 and 2 half-nozzle designs cannot be demonstrated for the period of extended operation pursuant to 10 CFR 54.21(c)(1)(i) or 54.21(c)(1)(ii), then these TLAA's will be dispositioned in accordance with 10 CFR 54.21(c)(1)(iii) which may include appropriate nozzle replacement to comply with ASME Section III and ASME Section XI replacement criteria. | Prior to entering the license renewal period for each unit. |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 1 - 3/1/1976; Unit 2 - 6/10/1983
Date New License Expires: Unit 1 - 3/1/2036; Unit 2 - 4/6/2043
Date Initial License Expires (prior to Period of Extended Operation):
Unit 1 - 3/1/2016; Unit 2 - 4/6/2023
- B. Safety Evaluation Report (SER) NUREG Number: 1779
- C. Initial license renewal inspection reports numbers: 50-335/02-07, 50-389/02-07; 50-335/03-03, 50-389/03-03

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT FORT CALHOUN STATION**

| No. | Commitment | Implementation Schedule |
|-----|--|---|
| 1 | <p>The Alloy 600 Program is a new program at FCS. With this being the case, inspection methodologies for all of the components in the program have not yet been determined. Some of the components that are in the program are currently part of other programs like the reactor vessel internals inspection program. The activities that occur under the interfacing programs relative to these components will be utilized to help analyze and determine the methodologies to be incorporated within the Alloy 600 program for inspection of its included components. These analyses and determinations will be completed prior to entry into the period of extended operation.</p> | <p>Prior to the period of extended operation</p> |
| 2 | <p>There is to be a plant-specific program, the Alloy 600 program, for the aging management of Inconel 182 welds. The details of this program are still in development but will be completed prior to the period of extended operation.</p> | <p>Prior to the period of extended operation</p> |
| 3 | <p>The flow skirt is one of those components currently included under the scope of the reactor vessel internals inspection program and the Alloy 600 program. Exactly how the flow skirt is to be managed under the Alloy 600 program is yet to be determined; however, that determination will be made before entry into the period of extended operation.</p> | <p>Prior to the period of extended operation.</p> |
| 4 | <p>Develop the Alloy 600 program which reflects the program elements of GALL AMP XI.M11, and other commitments in response to the NRC staff's review.</p> <p>An assessment of Alloy 600 and Alloy 82/182 components has been performed and incorporated into the Alloy 600 program basis document. The assessment ... provided conclusions and recommendations to address the specified components...These recommendations will be evaluated as part of the Alloy 600 program and implemented as necessary to ensure the reliability of the Alloy 600 and Alloy 82/182 components.</p> <p>The applicant will incorporate appropriate information from its responses to GL 97-01 and NRC Bulletins 2001-01, 2002-01, and 2002-02.</p> | <p>Prior to the period of extended operation.</p> |
| 5 | <p>OPPD's response to RAI B.3.1-1 also states that the FCS Alloy 600 Program currently includes a requirement to monitor industry operating experience and implement program enhancements as necessary. By making this a requirement of the Alloy 600 Program, OPPD has committed to incorporating industry activity recommendations or mandates as applicable.</p> | <p>Prior to the period of extended operation</p> |

| | | |
|----|--|--|
| 6 | OPPD commits to applying recommended or mandated activities resulting from the CRD Material Reliability Management Plan with regard to management of CEDM housings. OPPD will submit the revised AMPs prior to the period of extended operation to ensure that the revised AMPs are adequate to manage the aging of the CEDM housings. | Prior to the period of extended operation |
| 7 | Develop the one-time inspection program which reflects the program elements of GALL AMP XI.M32, and other commitments in response to the NRC staff's review, as documented in responses to staff RAIs and potential open items (POIs). | Prior to the period of extended operation. |
| 8 | OPPD has conservatively included loss of material as an AERM for Alloy 600 in borated treated water...To validate the effectiveness of the chemistry program, OPPD will determine the worst-case location for the potential occurrence of this AERM and perform a one-time inspection of this location prior to the period of extended operation. | Prior to the period of extended operation |
| 9 | OPPD will continue to visually inspect and perform a dye-penetrant exam on the two remaining RCP thermal barriers when the rotating assemblies are refurbished. In addition, an air drop test will also be performed on the seal water coolers to ensure tube integrity. FCS will credit the One-Time Inspection Program for these RCP thermal barrier and seal water cooler tubes. | Prior to the period of extended operation |
| 10 | OPPD commits to the requirements in GALL report Section XI.M32 relative to the inspection of small-bore RCS piping and to base inspections on those locations where small-bore piping is subject to thermal cycling stratification and turbulent penetration | Prior to the period of extended operation |
| 11 | Worst-case locations will be evaluated and identified, taking into account severity of condition, time of service, and lowest design margin, as part of the implementation of the one-time inspection program (B.3.5) prior to the period of extended operation. | Prior to the period of extended operation |
| 12 | New fuel additions to the fire protection diesel fuel oil tank will be analyzed for water and sediment, and this water and sediment will be removed, to preclude water contamination, and the tank bottom will be monitored to ensure water or biological activity is not accumulating. UT and/or visual inspections will be performed in the other storage tanks which credit this program for aging management. The low point beyond the main tank is the bottom of the day tank, and a day tank sample will be drawn from the bottom of the tank and analyzed for water and sediment. OPPD commits to performance of a one-time inspection... to determine the condition of the fire protection fuel oil tank and verify that the tank is not in a degraded condition. | Ongoing, beginning prior to the period of extended operation |
| 13 | The fire protection day tank will be analyzed quarterly for water and sediment, semi-annually for microbiological activity, and will have a one-time boroscope inspection performed. | Tank analysis - ongoing, beginning prior to the period of extended operation. Boroscope inspection - prior to the period of extended operation |

| | | |
|----|--|--|
| 14 | <p>Additional guidance will be added to the diesel fire pump maintenance procedure to inspect the diesel fire pump fuel line and zinc plug for corrosion or mechanical damage.</p> <p>Specific guidance will be added to the halon and fire damper inspection procedures to inspect halon system components and fire dampers for corrosion, and mechanical and physical damage.</p> <p>Specific acceptance criteria will be added to the fire barrier inspection procedures for concrete walls, floors, and ceilings.</p> <p>Specific guidance will be added to the fire door inspection procedure to inspect for wear and missing parts.</p> <p>Specific guidance will be developed to replace or inspect in-scope sprinkler heads in accordance with NFPA-25.</p> <p>Additional guidance will be added to one of the system valve cycling tests to improve system flushing.</p> <p>Specific guidance will be developed for flow testing the in-scope sprinkler system.</p> | Prior to the period of extended operation |
| 15 | Enhancements will be made to the Fire Protection Program prior to the period of extended operation to implement the requirements of the interim staff guidance (on wall thinning of piping due to corrosion). | Prior to the period of extended operation |
| 16 | <p>Visual inspections of the core shrouds at Palisades and FCS in 1995 and 1993, respectively, revealed no panel separation and no missing bolts. Ten-year in-service inspections were performed at FCS in 1992 and will be performed again in 2003 and prior to the period of extended operation. The results of these inspections, the Palisades in-service inspection results, and the results of industry programs will be monitored to determine if additional action, such as ultrasonic inspection, is necessary.</p> <p>The EPRI MRP is developing an action plan to address potential SCC of reactor vessel internals. OPPD is participating in this program and will take action, as necessary, in response to any recommendations and findings coming from the evaluation.</p> | 10-year inspection of core shroud - ongoing beginning prior to the period of extended operation. Implementation of EPRI MRP recommendations - when recommendations are available |
| 17 | <p>The following enhancements will be made to the Reactor Vessel Internals Inspection Program:</p> <p>A fluence and stress analysis will be performed to identify critical locations. A fracture mechanics analysis for critical locations will be performed to determine flaw acceptance criteria and resolution required to detect flaws. Appropriate inspection techniques will be implemented based on analyses.</p> <p>(For the RVI flow skirt)The fracture mechanics analysis committed to in Section B.2.8 of the LRA will be performed.</p> | Prior to the period of extended operation. |

| | | |
|----|--|--|
| 18 | <p>As identified in the FCS License Renewal Application, the Buried Surfaces External Corrosion Program is a new program that will be implemented at FCS prior to the period of extended operation. The new program will include the following items to make it consistent with GALL XI.M34, "Buried Piping and Tanks Inspection" criteria:</p> <ul style="list-style-type: none"> • A revision has been completed to the FCS maintenance control procedure to require engineering evaluation of concrete, piping, and piping coatings whenever excavations are performed. • Current routine inspections of diesel fuel oil tanks within the scope of license renewal will be annotated as commitments required to meet license renewal requirements. • A program basis document will be developed which will define the program requirements and compile industry and FCS operating experience related to buried components. | Prior to the period of extended operation. |
| 19 | Procedures will be revised to include acceptance criteria that a visual indication of loss of material or cracking of elastomer ventilation components identified by the accountable Operator or Engineer will not necessarily lead to an unacceptable component. | Prior to the period of extended operation. |
| 20 | <p>Specific guidance will be added to the Boric Acid Corrosion Prevention Program basis document and applicable procedures to inspect components, structures, and electrical components where boric acid may have leaked.</p> <p>Add Spent Fuel Pool Cooling and Waste Disposal Systems to the program. Two areas not routinely inspected will be added to inspection scope.</p> <p>Specific guidance will be implemented for maintenance personnel to report boric acid leakage to the BAC Program Engineer.</p> | Prior to the period of extended operation. |
| 21 | Inspections to various raw water and cooling water components will be added based on FCS' Cooling Water Corrosion Program susceptibility evaluation. These inspection activities will be commensurate with the GALL Program. | Prior to the period of extended operation. |
| 22 | <p>Add the following to the scope of components subject to the FCS Fatigue Monitoring Program:</p> <p>Pressurizer Surge Line bounding locations, and elbow</p> <p>Class 2 and 3 components not included in the NUREG-1801 program which are subject to fatigue as an aging effect requiring management.</p> <p>The number of cycles assumed for the evaluation of the charging line nozzle will be included in the Fatigue Monitoring Program Basis Document, when it is generated, to assure that a CUF of 1.0 is not exceeded.</p> | Prior to the period of extended operation. |
| 23 | Cycles which involve power changes, operating pressure and temperature variations, and feedwater additions with the plant in hot standby conditions will be conservatively estimated from a review of plant operating records to predict current cycles under the FMP. Once current number of cycles has been established, a review will be performed to determine if there is a potential for exceeding the allowable cycles and should be managed. If so, they'll be counted and managed by the FMP. | Review to be completed prior to the period of extended operation |

| | | |
|----|---|--|
| 24 | <p>The limiting surge line welds will be inspected prior to the period of extended operation. The results of these inspections will be used to assess the appropriate approach for addressing environmentally-assisted fatigue of the surge lines. The approach would include one or more of the following options:</p> <ol style="list-style-type: none"> 1. further refinement of the fatigue analysis to lower the CUF(s) to below 1.0 2. repair of the affected locations 3. replacement of the affected locations 4. management of the effects of fatigue by an inspection program that has been reviewed and approved by the NRC (e.g., periodic nondestructive examination of the affected locations at inspection intervals to be determined by a method accepted by the NRC) | Prior to the period of extended operation |
| 25 | As part of the FMP, the NSSS sampling piping will be analyzed and a stress calculation performed to determine the thermal stress range for the line. | Prior to the period of extended operation |
| 26 | These CVCS cycle counts (loss of charging, intermittent manual charging makeup cycles, and maximum purification/emergency boration cycles) are gross estimates due to incomplete logs. ...A condition report (CR) is being generated to address this issue within the corrective action program so that a more accurate transient count/determination can be performed for the indicated transients prior to entry into the period of extended operation. | Prior to the period of extended operation |
| 27 | <p>Overhead Load Handling Systems Inspection Program- Specific guidance will be added to applicable inspection procedures to inspect for degradation of expansion anchors and surrounding concrete.</p> <p>Specific guidance will be added to applicable inspection procedures to identify acceptance criteria for general corrosion and degradation of expansion anchors and surrounding concrete.</p> <p>Specific guidance will be added to applicable inspection procedures to initiate FCS corrective action documentation if excessive general corrosion or cracking of concrete around expansion anchors is identified.</p> | Prior to the period of extended operation. |
| 28 | Containment ISI/Structures Monitoring Programs- For concrete at FCS, even though OPPD has concluded that the AERMs identified for concrete in the GALL Report are not applicable due to the plant's operating experience, OPPD has committed to be consistent with the GALL Report and monitor for the possibility of the AERMs with the programs identified in the GALL Report. | Ongoing, beginning prior to the period of extended operation |
| 29 | A periodic task will be initiated as part of the structures monitoring program to take ground water samples on a five year frequency and compare the evaluation results to previous samples. | Prior to the period of extended operation and ongoing thereafter at the stated frequency |

| | | |
|---------------|---|--|
| 30 | <p>OPPD will perform a one-time inspection of the circulating water discharge tunnel per the structures monitoring program (B.2.10). The circulating water discharge tunnel will be included within the scope of license renewal as part of the intake structure.</p> | Prior to the period of extended operation |
| 31 | <p>The following FCS-specific tasks will be added to the SMP: Performance of periodic sampling and evaluation of ground water. Guidance to inspect structural components when exposed by excavation. XI.S5 Specific guidance will be added to inspect masonry walls for cracking and condition of steel bracing. Specific acceptance criteria will be added to inspection procedures to be commensurate with industry codes, standards, and guidelines. XI.S6 Specific guidance will be added for inspection of component supports, new fuel storage rack, and the plant-specific components identified in the LRA Section 3 tables. Aging management activities related to these components will be commensurate with industry standards and practices as identified in the NUREG-1801 Structures Monitoring Program criteria. Additional guidance commensurate with industry codes, standards, and guidelines, will be added to inspection procedures.</p> | Prior to the period of extended operation. |
| 31 (Con't) | <p>Specific acceptance criteria will be added to the inspection procedures to be commensurate with industry codes, standards, and guidelines. XI.S7 Additional guidance will be added to the inspection procedure to identify specific parameters to inspect. Additional guidance will be added to review maintenance activities since last inspection. Specific acceptance criteria will be added to the inspection procedures to be commensurate with industry codes, standards, and guidelines.</p> | Prior to the period of extended operation. |
| 32 | <p>Develop the selective leaching program which reflects the program elements of GALL AMP XI.M33, as clarified in LRA Section B.3.6, and other commitments in response to the NRC staff's review, as documented in the responses to staff RAIs and potential open items (POIs)</p> | Prior to the period of extended operation. |
| 33 | <p>Develop the thermal aging embrittlement of CASS program which reflects the program elements of GALL AMP XI.M12, and other commitments in response to the NRC staff's review, as documented in the responses to staff RAIs and potential open items (POIs)</p> | Prior to the period of extended operation. |
| 34 | <p>For non-EQ cables and connections within the scope of license renewal and subject to an aging management review: OPPD will implement a program and inspection consistent with that described in XI.E1 of the GALL Report. OPPD will implement a program and inspection consistent with that described in XI.E2 of the GALL Report. OPPD will implement a program and inspection consistent with that described in XI.E3 of the GALL.</p> | Prior to the period of extended operation. |

| | | |
|----|--|--|
| 35 | The aging effects of hardening and loss of strength for elastomers are not included in the general corrosion of external surfaces program (B.3.3). Enhancements will be made to add these AERMs to preventive maintenance tasks under the PS/PMP (B.2.7) to specifically perform hands on type inspections of elastomer expansion joints, seals, and vibration isolators within the scope of license renewal for hardening and loss of strength. Applicable PMs are performed at least once per refueling cycle (approximately 18 months). | Prior to the period of extended operation |
| 36 | The portion of CCW that provides cooling to the SI leakage coolers is included within the scope of license renewal. The piping and components will be added to the license renewal database and the CCW AMR evaluation will be revised to include these components. | Prior to the period of extended operation |
| 37 | For commitments listed in the Safety Evaluation Report, OPPD will include this list of commitments in an appropriate subsection of the FCS USAR Supplement for License Renewal | Prior to the period of extended operation |
| 38 | OPPD will complete a plant-specific leak before break (LBB) analysis using the latest LBB criteria. OPPD will submit to the NRC a license amendment request containing the plant-specific LBB evaluation | No later than December, 2006 |
| 30 | OPPD will submit to the NRC a license amendment request containing the fracture mechanics evaluation of the small-bore instrument nozzle J-weld region at the repaired instrument nozzle in the side of the pressurizer lower shell. This evaluation will include bounding of the flaw size by the size of the j-weld itself, and addressing the possibility of corrosion in the presence of a flaw | Prior to the period of extended operation |
| 40 | OPPD will manage the aging of fuse holders in accordance with ISG-5 | Ongoing, beginning prior to the period of extended operation |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: 8/9/1973
Date New License Expires: 8/9/2033
Date Initial License Expires (prior to Period of Extended Operation): 8/9/2013
- B. Safety Evaluation Report (SER) NUREG Number: 1782
- C. Initial license renewal inspection reports numbers: 50-285/02-07, 50-285/03-07

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT MCGUIRE NUCLEAR STATION**

Outstanding Commitments

| No. | Commitment | Implementation Schedule |
|-----|--|--|
| 1 | (a) Complete the Alloy 600 Aging Management review. (b) Submit the results of the review for the pressurizer surge and spray nozzle thermal sleeve attachment welds. (c) The summary aging management program descriptions contained in this UFSAR will be updated as necessary to reflect any new or revised commitments made by Duke in response to the staff generic communications that results from the Davis-Besse event in March 2002. (d) The results of this review will be incorporated into the unit specific inservice inspection (ISI) plan for the ISI intervals during the period of extended operation. | (a) Following issuance of the renewed operating licenses and by June 12, 2021. (b) Following issuance of the renewed operating licenses and by June 12, 2021. (c) As necessary (d) Prior to the respective ISI interval |
| 2 | Complete the Borated Water Systems Stainless Steel Inspection. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 3 | (a) Implement the Control Rod Drive Mechanism Nozzle and Other Vessel Closure Penetrations Inspection Program. (b) Update UFSAR summary description of this program to reflect any new or revised commitments made by Duke in response to the staff generic communications that result from the Davis-Besse event in March 2002. | (a) Following issuance of the renewed operating licenses and by June 12, 2021. (b) As necessary |
| 4 | Implement enhancements to the Fire Protection Program to provide surveillances for sprinkler branch lines, main fire pump strainer, jockey pump strainer, tank and connected piping, and turbine building manual hose stations. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 5 | Complete the Galvanic Susceptibility Inspection. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 6 | Implement enhancements to the Heat Exchanger Preventive Maintenance Activities to provide surveillances for pump motor air handling units and pump oil coolers. | Following issuance of the renewed operating licenses and by June 12, 2021. |

| | | |
|----|---|---|
| 7 | Implement the Inaccessible Non-EQ Medium Voltage Cables Aging Management Program. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 8 | Implement enhancements to the Inservice Inspection Plan to provide surveillances for the Unit 1 cold leg elbow and small bore piping. | Evaluation of the Unit 1 cold leg elbow will be completed following issuance of the renewed operating licenses and by June 12, 2021. Small bore piping examinations will be performed during each inservice inspection interval during the period of extended operation following issuance of the renewed operating licenses. |
| 9 | Implement enhancements to the Inspection Program for Civil Engineering Structures and Components to provide surveillances for exposed external surfaces of mechanical components. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 10 | Complete the Liquid Waste System Inspection. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 11 | Complete the future modification to the Thermal Fatigue Management Program for environmentally assisted fatigue. | Prior to the end of the 40th year of each unit's operation. |
| 12 | Implement the Non-EQ Insulated Cables and Connections Aging Management Program. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 13 | (a) Complete the Pressurizer Spray Head Examination on McGuire Unit 1. (b) If necessary, complete the Pressurizer Spray Head Examination on Unit 2. | (a) Following issuance of the renewed operating licenses and by June 12, 2021. (b) Following issuance of the |

| | | |
|----|--|---|
| | | renewed operating licenses and by March 3, 2023. |
| 14 | (a) Implement the Reactor Vessel Internals Inspection. (b) For items comprised of plates, forgings, and welds critical crack size will be determined by analysis and submitted for review and approval to the NRC. (c) For items fabricated from CASS, critical crack size will be determined by analysis. Acceptance criteria for all aging effects will be developed and submitted for review and approval to the NRC. | (a) McGuire Unit 1 will be inspected in the fifth inservice inspection interval; McGuire Unit 2 will be inspected early in the sixth inservice inspection interval. (b) Prior to the respective inspection. (c) Prior to the respective inspection. |
| 15 | Complete the Selective Leaching Inspection. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 16 | Complete the Sump Pump Systems Inspection. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 17 | Complete the Treated Water Systems Stainless Steel Inspection. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 18 | Complete the Ventilation Area Pressure Boundary Sealants Inspection. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 19 | Complete the Waste Gas System Inspection. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 20 | Complete the visual inspections of the interior surfaces of Auxiliary Feedwater System and Main Feedwater System components. | Following issuance of the renewed operating licenses and by June 12, 2021. |
| 21 | Implement the final version of the fuse holder interim staff guidance as provided to Duke by an NRC letter. | Following issuance of the renewed operating licenses and by June 12, 2021. |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 1 - 6/12/1981; Unit 2 - 3/3/1983
Date New License Expires: Unit 1 - 6/12/2041; Unit 2 - 3/3/2043
Date Initial License Expires (prior to Period of Extended Operation):
Unit 1 - 6/12/2021; Unit 2 - 3/3/2023

- B. Safety Evaluation Report (SER) NUREG Number: 1772

- C. Initial license renewal inspection reports: 50-369/02-05, 50-370/02-05, 50-369/02-06, 50-370/02-06

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT CATAWBA NUCLEAR STATION**

Outstanding Commitments

| No. | Commitment | Implementation Schedule |
|-----|---|--|
| 1 | (a) Complete the Alloy 600 Aging Management review. (b) Submit the results of the review for the pressurizer surge and spray nozzle thermal sleeve attachment welds. (c) The summary aging management program descriptions contained in this UFSAR will be updated as necessary to reflect any new or revised commitments made by Duke in response to the staff generic communications that results from the Davis-Besse event in March 2002. (d) The results of this review will be incorporated into the unit specific inservice inspection (ISI) plan for the ISI intervals during the period of extended operation | (a) Following issuance of the renewed operating licenses and by December 6, 2024. (b) Following issuance of the renewed operating licenses and by December 6, 2024. (c) As necessary (d) Prior to the respective ISI interval |
| 2 | Complete the Borated Water Systems Stainless Steel Inspection. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 3 | (a) Implement the Control Rod Drive Mechanism Nozzle and Other Vessel Closure Penetrations Inspection Program. (b) Update UFSAR summary description of this program to reflect any new or revised commitments made by Duke in response to the staff generic communications that result from the Davis-Besse event in March 2002. | (a) Following issuance of the renewed operating licenses and by December 6, 2024. (b) As necessary |
| 4 | Implement enhancements to the Fire Protection Program to provide surveillances for sprinkler branch lines, main fire pump strainer, jockey pump strainer, tank and connected piping, and turbine building manual hose stations. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 5 | Complete the Galvanic Susceptibility Inspection. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 6 | Implement the Inaccessible Non-EQ Medium Voltage Cables Aging Management Program. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 7 | Implement enhancements to the Inservice Inspection Plan to provide surveillances for small bore piping. | During each inservice inspection |

| | | |
|----|---|--|
| | | interval during the period of extended operation following issuance of the renewed operating licenses. |
| 8 | Implement enhancements to the Inspection Program for Civil Engineering Structures and Components to provide surveillances for exposed external surfaces of mechanical components. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 9 | Complete the Liquid Waste System Inspection. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 10 | Complete the future modification to the Thermal Fatigue Management Program for environmentally assisted fatigue. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 11 | Implement the Non-EQ Insulated Cables and Connections Aging Management Program. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 12 | If necessary following the results of the McGuire Unit 1 examination, complete the Pressurizer Spray Head Examination. | Following issuance of the renewed operating licenses and by December 6, 2024 for Catawba Unit 1 and February 24, 2026 for Catawba Unit 2. |
| 13 | Complete the Condenser Circulating Water Pump Expansion Joint Inspection. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 14 | Implement the Reactor Vessel Internals Inspection. | The decision to perform inspections on Catawba Unit 1 and Catawba Unit 2 will depend on an evaluation of the internals inspections performed on McGuire Units 1 and 2. |

| | | |
|----|--|---|
| 15 | Complete the Selective Leaching Inspection. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 16 | Complete the Sump Pump Systems Inspection. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 17 | Complete the Treated Water Systems Stainless Steel Inspection. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 18 | Complete the Ventilation Area Pressure Boundary Sealants Inspection. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 19 | Complete the Waste Gas System Inspection. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 20 | Complete the visual inspections of the interior surfaces of Auxiliary Feedwater System and Main Feedwater System components. | Following issuance of the renewed operating licenses and by December 6, 2024. |
| 21 | Implement the final version of the fuse holder interim staff guidance as provided to Duke by an NRC letter. | Following issuance of the renewed operating licenses and by December 6, 2024. |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 1 - 12/6/1984; Unit 2 - 2/24/1986
Date New License Expires: Unit 1 - 12/6/2043; Unit 2 - 2/24/2045
Date Initial License Expires (prior to Period of Extended Operation):
Unit 1 - 12/6/2024; Unit 2 - 2/24/2026
- B. Safety Evaluation Report (SER) NUREG Number: 1772
- C. Initial license renewal inspection reports numbers: 50-413/02-05, 50-414/02-05, 50-413/02-06, 50-414/02-05

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT H. B. ROBINSON NUCLEAR PLANT**

Outstanding Commitments

| No. | Commitment | Implementation Schedule |
|-----|--|---|
| 1 | Upon issuance of the renewed license, guidance will be incorporated into administrative control procedures that manage the RNP configuration control process to ensure that the requirements of 10 CFR 54.37(b) are met. | Following issuance of renewed license |
| 2 | A statement will be incorporated into the UFSAR Supplement description of the programs to document consistency of RNP AMP with programs defined in NUREG-1801, "Generic Aging Lessons Learned (GALL) Report." For RNP programs that are consistent with NUREG-1801, the program description will be revised to state "This program is consistent with the corresponding program described in the GALL Report." | Prior to the period of extended operation |
| 3 | The Fire Protection Program will be enhanced to note that concrete surface inspections performed under structures monitoring procedures are credited for inspection of fire barrier walls, ceilings, and floors. | Prior to the period of extended operation |
| 4 | The scope of the Boric Acid Corrosion Program will be expanded to (1) ensure that the mechanical, structural, and electrical components in scope for license renewal are addressed and (2) identify additional areas in which components are susceptible to exposure from boric acid. | Prior to the period of extended operation |
| 5 | The Flow-Accelerated Corrosion Program will be modified to (1) include additional components potentially susceptible to flow-accelerated corrosion and/or erosion, and (2) clarify when condition reports shall be initiated. | Prior to the period of extended operation |
| 6 | The following will be implemented: (1) administrative controls for bolting will be modified to prohibit the use of MoS ₂ compounds in high-strength bolting applications, and (2) an inspection and evaluation will be performed on highstrength bolting used on one motor-operated valve to determine susceptibility for cracking. | Prior to the period of extended operation |
| 7 | An activity will be scheduled in the site Preventive Maintenance Program to replace cooling coils in the emergency core cooling system room coolers on a prescribed frequency. | Prior to the period of extended operation |
| 8 | Administrative controls for inspection of overhead heavy load and light load handling will be enhanced to (1) include requirements for inspecting the turbine gantry crane in addition to the other cranes that require inspection, (2) note that cranes are to be inspected using the attribute inspection checklist for structures, and (3) revise the attribute inspection checklist for structures to include GALL | Prior to the period of extended operation |

| | | |
|----|---|---|
| | terminology such as wear. | |
| 9 | <p>The Fire Water System Program will be modified to include—Fire Protection Sprinkler Systems</p> <p>(1) For sprinkler heads in service for 50 years, either sprinkler head replacement or sampling/field service testing of heads in accordance with National Fire Protection Association (NFPA) 25 requirements based on the inservice date of the affected systems, and</p> <p>(2) prior to the period of extended operation, either full flow testing of portions of fire protection wet pipe sprinkler systems through the system cross mains, which are not routinely subject to flow, at the greatest flow and pressure allowed by the design of the systems or, alternatively, inspections or ultrasonic (UT) testing of a representative sample of these systems. Results from initial tests or inspections, reflecting 40 years of service, will be used to determine the scope and subsequent test/inspection intervals. The intervals are not expected to exceed 10 years.</p> <p>Fire Protection Suppression Piping</p> <p>Prior to the period of extended operation, UT examination on a representative sampling of the above ground fire protection piping normally containing water will be performed. Each sampling will include different sections of piping. Alternatively, internal inspections may be conducted on a representative sampling of these piping systems. Results from initial tests or inspections, reflecting 40 years of service, will be used to determine the scope and subsequent test/inspection intervals. The intervals are not expected to exceed 10 years.</p> <p>Halon/Carbon Dioxide Fire Suppression Systems</p> <p>The NRC staff guidance with respect to halon/carbon dioxide fire suppression systems will be implemented prior to the period of extended operation. The guidance is documented in a letter from C. Grimes (NRC) to A. Nelson of Concerned Scientists) Proposed Staff Guidance on Aging Management of Fire Protection Systems for License Renewal, January 28, 2002.</p> | Prior to the period of extended operation |
| 10 | A review will be performed to ascertain the need to update, as necessary, administrative controls for the Buried Piping and Tanks Surveillance Program to ensure consistency with National Association of Corrosion Engineers (NACE) Standard RP-0169-96 regarding acceptance criteria for the cathodic protection system, and additional leak testing provisions for underground piping will be incorporated. | Prior to the period of extended operation |
| 11 | Administrative controls for the Above Ground Carbon Steel Tanks Program will be revised to indicate that the external surfaces of the fuel oil tanks are to be inspected periodically and to incorporate corrective action requirements. | Prior to the period of extended operation |
| 12 | Administrative controls for the Fuel Oil Chemistry Program will be enhanced to (1) improve sampling and de-watering of selected storage tanks, (2) formalize existing practices for periodically draining and filling the diesel fuel oil storage tank, (3) formalize bacteria testing for fuel oil samples from various tanks, and (4) incorporate quarterly trending of fuel oil chemistry parameters. | Prior to the period of extended operation |
| 13 | Reactor Vessel Surveillance Program administrative controls will be revised to require surveillance test samples to be stored in lieu of optional disposal. | Prior to the period of extended operation |

| | | |
|----|--|---|
| 14 | The Buried Piping and Tanks Inspection Program will be enhanced to (1) require that an appropriate as-found pipe coating and material condition inspection is performed whenever buried piping within the scope of this program is exposed, (2) add precautions to ensure backfill with material that is free of gravel or other sharp or hard material that can damage the coating, (3) require that the coating inspection be performed by qualified personnel to assess its condition, and (4) require that a coating engineer assist in evaluation of any coating degradation noted during the inspection. | Prior to the period of extended operation |
| 15 | ASME Boiler & Pressure Vessel Code, Section XI, Subsection IWE Program administrative controls will be enhanced to (1) specify the requirements for conducting reexaminations, and (2) document that repairs meet the specified acceptance standards. | Prior to the period of extended operation |
| 16 | ASME Boiler & Pressure Vessel Code, Section XI, Subsection IWL Program enhancements will be made to require supervisors to notify civil/structural design engineering of the location and extent of proposed excavations of foundation concrete, to require inspection of below-grade concrete when excavated for any reason to monitor for potential effects and to inspect above-grade accessible concrete, and include trending requirements for structures based on aggressive ground water. | Prior to the period of extended operation |
| 17 | Structures Monitoring Program administrative controls will be enhanced to (1) include buildings and structures and associated acceptance criteria in scope for license renewal but outside the scope of the Maintenance Rule, (2) identify interfaces between structures monitoring inspections of concrete surfaces and the Fire Protection Program requirements for barriers, (3) state clearly the boundary definition between systems and structures, (4) revise administrative controls to provide inspection criteria for portions of systems covered by structures monitoring and require corrective action(s) to be initiated for unacceptable inspection attributes, (5) expand system walkdown inspection criteria to include observation of adjacent components, (6) inspect above-grade accessible concrete, and (7) revise personnel responsibilities to include providing assistance in evaluating structural deficiencies when requested by the responsible engineer, inspecting excavated concrete to monitor for potential aging effects, and notifying civil/structural design engineering of the location and extent of proposed excavations, and (8) include trending requirements for structures based on aggressive ground water and lake water. | Prior to the period of extended operation |
| 18 | To enhance the Dam Inspection Program, the system monitoring administrative controls will be revised to (1) identify the "Recommended Guidelines for Safety Inspection of Dams" as the required management program document for the dam, (2) require the responsible system engineer to review the inspection report and initiate corrective actions for any unacceptable attributes, (3) include "Recommended Guidelines for Safety Inspections of Dams" as the applicable inspection guidance in the inspection procedure for RNP, (4) inspect above-grade accessible concrete, (5) inspect submerged spillway concrete on a frequency not to exceed (10) ten years and (6) include trending requirements for structures based on aggressive ground water and lake water. | Prior to the period of extended operation |
| 19 | Systems Monitoring Program administrative controls will be enhanced to (1) include aging effects identified in the aging management reviews (AMRs), (2) identify inspection criteria in checklist form, (3) include guidance for inspecting connected piping/components, (4) require that the | Prior to the period of extended operation |

| | | |
|----|---|---|
| | extent of degradation be recorded and that appropriate corrective action(s) be taken, (5) add a section specifically addressing corrective actions, and (6) ensure "Loss of Material due to Wear" is specifically included as an aging effect/mechanism identified in the system walkdown checklist. | |
| 20 | Preventive Maintenance Program administrative controls will be enhanced to (1) include aging effects/mechanisms identified in the AMRs and (2) incorporate specific aging management activities identified in the AMRs into the program. | Prior to the period of extended operation |
| 21 | The Fatigue Monitoring Program load/unload transient limit will be reduced to provide the margin needed for consideration of reactor water environmental effects. | Prior to the period of extended operation |
| 22 | The Nickel-Alloy Nozzles and Penetrations Program is a new program that will incorporate the following: (1) evaluations of indications will be performed under the ASME Boiler & Pressure Vessel Code, Section XI program, (2) corrective actions for augmented inspections will be performed in accordance with repair and replacement procedures equivalent to those requirements in ASME Boiler & Pressure Vessel Code, Section XI, (3) RNP will maintain its involvement in industry initiatives and will systematically assess for implementation applicable programmatic enhancements, that are agreed upon between the NRC and the nuclear power industry to monitor for, detect, evaluate, and correct cracking in the vessel head penetration (VHP) nozzles, specifically as the actions relate to ensuring the integrity of VHP nozzles in the RNP upper reactor vessel head during the extended period of operation, and (4) RNP will submit, for review and approval, its inspection plan for the Nickel-Alloy Nozzles and Penetrations Program, as it will be implemented from the applicant's participation in industry initiatives, prior to July 31, 2009. | Prior to July 31, 2009. |
| 23 | The Thermal Aging Embrittlement and Cast Austenitic Stainless Steel (CASS) Program is a new program applied to CASS components within Class 1 boundaries of the reactor coolant system and connected systems where operating temperature exceeds the threshold criterion. | Prior to the period of extended operation |
| 24 | The Pressurized Water Reactor (PWR) Vessel Internals Program is a new program that will incorporate the following— (1) RNP will continue to participate in industry programs to investigate aging effects and determine the appropriate AMP activities to address baffle and former assembly issues, and to address change in dimensions due to void swelling, (2) as Westinghouse Owners Group and Electric Power Research Institute MRP research projects are completed, RNP will evaluate the results and factor them into the PWR Vessel Internals Program as appropriate, and (3) RNP will implement an augmented inspection during the license renewal term. Augmented inspections, based on required program enhancements resulting from industry programs, will become part of the ASME Boiler & Pressure Vessel Code, Section XI program. Corrective actions for augmented inspections will be developed using repair and replacement procedures equivalent to those requirements in ASME Boiler & Pressure Vessel Code, Section XI. | Prior to the period of extended operation |
| 25 | One-Time Inspection Program activities consist of inspections of the following. (1) The AMP determined that an inspection of CCW heat exchanger tubing would be prudent to assure that potential degradation due to erosion was managed. | Prior to the period of extended operation |

| | | |
|----|--|---|
| | <p>(2) Miscellaneous piping in steam and power conversion systems protected by the Water Chemistry Program will be inspected. The One-Time Inspection Program will be used to select representative inspection locations.</p> <p>(3) The small bore reactor coolant system and connected piping will be inspected to verify effectiveness of the Water Chemistry Program. Components to be examined will be selected based on accessibility, exposure levels, nondestructive examination (NDE) techniques, and locations identified in NRC Information Notice 97-46.</p> <p>(4) Emergency diesel generator exhaust silencers.</p> <p>(5) Certain inaccessible areas of the containment liner plate and containment structure moisture barrier are required to be inspected to determine their material condition.</p> <p>(6) The diesel fire pump fuel oil tank.</p> <p>(7) Steam Generator feed ring/J-nozzles.</p> | |
| 26 | The Selective Leaching of Materials Program is a new program to determine the properties of selected components that may be susceptible to selective leaching. The program will ascertain whether loss of material is occurring and whether the process will affect the ability of the components to perform their intended function for the period of extended operation. | Prior to the period of extended operation |
| 27 | The Non-Environmentally Qualified Insulated Cables and Connections Program is a new program and involves inspecting accessible power and instrument and control cables at least once every 10 years. The technical basis for selecting a sample of cables to be inspected will be defined prior to the period of extended operation. The sample locations will consider the location of cables inside and outside containment, as well as any known adverse localized environments. | Prior to the period of extended operation |
| 28 | The Aging Management Program for Non-EQ Electrical Cables Used in Instrumentation Circuits is a new program that uses calibration or surveillance testing programs to identify the potential existence of aging degradation of cables. This program applies to the cables used in containment high-range radiation monitoring instrumentation circuits. The program has a 10-year frequency. | Prior to the period of extended operation |
| 29 | The Aging Management Program for Neutron Flux Instrumentation Circuits is a new program that will employ insulation resistance or other testing to identify the potential existence of aging degradation of cables in neutron monitoring circuits. The program has a 10-year frequency. | Prior to the period of extended operation |
| 30 | The Aging Management Program for Fuse Holders is a new program applicable to fuse holders located outside of active devices. The program utilizes thermography or other appropriate test methods to identify the potential existence of aging degradation. The program has a 10-year frequency. | Prior to the period of extended operation |
| 31 | The Aging Management Program for Bus Duct is a new program for inspecting bus duct for signs of cracks, corrosion, foreign debris, excessive dust buildup or discoloration which may indicate overheating, loosening of bolted connections, or water intrusion. The program applies to the iso-phase bus duct as well as to all nonsegregated 4.16 kV and 480 V bus duct within the scope of license renewal. The program has a 10-year frequency. | Prior to the period of extended operation |
| 32 | EQ packages are undergoing revision to incorporate increased | Prior to the period of |

| | | |
|----|---|---|
| | radiation values resulting from power uprate and will be updated prior to the end of the current license term. | extended operation |
| 33 | <p>Further action is required for management of environmental fatigue of the surge line for the period of extended operation. Therefore, fatigue of the surge line will be managed using one or more of the following options.</p> <ol style="list-style-type: none"> 1. Further refinement of the fatigue analyses to maintain the EAF-adjusted CUF below 1.0. 2. Repair of the affected locations. 3. Replacement of the affected locations. 4. Manage the effects of fatigue through the use of an reviewed and approved by the NRC. This includes periodic surface and volumetric examinations of the limiting locations at inspection intervals to be determined by a method accepted by the NRC. If this option is selected, the scope, qualification, method, and frequency will be provided to the NRC for review and approval prior to the period of extended operation. | Prior to the period of extended operation |
| 34 | In accordance with the requirements of the Environmental Qualification Program, any component that is not qualified through the period of extended operation will be refurbished or replaced prior to exceeding its qualified life. Prior to the period of extended operation, certain motoroperated valve actuators will either be reevaluated to demonstrate acceptable wear-cycle qualifications or they will be replaced. | As noted in commitment |
| 35 | To provide additional assurance of the tendons design capacity, testing (at integrated leak rate test pressure) similar to the Structural Integrity Test performed in 1992 will be scheduled to coincide with Appendix J containment integrated leak rate testing conducted during the period of extended operation (required frequency in accordance with 10 CFR 50, Appendix J). The monitoring criteria for these tests will be limited to deformations and cracking associated with the vertical prestressed tendons, and will not include radial monitoring. Guidelines for performing the IWL examinations for these tests will include additional emphasis on looking for a pattern of horizontal cracks, and additional cracking in the discontinuity areas. | As noted in commitment |
| 36 | Information from the response to RAI 4.5-1 will be incorporated into Section 3.8.1.4.7 of the UFSAR. This will include initial average prestressing force, losses, and final average prestressing force at 50 and 60 years as discussed in the response to RAI 4.5-1. This commitment supersedes the proposed changes shown on LRA Page A- 6 for UFSAR Section 3.8.1.4.7. | Prior to the period of extended operation |
| 37 | Prior to the period of extended operation, the Boraflex Monitoring Program will be modified to (1) include neutron attenuation testing, called blackness testing, to determine gap formation in Boraflex panels; (2) include trending the results for silica levels by using the EPRI RACKLIFE predictive code or equivalent, and (3) include measurements of boron areal density by techniques such as the BADGER device, RNP has requested, by letter dated May 28, 2003, Serial: RNP-RA/03-0038, an amendment to the Technical Specifications to eliminate the need to credit Boraflex neutron absorbing material for reactivity control. The Boraflex Monitoring Program will be eliminated upon NRC approval of this amendment or upon implementation of another option(such as re-racking the spent fuel pool) which eliminates the need to credit Boraflex for reactivity control. | Prior to the period of extended operation |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 2 - 9/23/1970
Date New License Expires: Unit 2 - 7/31/2030
Date Initial License Expires (prior to Period of Extended Operation):
Unit 2 - 7/31/2010
- B. Safety Evaluation Report (SER) NUREG Number: 1785
- C. Initial license renewal inspection reports numbers: 50-261/03-08,
05-261/03-09, 05-261/03-11

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT R.E. GINNA NUCLEAR POWER PLANT**

| No. | Commitment | Implementation Schedule |
|------------|---|-------------------------------------|
| 1 | Submit new pressure-temperature limit curves. | December 2004 |
| 2 | Implement a Fatigue Monitoring Program to confirm that the number of operating cycles (causing fatigue) are fewer than the plant design cycles. | June 2004 |
| 3 | Retension 23 containment tendons as part of the 2005 tendon testing tendon program. | May 2005 |
| 4 | Perform one-time inspections of selected plant equipment to verify that current plant aging management programs are effective in managing the effects of aging. | Prior to September 2009 |
| 5 | Replace or test a representative sample of fire water system sprinklers that have been in service for up to 50 years. | Prior to 2016 |
| 6 | Develop a Reactor Vessel Head Penetration Inspection Program, in concert with industry initiatives. | Ongoing initiative with NEI and MRP |
| 7 | Enhance Systems Monitoring Program to include all systems within the scope of license renewal and provide additional guidance for detecting aging effects. | June 2004 |
| 8 | Add the house heating boiler and associated components in screenhouse as requiring aging management review. | Prior to September 2009 |
| 9 | Locations judged to be potentially susceptible to thermal fatigue will be included in the sample population of small bore piping to be examined by appropriate volumetric technique. | Prior to September 2009 |
| 10 | The pressurizer manway stainless steel insert will receive a visual and surface examination as part of the applicant's Inservice Inspection Program to detect potential stress- corrosion cracking. | Prior to September 2009 |
| 11 | Add System Monitoring as an aging management program applicable to the pipe represented by Table 3.4-2, line number (42) | Prior to September 2009 |
| 12 | Develop an engineering guidance document that will direct inspections to evaluate galvanic corrosion at susceptible locations in a raw (service) water environment. | Prior to September 2009 |
| 13 | Develop an aging management program basis document to periodically measure insulation resistance of nuclear instrumentation system and high range radiation monitoring circuits | Prior to September 2009 |
| 14 | Thermographic inspections of 34.5 kV transformer yard components are to be performed at least once per refueling cycle while the components are energized. | Prior to September 2009 |
| 15 | Perform visual inspections and ultrasonic testing thickness measurements of the containment liner during 2005 RFO. | 2005 RFO |

| No. | Commitment | Implementation Schedule |
|-----|---|---|
| 16 | Perform hardness tests, if feasible, on emergency diesel generator jacket water coolers and lube oil coolers channel heads. | 2005 RFO |
| 17 | Perform visual inspections of phase bus. | Prior to 2012 |
| 18 | Perform two structural integrity tests at design pressure during period of extended operation. | 2015 & 2026 |
| 19 | Reexamine liner and restore thickness if below acceptance criteria. | 2005 |
| 20 | Include measurement of voltage between reference cells and rock anchors into Periodic Surveillance and Preventive Maintenance Program. | Prior to 2005 |
| 21 | Define selection criteria, sample size, and periodicity of inspections for fire system piping | Prior to September 2009 |
| 22 | Submit Reactor Vessel Internals Program for staff review and approval. | September 2007 |
| 23 | Add component cooling water makeup water piping, valves and pumps from the refueling water storage tank to the spent fuel pool into the scope of license renewal. | July 2004 |
| 24 | Perform joint resistance tests when visual inspections of PVC boots or other materials of construction indicate that the joint may be overheating. | July 2004 |
| 25 | Add spent fuel pool (SPF) makeup path from refueling water storage tank to the SFP into scope of license renewal. | July 2004 |
| 26 | Add fire service water (SW) booster pump and associated valves and piping back to the SW system into the scope of license renewal. | July 2004 |
| 27 | Add medium-voltage cables M0089 and M0108 into the scope of license renewal and develop aging management program consistent with NUREG-1801, Section XI.E3. | July 2004 |
| 28 | Withdraw surveillance capsule in Spring 2005 and submit test report of results within one year, in accordance with 10 CFR 50, App. H, paragraph IV.A. Withdraw last surveillance capsule shortly after accumulating fluence equivalent to 80 years of operation. | Spring 2005 2011 RFO |
| 39 | Perform inspections of thimble tubes for wear and stress-corrosion cracking (SCC) each refueling outage. VT-1 quality inspect stainless steel fillet weld joining the bottom mounted instrument (BMI) guide tube to the end of each BMI penetration, as well as the 82/182 weld between the SS safe end and the lower penetration nozzle, each refueling outage. | RFOs beginning in 2005: wear of thimble tubes RFOs beginning in 2009; SCC of thimble tubes RFOs beginning in 2005 |
| 40 | Submit License Amendment Request to incorporate specific particulate testing for diesel generator fuel oil, ASTM D2276 (or its successor), and eliminate the need for the "clear and bright" method of ASTM D4176. | December 2004 |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: 9/19/1969
Date New License Expires: 9/18/2029
Date Initial License Expires (prior to Period of Extended Operation):
9/18/2009

- B. Safety Evaluation Report (SER) NUREG Number: 1786

- C. Initial license renewal inspection reports numbers: 50-244/03-10,
50-244/03-08

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT VIRGIL C. SUMMER NUCLEAR STATION**

| No. | Commitment | Implementation Schedule |
|------------|--|---|
| 1 | The applicability of the VCSNS QA Program applies equally to existing programs as to new programs being developed for license renewal. Generic statements regarding the applicability of the VCSNS QA Program will be made to the FSAR Section 18.1 for all of the programs credited to manage aging effects for in-scope SSCs. | Prior to the end of the current operating license term. |
| 2 | The Above Ground Tank Inspection will be consistent with XI.M32, <i>One-Time Inspection</i> , as identified in NUREG-1801. The Above Ground Tank Inspection will be performed prior to the period of extended operation. | Prior to the end of the current operating license term. |
| 3 | The following enhancements will be incorporated into the Alloy 600 Aging Management Program. Changes indicated by emerging regulatory requirements and developed by the industry groups will be implemented for the applicable Attributes. | Prior to the end of the current operating license term. |
| 4 | For those systems outside of containment, VCSNS intends to enhance the Surveillance Test Procedures already required by Technical Specifications for leakage of primary coolant sources outside containment. These leakage assessment tests are for the following systems: Boron Recycle, Liquid Waste, Nuclear Sampling, Chemical and Volume Control, Residual Heat Removal, and RB Spray. In addition to these, VCS intends to enhance the leak tests performed for the SI Accumulators and the Spent Fuel Pool Cooling. These test procedures will be enhanced to specify inspecting for boric acid crystallization on the system being tested and, when boric acid is found, on surrounding systems. The enhancements to the procedures will be noted on the procedures and maintained as license renewal commitments. | Prior to the end of the current operating license term. |
| 5 | The Buried Piping and Tanks Inspection will be consistent with XI.M34, <i>Buried Piping and Tanks Inspection</i> , as identified in NUREG-1801. | Prior to the end of the current operating license term. |
| 6 | Prior to the period of extended operation, one-time inspections will be conducted in low flow areas of various treated water systems to demonstrate the effectiveness of the Chemistry Program for various material/environment combinations. | Prior to the end of the current operating license term. |
| 7 | The Diesel Generator Systems Inspection will be consistent with XI.M32, <i>One-Time Inspection</i> , as identified in NUREG-1801 prior to the period of extended operation. The Diesel Generator Systems Inspection will be performed prior to the period of extended operation. | Prior to the end of the current operating license term. |
| 8 | The following enhancement will be incorporated into the Fire Protection Program prior to the period of extended operations. Sprinklers will either be replaced or representative samples will be submitted to a recognized laboratory for field service testing in accordance with NFPA code 25. Subsequent replacement or field service testing of representative samples will occur at 10-year intervals. | Prior to the end of the current operating license term. |

| | | |
|----|---|--|
| 9 | The following enhancement will be incorporated into the Fire Protection Program prior to the period of extended operations. Ultrasonic testing of representative portions of above ground fire protection piping that are exposed to water but do not normally experience flow will be performed before the end of the current operating term. Ultrasonic testing of a representative sample of these stagnant sections of piping will be conducted at 10-year intervals thereafter. | Prior to the end of the current operating license term. |
| 10 | A one-time inspection of the Fire Service System will be performed to determine if aging management is required for brass and cast iron components during the period of extended operation. The inspection activity will detect and characterize loss of material due to selective leaching. This inspection will use suitable hardness measurement techniques at the most susceptible (sample) locations. | Prior to the end of the current operating license term. |
| 11 | The Non-EQ Insulated Cables and Connections Inspection Program will be consistent with XI.E1, <i>Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements</i> , as identified in NUREG-1801 prior to the period of extended operation. In addition to the visual inspection of in-scope, passive fuse holders on a 10-year periodicity for indication of age related degradation, the metallic fuse clip portion of the in-scope, passive fuse holders that are found to be susceptible to age related degradation, will receive a continuity check or will undergo thermography or other appropriate test on a representative sample basis to assure the metallic fuse clip is still making a good connection. | Prior to the end of the current operating license term. |
| 12 | The Aging Management Programs for cracking of the Core Support Pads and Bottom Head Penetrations include the Alloy 600 Aging Management Program, Chemistry Program, as well as the In-Service (ISI) Plan. ISI inspections are done in accordance with the ASME code requirements. VCSNS is active in industry groups specifically EPRI and WOG. New developments will be reviewed and if deemed appropriate incorporated into the aging management of the Core Support Pads and Bottom Head Penetrations. | Prior to the end of the current operating license term. |
| 13 | Inspections for Mechanical Components will manage the relevant aging effects for mechanical components constructed of carbon steel, low alloy steel, and other susceptible materials. These inspections will follow the same frequency as Maintenance Rule Inspections (five years) and the baseline inspection would occur within five years of obtaining the new license. Based upon the results of these inspections, or any new industry experience, the frequency may increase. | Every five years with baseline inspection within five years of obtaining the new license |
| 14 | The Liquid Waste System Inspection will be consistent with XI.M32, <i>One-Time Inspection</i> , as identified in NUREG-1801 prior to the period of extended operation. The Liquid Waste System Inspection will be performed prior to the period of extended operation. | Prior to the end of the current operating license term. |
| 15 | The following enhancements will be incorporated into the Maintenance Rule Structures Program prior to the period of extended operation. (1) - Future inspections will add: North Berm, Electrical Manhole EMH-2 interior inspection, Inaccessible Areas when exposed by excavation, Flood Barrier Seals for Control, Intermediate, and Diesel Generator Buildings, Portions of the power path from the power circuit breaker (PCB) in the substation to the safety-related buses, and Groundwater chemical analyses. (2) - Groundwater chemical analyses will include: pH, Sulfates and Chlorides. Groundwater chemical analyses will be used to monitor changes in aggressiveness of the below grade environment. | Prior to the end of the current operating license term. |
| 16 | The Reactor Building Cooling Unit Inspection will be consistent with XI.M32, <i>One-Time Inspection</i> , as identified in NUREG-1801 prior to the period of extended operation. The Reactor Building Cooling Unit Inspection will be performed prior to the period of extended operation. | Prior to the end of the current operating license term. |

| | | |
|----|---|---|
| 17 | <p>The Reactor Vessel Internals Inspection will be consistent with XI.M16, <i>PWR Vessel Internals</i>, as identified in NUREG-1801. The program details have not been developed. VCSNS will follow industry initiatives and will have the program in place prior to the period of extended operation.</p> <p>With respect to cracking due to SCC & IASCC, staff approved recommendations of the industry initiatives applicable to inspection of vessel internals will be implemented. It is the intent of VCSNS to follow staff approved industry initiatives for these inspections.</p> <p>With respect to IASCC, and loss of fracture toughness due to neutron irradiation embrittlement of the RV interval components, VCSNS will follow industry initiatives develop a reactor vessel internals inspection program which will be in place prior to the period of extended operation. It is the intent of VCSNS to follow industry initiatives for this inspections.</p> | Prior to the end of the current operating license term. |
| 18 | <p>With respect to changes in dimensions due to void swelling, industry activities (including WOG and EPRI) are under way to better characterize the effect and, if necessary, to develop and qualify methods for detection and management. These activities will be monitored by VCSNS and implemented, as applicable. It is the intent of VCSNS to follow industry initiatives for these inspections.</p> | Prior to the end of the current operating license term. |
| 19 | <p>The following enhancement will be incorporated into the Reactor Vessel Surveillance Program prior to the period of extended operation. Perform a one-time analysis to demonstrate that the materials in the inlet and outlet nozzles and upper shell course will not become controlling during the period of extended operations.</p> | Prior to the end of the current operating license term. |
| 20 | <p>A program will be established at the end of RF-14 to ensure that the plant is operated under conditions to which the surveillance capsules were exposed and the exposure conditions of the Reactor Vessel will be monitored to ensure that they continue to be consistent with those used to project the effects of embrittlement to the end of license. This program will be supplemented or revised by using alternative dosimetry during the period of extended operation.</p> | RF-15 |
| 21 | <p>The Service Air System Inspection will be consistent with XI.M32, <i>One-Time Inspection</i>, as identified in NUREG-1801. The Service Air System Inspection will be performed prior to the period of extended operation.</p> | Prior to the end of the current operating license term. |
| 22 | <p>The following enhancements will be incorporated into the Service Water Pond Dam Inspection Program. (1) - Scope - North Dam piezometers will be added. (2) - Parameters Monitored / Inspected - Water level. (3) - Monitoring and Trending - Inspections will be made every 5-years concurrent with the RG 1.127 inspections. (4) - Acceptance Criteria - Nominal elevation of adjacent Service Water Pond and Monticello Reservoir.</p> | Prior to the end of the current operating license term. |
| 23 | <p>The Small Bore Class 1 Piping Inspection will be consistent with XI.M32, <i>One-Time Inspection</i>, as identified in NUREG-1801. The Small Bore Class 1 Piping Inspection will be scheduled at or near the end of the second period of the fourth ISI interval.</p> <p>VCSNS will evaluate the small-bore class 1 piping with a methodology that is approved by the Staff. The present approved methodology is to perform destructive examinations of small-bore piping. The approved method will be incorporated into the Small Bore Class 1 Piping Inspection.</p> | Before the end of the second period of the fourth ISI interval. |
| 24 | <p>The Waste Gas System Inspection will be consistent with XI.M32, <i>One-Time Inspection</i>, as identified in NUREG-1801. The Waste Gas System Inspection will be performed prior to the period of extended operation.</p> | Prior to the end of the current operating license term. |

| | | |
|----|---|---|
| 25 | The Heat Exchanger Inspections will be consistent with XI.M32, <i>One-Time Inspection</i> , and XI.M33, Selective Leaching of Materials, as identified in NUREG-1801. The Heat Exchanger Inspections will be performed prior to the period of extended operation. | Prior to the end of the current operating license term. |
| 26 | The Area Based Inspections for Refined 10 CFR 54.4(a)(2) Criteria Commodities is a new one-time inspection that will detect and characterize loss of material due to general, crevice, and pitting corrosion resulting from exposure to an unmonitored and uncontrolled water environment. The Area Based Inspections for Refined 10 CFR 54.4(a)(2) Criteria commodities will be performed prior to the period of extended operation. | Prior to the end of the current operating license term. |
| 27 | This is a new program. A summary description of the X1.E2 GALL type program was provided. In this program, calibration results on findings of surveillance testing programs will be used to identify the potential existence of aging degradation. This program applies to the in-scope instrumentation cables that are included in the circuit during loop calibrations. | Prior to the end of the current operating license term. |
| 28 | VCSNS will establish a GALL type program for relevant, non-EQ, in-scope I&C cables with sensitive, low-level signals for the NI and RM systems. Implementation of an alternate program will be considered, when appropriate, for low signal level NI and RM circuit cables without loop calibrations, after the industry finalizes the approach. | Prior to the end of the current operating license term. |
| 29 | VCSNS recognizes the potential uncertainties involved with water treeing, even with ducts that are sloped to preclude moisture accumulation, and will create a program consistent with NUREG-1801 section XI.E3. The VCSNS program described herein will result in a 10-year test interval by an appropriate industry approved testing method selected to validate the satisfactory condition of the cable insulation and to give some assurance of the remaining life of the cable, while not damaging the cable itself. The specific type of test performed will be determined prior to the initial test. The 10-year interval will commence prior to the start of the period of extended operation. | Prior to the end of the current operating license term. |
| 30 | Additional analyses are required to calculate Charpy Upper-Shelf Energy for the end of the period of extended operation. Following adequate capsule exposure, a capsule will be withdrawn and analyzed. The Charpy Upper-Shelf Energy will be recalculated for additional fast neutron fluence corresponding to the end of the extended operating period. The capsule will be tested and will provide bounding data for the EOL fluence of 54 EFPY. | Prior to the end of the current operating license term. |
| 31 | The pressure-temperature limit curves will be recalculated following the removal of one of the remaining surveillance capsules from the vessel. The surveillance capsule will be removed when the calculated fast neutron fluence on the capsule meets or exceeds the calculated fast neutron fluence on the vessel wall at the end of the period of extended operation. The Technical Specifications will be updated as required by 10 CFR 50.61. The LTOP analysis will be done as part of this calculation revision. | Prior to the end of the current operating license term. |
| 32 | The VCSNS Thermal Fatigue Management Program will be revised by the end of the current license term (40 years) to base future projections on 60 years of operation and to account for environmental effects of the reactor coolant environment on RCS components. For the NUREG/CR-6260 locations, VCSNS will evaluate the Fatigue Environmental Effects prior to the period of extended operation. VCSNS will evaluate the fatigue usage for components with a methodology that is approved by the Staff. The present approved methodology is to use the correlations contained in NUREG/CR-6583, for Carbon and Low-Alloy Steels and NUREG/CR-5704, for Austenitic Stainless Steels. Component CUF will be maintained below 1.0. | Prior to the end of the current operating license term. |

| | | |
|----|--|---|
| 33 | The leak-before-break analyses are currently valid for 40 years. The analyses require revision in order to demonstrate that the design is adequate for the extended period of operation. | Prior to the end of the current operating license term. |
| 34 | [RC Loop 'B' hot leg sampling portion of SS.] The present sampling method seldom uses loop sampling. VCSNS will administratively limit of activities on the "B" RCS loop sampling line in order to account for 60 years of plant operation. | Prior to the end of the current operating license term. |
| 35 | Prior to the period of extended operation, the equipment subject to the provisions of 10 CFR 50.49 will be re-evaluated for 60 years of installation. Components not meeting a 60 year qualified life will be replaced prior to expiration of qualified life. | Prior to the end of the current operating license term. |
| 36 | As appropriate, station documents will be revised or established, implemented, and maintained to cover the aging management programs and activities described in Chapter 18. | Varies by program and activity |
| 37 | VCSNS is developing a process which will be implemented to capture the LRA methodology and guidance for use during the period of extended operation to satisfy the requirements of 10 CFR 54.35. Existing plant programs and procedures (associated with aging management) will be revised and/or enhanced to identify those commitments (governed by the license / CLB) which cannot be altered without prior review against the LRA criteria. New "one-time inspection" aging management programs will be developed in accordance with the LRA, incorporating the commitment process identified above. | Prior to the end of the current operating license term. |
| 38 | Plant procedures which impact "control of facility changes", including modifications and documentation, will be reviewed to determine an acceptable screening review process against the 10 CFR 54 requirements to ensure consistency with the LRA methodology and guidance. | Prior to the end of the current operating license term. |
| 39 | To support Items 38 and 39 above, a License Renewal DBD will be developed as a guidance document which can be used for all future plant procedure, documentation and modification changes to ensure consistency with 10 CFR 54. | Prior to the end of the current operating license term. |
| 40 | All Technical Reports, which have been developed to substantiate the LRA submittal, are filed as permanent records and will be available for future reference and/or update. | Prior to the end of the current operating license term. |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: 11/12/1982
Date New License Expires: 8/6/2042
Date Initial License Expires (prior to Period of Extended Operation):
8/6/2022
- B. Safety Evaluation Report (SER) NUREG Number: 1787
- C. Initial license renewal inspection reports numbers: 50-395/03-07,
50-395/03-08

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT DRESDEN NUCLEAR POWER STATION**

| No. | Commitment | Implementation Schedule |
|------------|---|---|
| 1 | Both Dresden and Quad Cities will be implementing RI-ISI and its alternative inspections for Class 1 and 2 piping within the scope of license renewal. The requirements of ASME Code, Section XI will be implemented in accordance with 10 CFR 50.55(a). | Prior to the period of extended operation |
| 2 | Water Chemistry program will be enhanced to provide increased sampling to verify corrective actions are taken to address abnormal chemistry conditions. The Quad Cities procedure for turbine building sample panel collection will be revised to assure maintenance of the integrity of chemistry samples. | Prior to the period of extended operation |
| 3 | BWR Feedwater Nozzle program will be enhanced to implement the recommendations of Revision 1, Version A of report GE-NE-523-A71-0594-A, Revision 1, which was approved by the NRC staff. | Prior to the period of extended operation |
| 4 | BWR Stress Corrosion Cracking program will be enhanced to include an additional ultrasonic examination of the Quad Cities Unit 2 reactor vessel head crack (detected in 1990) to verify that the relevant indication has remained essentially unchanged. | End of 2018 (plus or minus 2 years) |
| 5 | BWR Vessel Internals program will be enhanced as follows: (1) Additional inspections will be performed when new inspection techniques and tooling are developed, incorporated into applicable BWRVIP document(s), and approved by the NRC. (2) Dresden and Quad Cities agree to perform inspections of the top guide similar to inspections of the control rod drive housing guide tube. However, Exelon reserves the right to modify the above agreed upon inspection program should the BWRVIP-26 be revised in the future. (3) Exelon has made commitments to ensure that the Dresden and Quad Cities steam dryers will maintain their structural integrity at EPU power levels for longterm operation and will not generate loose parts. These commitments have been submitted to the NRC for acceptance in a letter dated May 12, 2004. Should Exelon's plans not be successful, Exelon will include the steam dryers in the scope of license renewal under 10 CFR 54.4(a)(2) and will provide the appropriate aging management in accordance with 10 CFR 54.37(b). | As approved by the NRC |
| 6 | An aging management program will be implemented for thermal aging and neutron irradiation embrittlement of CASS reactor internal components within the scope of license renewal. A component specific evaluation for the loss of fracture toughness will be included. For those components where the loss of fracture toughness may affect the function of the component, an inspection will be performed as part of the ISI program. | Prior to the period of extended operation |

| | | |
|----|---|---|
| 7 | Flow-Accelerated Corrosion program will be enhanced to include portions of the main steam and the reactor vessel head vent systems that are within the scope of license renewal. | Prior to the period of extended operation |
| 8 | <p>Bolting Integrity program will be enhanced to do the following:</p> <p>(1) Credit periodic in-service Inspection piping and component preventive maintenance inspections, system engineering walkdowns, and routine walkdowns to inspect for leakage and visual indications of loose bolts; trend walkdown results</p> <p>(2) Manage the loss of preload for closure bolting in the reactor vessel system, recirculation pumps, reactor recirculation valves, reactor vessel head vent valves, and the reactor pressure boundary portion of all other systems.</p> <p>(3) Credit periodic inspections of the closure bolting in accordance with the ASME Code Section XI requirements.</p> <p>(4) Inspect bolted joints of diesel generator system components, component bolted joint inspections in high-humidity/moisture areas (pump vaults), and reactor vessel-to-ring girder bolting.</p> <p>(5) Enhance implementing procedure to reference NUREG-1339.</p> | Prior to the period of extended operation |
| 9 | Open-Cycle Cooling Water Program will be enhanced to include periodic inspections of cooling water pump internal linings, additional heat exchangers and sub-components, external surfaces of various submerged pumps, components in the high humidity/moisture environments of the pump vaults, and piping. At Dresden only, periodic visual inspections will be performed of strainer internals in the CCSW supply line to the main control room HVAC | Prior to the period of extended operation |
| 10 | Closed-Cycle Cooling Water Program will be enhanced to provide monitoring of specific parameters in accordance with EPRI TR-107396 guidance. This will include provisions for monitoring parameters such as pH, specific gravity, freeze point, reserve alkalinity, percent glycol and suspended solids in glycol based systems as appropriate. At Dresden, the program will include monitoring of pH and ammonia in the diesel generator jacket water. | Prior to the period of extended operation |
| 11 | Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems program will be enhanced to include specific inspections for rail wear and proper crane travel on the rails, and for corrosion of crane structural components. | Prior to the period of extended operation |
| 12 | Compressed Air Monitoring program will be enhanced to include periodic inspections on those portions of the instrument air distribution piping in the scope of license renewal. The program will also include additional air sample points representative of the inscope piping. Additionally, at Dresden only, periodic blowdowns will be provided of the instrument air receiver tanks. | Prior to the period of extended operation |

| | | |
|----|--|---|
| 13 | <p>Fire Protection program will be enhanced as follows:</p> <p>(1) Specific guidance will be provided to check fire doors for wear and holes in skin. At Quad Cities only, the program will be revised to include the requirement to check fire door clearances.</p> <p>(2) Periodic inspections will be performed for corrosion on the external surfaces of piping and components for the carbon dioxide systems; and for the external surfaces of the Dresden halon system.</p> <p>(3) Specific guidance will be provided for examining the fire pumps and the Dresden isolation condenser makeup pump diesel fuel supply systems for leaks during pump tests.</p> <p>(4) Periodic capacity tests will be performed on the Dresden isolation condenser diesel-driven makeup pumps.</p> <p>(5) At Dresden, frequency of inspections will be provided for fire doors and spill barriers.</p> <p>(6) The program will be revised to perform a visual inspection (VT-1 or equivalent) on a 10% sample population of each type of fire seal on a refueling outage frequency. Additionally, the program will be revised to expand the sample population by 10% if any of the inspected seals are found to have abnormal degradation that could prevent the seal from performing its intended function.</p> | Prior to the period of extended operation |
| 14 | <p>Fire Water System program will be enhanced as follows:</p> <p>(1) Periodic non-intrusive wall thickness measurements will be provided of selected portions of the fire water system.</p> <p>(2) Periodic inspections will be performed on the external surfaces of submerged fire pumps, outdoor fire hydrants, and outdoor transformer deluge system components.</p> <p>(3) Sampling of sprinklers will be performed in accordance with NFPA 25, "Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems."</p> | Prior to the period of extended operation |
| 15 | <p>Above-ground Carbon Steel Tanks program will be enhanced as follows:</p> <p>(1) Periodic system engineer walkdowns will be performed on the nitrogen storage tanks utilizing stand-alone procedures.</p> <p>(2) At Quad Cities, a one-time UT thickness inspection will be performed of the aluminum condensate storage tank or demineralized water storage tank.</p> <p>(3) At Dresden, periodic internal/external inspections of the aluminum storage tanks will be performed, and periodic UT thickness inspections will be performed of the bottoms will be performed</p> | Prior to the period of extended operation |
| 16 | <p>Fuel Oil Chemistry program will be enhanced to include inspection of the fuel oil storage tank interiors for corrosion during regularly scheduled tank cleanings.</p> | Prior to the period of extended operation |
| 17 | <p>Reactor Vessel Surveillance The program will be enhanced as follows:</p> <p>(1) The Integrated Surveillance Program (ISP) for the license renewal period (in accordance with proposed BWRVIP-116) will be implemented when approved by the NRC.</p> <p>(2) If BWRVIP-116 is not approved, a plant-specific surveillance plan will be provided for the license renewal period in accordance with Appendices G and H to 10 CFR Part 50</p> | Prior to the period of extended operation |

| | | |
|----|--|---|
| 18 | <p>One-time inspection sampling will be performed on the following:</p> <ul style="list-style-type: none"> (1) at Dresden, spent fuel pool cooling and demineralizer system components for corrosion in stagnant locations (2) condensate and torus water components for corrosion in stagnant locations (3) compressed gas system piping components for corrosion (4) compressed gas system flexible hoses for age related degradation (5) lower sections of carbon steel fuel oil and lubricating oil tanks for reduced thickness (6) fuel oil and lubricating oil piping and components for corrosion (7) control room ventilation, EDG ventilation, SBO building ventilation, reactor building ventilation, and standby gas treatment system components for loss of material (8) HPCI lubrication oil hoses for age related degradation (9) non-safety-related vent and drain components for age related degradation (10) 10 CFR 54.4(a)(2) components for corrosion (11) piping exposed to containment atmosphere for loss of material (12) torus saddle supports to confirm condition of drywell radial beam lubrite baseplates (13) 10% of high and medium risk butt welds in ASME Code, Class 1, NPS < 4 in. piping (14) stainless steel components in CRD hydraulic system and stainless steel clevis pins in torus water environment for stress corrosion cracking; clevis pin interface with uncoated carbon steel in torus water environment for galvanic corrosion (15) sample of stainless steel standby liquid control system components not in reactor coolant pressure boundary section of SBLC system for cracking | Prior to the period of extended operation |
| 19 | <p>A sample of components that are made of susceptible materials will be visually inspected for evidence of selective leaching. The sample will be expanded if failed conditions are identified.</p> | Prior to the period of extended operation |
| 20 | <p>Buried Piping and Tanks Inspection program will be enhanced as follows:</p> <ul style="list-style-type: none"> (1) A one-time visual inspection will be performed on the external surface of a section of buried ductile iron fire main piping (including a mechanical joint). (2) A one-time internal UT of one buried steel tank per site will be performed. (3) At Quad Cities, periodic leakage checks will be performed on buried carbon steel fuel oil storage tanks. | Prior to the period of extended operation |
| 21 | <p>ASME Code, Section XI, Subsection IWE program will be enhanced as follows:</p> <ul style="list-style-type: none"> (1) The program will be based on the latest edition and addenda, which is approved by the NRC 12 months prior to the end of the current 120-month inspection interval. (2) The program will be updated in accordance with 10 CFR 50.55(a). (3) Additional inspections of the Dresden Unit containment shell for corrosion will be provided. (4) Requirements will be provided in Quad Cities procedures to ensure that sand pocket drains are clear. (5) The pressurized testing methodology will be credited for managing the aging of bellows. | Prior to the period of extended operation |

| | | |
|----|--|---|
| 22 | <p>ASME Code, Section XI, Subsection IWF program will be enhanced to include inspection of Class MC component supports consistent with NUREG-1801, Chapter III, Section B1.3. The ASME Code, Section XI, Subsection IWF program will manage the aging of the following Class MC supports:</p> <ol style="list-style-type: none"> (1) Biological Shield to Containment Stabilizer (2) RPV Male Stabilizer Attached to Outside of Drywell Shell (3) RPV Female Stabilizer and Anchor Rods (4) Suppression Chamber Ring Girder Vertical Supports and Base Plates (5) Suppression Chamber Saddle Supports and Base Plates (6) Suppression Chamber Seismic Restraints and Base Plates (7) Vent Header Vertical Column Supports | Prior to the period of extended operation |
| 23 | <p>Structures Monitoring Program program will be enhanced to add the following which will be implemented prior to the period of extended operation:</p> <ol style="list-style-type: none"> (1) inspections of structural steel components in secondary containment, flood barriers, electrical panels and racks, junction boxes, instrument panels and racks, and offsite power structural components and their foundations, and the Quad Cities discharge canal weir as part of the ultimate heat sink (2) periodic reviews of chemistry data on below-grade water to confirm that the environment remains non-aggressive for aggressive chemical attack of concrete or corrosion of embedded steel (3) inspection of a sample of non-insulated indoor piping external surfaces at locations immediately adjacent to periodically inspected piping supports and inspection of standard components such as snubbers, struts, and spring cans. (4) program reference to specific insulation inspection criteria for existing cold weather preparation and inspection procedures for outdoor insulation, and the establishment of new inspections for various indoor area piping and equipment insulation (5) inspection parameters for non-structural joints, roofing, grout pads and isolation gaps (6) Extension of inspection criteria to the structural steel, concrete, masonry walls, equipment foundations, and component support sections of the program (7) VT-3 visual inspections of 15% of the non-exempt Class MC pipe supports once every 10 years | Prior to the period of extended operation |
| 24 | <p>RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants program will be enhanced to add the following:</p> <ol style="list-style-type: none"> (1) monitoring of crib house concrete walls and slabs with an opposing side in contact with river water (2) inspection for structural integrity of concrete and steel components and identification of specific types of components to be inspected (3) periodic monitoring of the Dresden discharge outfall concrete structure (4) at Quad Cities, periodic inspections of the concrete of the discharge flume/canal and the weir gate in the discharge canal | Prior to the period of extended operation |
| 25 | <p>Protective Coating Monitoring and Maintenance Program will be enhanced as follows:</p> <ol style="list-style-type: none"> (1) visual inspection of Service Level I coatings near sumps or screens associated with the emergency core cooling system (2) pre-inspection review of previous reports so that trends can be identified for the program (3) analysis of coating failures to determine reasons for failures | Prior to the period of extended operation |

| | | |
|----|---|---|
| 26 | A program will be developed that is consistent with NUREG-1801 AMP XI.E1 for electrical cables and connections installed in adverse localized environments not subject to 10 CFR 50.49 environmental qualification requirements. | Prior to the period of extended operation |
| 27 | Metal Fatigue of Reactor Coolant Pressure Boundary program will be enhanced to utilize the EPRI-licensed FatiguePro computer program for monitoring fatigue at bounding locations for reactor pressure vessel, Class I piping, torus, torus vents, and torus attached piping and penetrations, SRV discharge lines, and the Dresden isolation condenser. | Prior to the period of extended operation |
| 28 | A program will be developed to manage aging of cables in sensitive instrumentation circuits with low-level signals in the Nuclear Instrumentation Systems and Radiation Monitoring Systems. The program will include a review of calibration and surveillance results, and cable testing every 24 months (SRM, IRM circuits) for cable aging degradation before the period of extended operation and every 10 years thereafter. This program applies to the cables of the Nuclear Instrumentation Systems which includes source range monitors, intermediate range monitors, local power range monitors, and Radiation Monitoring Systems which includes drywell high range radiation monitors, main steam line radiation monitors, and the steam jet air ejector radiation monitors. | Prior to the period of extended operation |
| 29 | At Dresden, a new condition monitoring program will be provided in accordance with NUREG-1801, AMP XI.E3 to manage aging of five inaccessible medium-voltage cables feeding the service water pumps. The cables will be tested at least once every ten years. The end of the cribhouse duct bank will be inspected annually to verify that the duct run is not plugged with debris. | Prior to the period of extended operation |
| 30 | A program will be developed and implemented to periodically inspect non-segregated bus ducts that connect the reserve auxiliary transformers (RATs) to 4160V ESS buses, the nonsegregated bus ducts that connect the EDG to the ESS buses, and, for Dresden only, the non-segregated bus ducts that connect ESS buses. The bus duct internal components and materials will be visually inspected for signs of aging degradation. The program will include the following: (1) inspection of accessible normally energized non-segregated bus duct internal components such as insulation materials, bus duct support pieces, gaskets, insulating boots, taped connections, and bus bar sleeves for material surface anomalies for nonsegregated bus duct that connects the RATs to the 4160V ESS buses (2) inspection of bus bar insulation material at the accessible bolted connections of the non-segregated bus duct that connects the RATs to the 4160V ESS buses (3) inspection of 10% of the splice insulation material at the bolted connections (including all visible insulation in both directions beyond the location of the bolted connection splice insulation inspected) for the non-segregated bus duct that connects the EDG to the ESS buses and, for Dresden only, the non-segregated bus duct that connects the ESS buses for signs of aging degradation that indicate possible loose connections (4) inspections for the presence of dirt or moisture in the bus duct | Prior to the period of extended operation |

| | | |
|----|---|---|
| 31 | <p>Periodic Inspection of Ventilation System Elastomers program will be enhanced to include inspection of aging of all elastomers, flexible boots, access door seals and gaskets, filter seals and gaskets, and RTV silicone used as a duct sealant, in the components of the SBO ventilation and Reactor Building ventilation systems for Dresden, and the SBO ventilation and EDG Room ventilation systems for Quad Cities. The inspections will be performed to detect cracking, loss of material, and other evidence of aging. Tests of seals for hardening will be included if evidence of aging is found.</p> | Prior to the period of extended operation |
| 32 | <p>Lubricating Oil Monitoring Activities program will be enhanced to include those components exposed to an environment of lubricating oil in the following systems:</p> <ul style="list-style-type: none"> (1) the reactor core isolation cooling system (Quad Cities only) (2) the main generator hydrogen seal oil system (Quad Cities only) (3) the high pressure coolant injection system (4) the emergency diesel generator and auxiliaries system (5) the station blackout diesel system (6) the electro-hydraulic control system | Prior to the period of extended operation |
| 33 | <p>An aging management program will be developed and implemented for heat exchangers in the scope of license renewal that are not tested and inspected by the Open-Cycle Cooling Water System and Closed-Cycle Cooling Water System aging management programs. Specifically, for the Dresden isolation condensers, the augmentation activities identified in NUREG-1801, lines IV.C1.4-a and IV.C1.4-b to manage loss of material and cracking will also be included in this aging management program, and will provide the following:</p> <ul style="list-style-type: none"> (1) temperature and radioactivity monitoring of the shell-side (cooling) water (2) eddy current testing of the tubes (3) visual inspections of the channel head, tube sheets, and internal surfaces of the shell | Prior to the period of extended operation |
| 34 | <p>An aging management program will be developed and implemented to inspect components in the Plant Heating system once before the end of the current operating term and periodically at intervals not to exceed once every 5 years during the period of extended operation.</p> | Prior to the period of extended operation |
| 35 | <p>Revised P-T limits will be prepared and submitted to the NRC for approval prior to the start of the extended period of operation using an approved fluence methodology for Dresden and Quad Cities.</p> | Prior to the period of extended operation |
| 36 | <p>The Dresden Unit 2 jet pump riser braces will be repaired or replaced prior to the period of extended operation.</p> | Prior to the period of extended operation |

| | | |
|----|--|---|
| 37 | Plant-specific calculations will be performed for applicable locations identified in NUREG/CR 6260, "Application of NUREG/CR-5999 Interim Fatigue Curves to Selected Nuclear Power Plant Components," for older-vintage BWR plants, to assess potential effects of reactor coolant on component fatigue life in accordance with 10 CFR 54.21(c)(1)(ii). Exelon reserves the right to modify this position in the future based on the results of industry activities currently underway, or based on other results of improvements in methodology, subject to NRC approval prior to changes in this position. | Prior to the period of extended operation |
| 38 | A reanalysis will be applied to EQ components now qualified for the current operating term of 40 years. The EQ Binders for components within the scope of 10 CFR 50.49 will be updated to include environmental conditions associated with EPU implementation together with an extended operating period of 60 years. | Prior to the period of extended operation |
| 39 | The corrosion rate assumptions used in the calculation of the drywell steel plate remaining thickness at the sand pocket level will be confirmed by a Dresden Unit 3 UT inspection prior to the period of extended operation. The results will be used to revise the associated corrosion calculation and validate that an acceptable wall thickness will remain to the end of the 60-year licensed operating period. | Prior to the period of extended operation |
| 40 | The corrosion rate assumptions used in the calculation of the ECCS Suction strainer flange remaining thickness will be confirmed by an ultrasonic inspection. One bounding inspection will be performed and results will be used to validate the corrosion rate for both sites. Based upon the results of the inspection, a revised galvanic corrosion calculation will be performed to ensure acceptable wall thickness to the end of the 60-year licensed operating period. | Prior to the period of extended operation |

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 2 - 02/20/1991;
Unit 3 - 01/12/1971
Date New License Expires: Unit 2 - 12/22/2029; Unit 3 - 1/12/2031
Date Initial License Expires (prior to Period of Extended Operation):
Unit 2 - 12/22/2009; Unit 3 - 1/12/2011
- B. Safety Evaluation Report (SER) NUREG Number: 1796
- C. Initial license renewal inspection reports numbers: 50-237/03-04,
50-249/03-04, 50-237/03-10, 50-249/03-10, 50-237/04-05, 50-249/04-05

**SITE-SPECIFIC LIST OF OUTSTANDING COMMITMENTS FOR
POST-RENEWAL INSPECTION AT QUAD CITIES NUCLEAR POWER STATION**

| No. | Commitment | Implementation Schedule |
|------------|---|---|
| 1 | Both Dresden and Quad Cities will be implementing RI-ISI and its alternative inspections for Class 1 and 2 piping within the scope of license renewal. The requirements of ASME Code, Section XI will be implemented in accordance with 10 CFR 50.55(a). | Prior to the period of extended operation |
| 2 | Water Chemistry program will be enhanced to provide increased sampling to verify corrective actions are taken to address abnormal chemistry conditions. The Quad Cities procedure for turbine building sample panel collection will be revised to assure maintenance of the integrity of chemistry samples. | Prior to the period of extended operation |
| 3 | BWR Feedwater Nozzle program will be enhanced to implement the recommendations of Revision 1, Version A of report GE-NE-523-A71-0594-A, Revision 1, which was approved by the NRC staff. | Prior to the period of extended operation |
| 4 | BWR Stress Corrosion Cracking program will be enhanced to include an additional ultrasonic examination of the Quad Cities Unit 2 reactor vessel head crack (detected in 1990) to verify that the relevant indication has remained essentially unchanged. | End of 2018 (plus or minus 2 years) |
| 5 | BWR Vessel Internals program will be enhanced as follows: (1) Additional inspections will be performed when new inspection techniques and tooling are developed, incorporated into applicable BWRVIP document(s), and approved by the NRC. (2) Dresden and Quad Cities agree to perform inspections of the top guide similar to inspections of the control rod drive housing guide tube. However, Exelon reserves the right to modify the above agreed upon inspection program should the BWRVIP-26 be revised in the future. (3) Exelon has made commitments to ensure that the Dresden and Quad Cities steam dryers will maintain their structural integrity at EPU power levels for longterm operation and will not generate loose parts. These commitments have been submitted to the NRC for acceptance in a letter dated May 12, 2004. Should Exelon's plans not be successful, Exelon will include the steam dryers in the scope of license renewal under 10 CFR 54.4(a)(2) and will provide the appropriate aging management in accordance with 10 CFR 54.37(b). | As approved by the NRC |
| 6 | An aging management program will be implemented for thermal aging and neutron irradiation embrittlement of CASS reactor internal components within the scope of license renewal. A component specific evaluation for the loss of fracture toughness will be included. For those components where the loss of fracture toughness may affect the function of the component, an inspection will be performed as part of the ISI program. | Prior to the period of extended operation |

| | | |
|----|--|---|
| 7 | Flow-Accelerated Corrosion program will be enhanced to include portions of the main steam and the reactor vessel head vent systems that are within the scope of license renewal. | Prior to the period of extended operation |
| 8 | Bolting Integrity program will be enhanced to do the following: (1) Credit periodic in-service Inspection piping and component preventive maintenance inspections, system engineering walkdowns, and routine walkdowns to inspect for leakage and visual indications of loose bolts; trend walkdown results (2) Manage the loss of preload for closure bolting in the reactor vessel system, recirculation pumps, reactor recirculation valves, reactor vessel head vent valves, and the reactor pressure boundary portion of all other systems. (3) Credit periodic inspections of the closure bolting in accordance with the ASME Code Section XI requirements. (4) Inspect bolted joints of diesel generator system components, component bolted joint inspections in high-humidity/moisture areas (pump vaults), and reactor vessel-to-ring girder bolting. (5) Enhance implementing procedure to reference NUREG-1339. | Prior to the period of extended operation |
| 9 | Open-Cycle Cooling Water Program will be enhanced to include periodic inspections of cooling water pump internal linings, additional heat exchangers and sub-components, external surfaces of various submerged pumps, components in the high humidity/moisture environments of the pump vaults, and piping. At Dresden only, periodic visual inspections will be performed of strainer internals in the CCSW supply line to the main control room HVAC | Prior to the period of extended operation |
| 10 | Closed-Cycle Cooling Water Program will be enhanced to provide monitoring of specific parameters in accordance with EPRI TR-107396 guidance. This will include provisions for monitoring parameters such as pH, specific gravity, freeze point, reserve alkalinity, percent glycol and suspended solids in glycol based systems as appropriate. At Dresden, the program will include monitoring of pH and ammonia in the diesel generator jacket water. | Prior to the period of extended operation |
| 11 | Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems program will be enhanced to include specific inspections for rail wear and proper crane travel on the rails, and for corrosion of crane structural components. | Prior to the period of extended operation |
| 12 | Compressed Air Monitoring program will be enhanced to include periodic inspections on those portions of the instrument air distribution piping in the scope of license renewal. The program will also include additional air sample points representative of the inscope piping. Additionally, at Dresden only, periodic blowdowns will be provided of the instrument air receiver tanks. | Prior to the period of extended operation |

| | | |
|----|--|---|
| 13 | <p>Fire Protection program will be enhanced as follows:</p> <p>(1) Specific guidance will be provided to check fire doors for wear and holes in skin. At Quad Cities only, the program will be revised to include the requirement to check fire door clearances.</p> <p>(2) Periodic inspections will be performed for corrosion on the external surfaces of piping and components for the carbon dioxide systems; and for the external surfaces of the Dresden halon system.</p> <p>(3) Specific guidance will be provided for examining the fire pumps and the Dresden isolation condenser makeup pump diesel fuel supply systems for leaks during pump tests.</p> <p>(4) Periodic capacity tests will be performed on the Dresden isolation condenser diesel-driven makeup pumps.</p> <p>(5) At Dresden, frequency of inspections will be provided for fire doors and spill barriers.</p> <p>(6) The program will be revised to perform a visual inspection (VT-1 or equivalent) on a 10% sample population of each type of fire seal on a refueling outage frequency. Additionally, the program will be revised to expand the sample population by 10% if any of the inspected seals are found to have abnormal degradation that could prevent the seal from performing its intended function.</p> | Prior to the period of extended operation |
| 14 | <p>Fire Water System program will be enhanced as follows:</p> <p>(1) Periodic non-intrusive wall thickness measurements will be provided of selected portions of the fire water system.</p> <p>(2) Periodic inspections will be performed on the external surfaces of submerged fire pumps, outdoor fire hydrants, and outdoor transformer deluge system components.</p> <p>(3) Sampling of sprinklers will be performed in accordance with NFPA 25, "Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems."</p> | Prior to the period of extended operation |
| 15 | <p>Above-ground Carbon Steel Tanks program will be enhanced as follows:</p> <p>(1) Periodic system engineer walkdowns will be performed on the nitrogen storage tanks utilizing stand-alone procedures.</p> <p>(2) At Quad Cities, a one-time UT thickness inspection will be performed of the aluminum condensate storage tank or demineralized water storage tank.</p> <p>(3) At Dresden, periodic internal/external inspections of the aluminum storage tanks will be performed, and periodic UT thickness inspections will be performed of the bottoms will be performed</p> | Prior to the period of extended operation |
| 16 | <p>Fuel Oil Chemistry program will be enhanced to include inspection of the fuel oil storage tank interiors for corrosion during regularly scheduled tank cleanings.</p> | Prior to the period of extended operation |
| 17 | <p>Reactor Vessel Surveillance The program will be enhanced as follows:</p> <p>(1) The Integrated Surveillance Program (ISP) for the license renewal period (in accordance with proposed BWRVIP-116) will be implemented when approved by the NRC.</p> <p>(2) If BWRVIP-116 is not approved, a plant-specific surveillance plan will be provided for the license renewal period in accordance with Appendices G and H to 10 CFR Part 50</p> | Prior to the period of extended operation |

| | | |
|----|--|---|
| 18 | <p>One-time inspection sampling will be performed on the following:</p> <ul style="list-style-type: none"> (1) at Dresden, spent fuel pool cooling and demineralizer system components for corrosion in stagnant locations (2) condensate and torus water components for corrosion in stagnant locations (3) compressed gas system piping components for corrosion (4) compressed gas system flexible hoses for age related degradation (5) lower sections of carbon steel fuel oil and lubricating oil tanks for reduced thickness (6) fuel oil and lubricating oil piping and components for corrosion (7) control room ventilation, EDG ventilation, SBO building ventilation, reactor building ventilation, and standby gas treatment system components for loss of material (8) HPCI lubrication oil hoses for age related degradation (9) non-safety-related vent and drain components for age related degradation (10) 10 CFR 54.4(a)(2) components for corrosion (11) piping exposed to containment atmosphere for loss of material (12) torus saddle supports to confirm condition of drywell radial beam lubrite baseplates (13) 10% of high and medium risk butt welds in ASME Code, Class 1, NPS < 4 in. piping (14) stainless steel components in CRD hydraulic system and stainless steel clevis pins in torus water environment for stress corrosion cracking; clevis pin interface with uncoated carbon steel in torus water environment for galvanic corrosion (15) sample of stainless steel standby liquid control system components not in reactor coolant pressure boundary section of SBLC system for cracking | Prior to the period of extended operation |
| 19 | <p>A sample of components that are made of susceptible materials will be visually inspected for evidence of selective leaching. The sample will be expanded if failed conditions are identified.</p> | Prior to the period of extended operation |
| 20 | <p>Buried Piping and Tanks Inspection program will be enhanced as follows:</p> <ul style="list-style-type: none"> (1) A one-time visual inspection will be performed on the external surface of a section of buried ductile iron fire main piping (including a mechanical joint). (2) A one-time internal UT of one buried steel tank per site will be performed. (3) At Quad Cities, periodic leakage checks will be performed on buried carbon steel fuel oil storage tanks. | Prior to the period of extended operation |
| 21 | <p>ASME Code, Section XI, Subsection IWE program will be enhanced as follows:</p> <ul style="list-style-type: none"> (1) The program will be based on the latest edition and addenda, which is approved by the NRC 12 months prior to the end of the current 120-month inspection interval. (2) The program will be updated in accordance with 10 CFR 50.55(a). (3) Additional inspections of the Dresden Unit containment shell for corrosion will be provided. (4) Requirements will be provided in Quad Cities procedures to ensure that sand pocket drains are clear. (5) The pressurized testing methodology will be credited for managing the aging of bellows. | Prior to the period of extended operation |

| | | |
|----|--|---|
| 22 | <p>ASME Code, Section XI, Subsection IWF program will be enhanced to include inspection of Class MC component supports consistent with NUREG-1801, Chapter III, Section B1.3. The ASME Code, Section XI, Subsection IWF program will manage the aging of the following Class MC supports:</p> <ol style="list-style-type: none"> (1) Biological Shield to Containment Stabilizer (2) RPV Male Stabilizer Attached to Outside of Drywell Shell (3) RPV Female Stabilizer and Anchor Rods (4) Suppression Chamber Ring Girder Vertical Supports and Base Plates (5) Suppression Chamber Saddle Supports and Base Plates (6) Suppression Chamber Seismic Restraints and Base Plates (7) Vent Header Vertical Column Supports | Prior to the period of extended operation |
| 23 | <p>Structures Monitoring Program program will be enhanced to add the following which will be implemented prior to the period of extended operation:</p> <ol style="list-style-type: none"> (1) inspections of structural steel components in secondary containment, flood barriers, electrical panels and racks, junction boxes, instrument panels and racks, and offsite power structural components and their foundations, and the Quad Cities discharge canal weir as part of the ultimate heat sink (2) periodic reviews of chemistry data on below-grade water to confirm that the environment remains non-aggressive for aggressive chemical attack of concrete or corrosion of embedded steel (3) inspection of a sample of non-insulated indoor piping external surfaces at locations immediately adjacent to periodically inspected piping supports and inspection of standard components such as snubbers, struts, and spring cans. (4) program reference to specific insulation inspection criteria for existing cold weather preparation and inspection procedures for outdoor insulation, and the establishment of new inspections for various indoor area piping and equipment insulation (5) inspection parameters for non-structural joints, roofing, grout pads and isolation gaps (6) Extension of inspection criteria to the structural steel, concrete, masonry walls, equipment foundations, and component support sections of the program (7) VT-3 visual inspections of 15% of the non-exempt Class MC pipe supports once every 10 years | Prior to the period of extended operation |
| 24 | <p>RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants program will be enhanced to add the following:</p> <ol style="list-style-type: none"> (1) monitoring of crib house concrete walls and slabs with an opposing side in contact with river water (2) inspection for structural integrity of concrete and steel components and identification of specific types of components to be inspected (3) periodic monitoring of the Dresden discharge outfall concrete structure (4) at Quad Cities, periodic inspections of the concrete of the discharge flume/canal and the weir gate in the discharge canal | Prior to the period of extended operation |
| 25 | <p>Protective Coating Monitoring and Maintenance Program will be enhanced as follows:</p> <ol style="list-style-type: none"> (1) visual inspection of Service Level I coatings near sumps or screens associated with the emergency core cooling system (2) pre-inspection review of previous reports so that trends can be identified for the program (3) analysis of coating failures to determine reasons for failures | Prior to the period of extended operation |

| | | |
|----|---|---|
| 26 | A program will be developed that is consistent with NUREG-1801 AMP XI.E1 for electrical cables and connections installed in adverse localized environments not subject to 10 CFR 50.49 environmental qualification requirements. | Prior to the period of extended operation |
| 27 | Metal Fatigue of Reactor Coolant Pressure Boundary program will be enhanced to utilize the EPRI-licensed FatiguePro computer program for monitoring fatigue at bounding locations for reactor pressure vessel, Class I piping, torus, torus vents, and torus attached piping and penetrations, SRV discharge lines, and the Dresden isolation condenser. | Prior to the period of extended operation |
| 28 | A program will be developed to manage aging of cables in sensitive instrumentation circuits with low-level signals in the Nuclear Instrumentation Systems and Radiation Monitoring Systems. The program will include a review of calibration and surveillance results, and cable testing every 24 months (SRM, IRM circuits) for cable aging degradation before the period of extended operation and every 10 years thereafter. This program applies to the cables of the Nuclear Instrumentation Systems which includes source range monitors, intermediate range monitors, local power range monitors, and Radiation Monitoring Systems which includes drywell high range radiation monitors, main steam line radiation monitors, and the steam jet air ejector radiation monitors. | Prior to the period of extended operation |
| 29 | A program will be developed and implemented to periodically inspect non-segregated bus ducts that connect the reserve auxiliary transformers (RATs) to 4160V ESS buses, the nonsegregated bus ducts that connect the EDG to the ESS buses, and, for Dresden only, the non-segregated bus ducts that connect ESS buses. The bus duct internal components and materials will be visually inspected for signs of aging degradation. The program will include the following: (1) inspection of accessible normally energized non-segregated bus duct internal components such as insulation materials, bus duct support pieces, gaskets, insulating boots, taped connections, and bus bar sleeves for material surface anomalies for nonsegregated bus duct that connects the RATs to the 4160V ESS buses (2) inspection of bus bar insulation material at the accessible bolted connections of the non-segregated bus duct that connects the RATs to the 4160V ESS buses (3) inspection of 10% of the splice insulation material at the bolted connections (including all visible insulation in both directions beyond the location of the bolted connection splice insulation inspected) for the non-segregated bus duct that connects the EDG to the ESS buses and, for Dresden only, the non-segregated bus duct that connects the ESS buses for signs of aging degradation that indicate possible loose connections (4) inspections for the presence of dirt or moisture in the bus duct | Prior to the period of extended operation |
| 30 | Periodic Inspection of Ventilation System Elastomers program will be enhanced to include inspection of aging of all elastomers, flexible boots, access door seals and gaskets, filter seals and gaskets, and RTV silicone used as a duct sealant, in the components of the SBO ventilation and Reactor Building ventilation systems for Dresden, and the SBO ventilation and EDG Room ventilation systems for Quad Cities. The inspections will be performed to detect cracking, loss of material, and other evidence of aging. Tests of seals for hardening will be included if evidence of aging is found. | Prior to the period of extended operation |

| | | |
|----|---|---|
| 31 | <p>Lubricating Oil Monitoring Activities program will be enhanced to include those components exposed to an environment of lubricating oil in the following systems:</p> <ul style="list-style-type: none"> (1) the reactor core isolation cooling system (Quad Cities only) (2) the main generator hydrogen seal oil system (Quad Cities only) (3) the high pressure coolant injection system (4) the emergency diesel generator and auxiliaries system (5) the station blackout diesel system (6) the electro-hydraulic control system | Prior to the period of extended operation |
| 32 | <p>An aging management program will be developed and implemented for heat exchangers in the scope of license renewal that are not tested and inspected by the Open-Cycle Cooling Water System and Closed-Cycle Cooling Water System aging management programs. Specifically, for the Dresden isolation condensers, the augmentation activities identified in NUREG-1801, lines IV.C1.4-a and IV.C1.4-b to manage loss of material and cracking will also be included in this aging management program, and will provide the following:</p> <ul style="list-style-type: none"> (1) temperature and radioactivity monitoring of the shell-side (cooling) water (2) eddy current testing of the tubes (3) visual inspections of the channel head, tube sheets, and internal surfaces of the shell | Prior to the period of extended operation |
| 33 | <p>An aging management program will be developed and implemented to inspect components in the Plant Heating system once before the end of the current operating term and periodically at intervals not to exceed once every 5 years during the period of extended operation.</p> | Prior to the period of extended operation |
| 34 | <p>Revised P-T limits will be prepared and submitted to the NRC for approval prior to the start of the extended period of operation using an approved fluence methodology for Dresden and Quad Cities.</p> | Prior to the period of extended operation |
| 35 | <p>Plant-specific calculations will be performed for applicable locations identified in NUREG/CR 6260, "Application of NUREG/CR-5999 Interim Fatigue Curves to Selected Nuclear Power Plant Components," for older-vintage BWR plants, to assess potential effects of reactor coolant on component fatigue life in accordance with 10 CFR 54.21(c)(1)(ii). Exelon reserves the right to modify this position in the future based on the results of industry activities currently underway, or based on other results of improvements in methodology, subject to NRC approval prior to changes in this position.</p> | Prior to the period of extended operation |
| 36 | <p>A reanalysis will be applied to EQ components now qualified for the current operating term of 40 years. The EQ Binders for components within the scope of 10 CFR 50.49 will be updated to include environmental conditions associated with EPU implementation together with an extended operating period of 60 years.</p> | Prior to the period of extended operation |
| 37 | <p>The corrosion rate assumptions used in the calculation of the drywell steel plate remaining thickness at the sand pocket level will be confirmed by a Dresden Unit 3 UT inspection prior to the period of extended operation. The results will be used to revise the associated corrosion calculation and validate that an acceptable wall thickness will remain to the end of the 60-year licensed operating period.</p> | Prior to the period of extended operation |

| | | |
|----|---|---|
| 38 | The corrosion rate assumptions used in the calculation of the ECCS Suction strainer flange remaining thickness will be confirmed by an ultrasonic inspection. One bounding inspection will be performed and results will be used to validate the corrosion rate for both sites. Based upon the results of the inspection, a revised galvanic corrosion calculation will be performed to ensure acceptable wall thickness to the end of the 60-year licensed operating period. | Prior to the period of extended operation |
|----|---|---|

Reference Documents

- A. Facility Operating License
Date Facility Operating License Issued: Unit 1 - 12/14/1972;
Unit 2 - 12/14/1972
Date New License Expires: Unit 1 - 12/14/2032; Unit 2 - 12/14/2032
Date Initial License Expires (prior to Period of Extended Operation):
Unit 1 - 12/14/2012; Unit 2 - 12/14/2012
- B. Safety Evaluation Report (SER) NUREG Number: 1796
- C. Initial license renewal inspection reports numbers: 50-254/03-04,
50-265/03-04, 50-254/03-14, 50-265/03-14, 50-254/04-03, 50-265/04-03