



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

January 7, 2013

10 CFR 54  
10 CFR 51

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Sequoyah Nuclear Plant, Units 1 and 2  
Facility Operating License Nos. DPR-77 and DPR-79  
NRC Docket Nos. 50-327 and 50-328

**Subject: Sequoyah Nuclear Plant, Units 1 and 2 License Renewal**

**References:** TVA Letter to NRC "Revision to Expected Submittal Dates for Sequoyah Nuclear Plant License Renewal Applications," dated May 25, 2011

Pursuant to 10 CFR 51 and 10 CFR 54, Tennessee Valley Authority (TVA) hereby applies for renewal of the operating license for the Sequoyah Nuclear Plant (SQN), Units 1 and 2 to extend the license for an additional 20 years beyond the current expiration date. With renewal, the SQN Unit 1 operating license would be extended from September 17, 2020 to September 17, 2040; and the SQN Unit 2 operating license from September 15, 2021 to September 15, 2041.

The enclosed License Renewal Application and related Appendices contain the information required by 10 CFR 54 for the contents of an application.

As required by 10 CFR 54.21(b), current licensing basis changes which have a material effect on the content of this application, including the Final Safety Analysis Report (FSAR) Supplement (Appendix A), will be identified at least annually while the application is under NRC review and at least three months prior to the scheduled completion of the NRC review.

Commitments contained in this application are summarized in Enclosure 8.

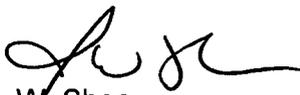
If you have any questions please contact Henry Lee at (423) 751-2683.

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I declare under penalty of perjury that the foregoing is true and correct. Executed on this  
7<sup>th</sup> day of January 2013.

Sincerely,



J. W. Shea  
Vice President, Nuclear Licensing

Enclosures:

1. License Renewal Application
2. Appendix A: Updated Final Safety Analysis Report Supplement
3. Appendix B: Aging Management Programs and Activities
4. Appendix C: Response to Applicant Action Items for Inspection and Evaluation Guidelines for PWR Internals
5. Appendix D: Sequoyah Nuclear Plant License Renewal Application Technical Specifications Changes
6. Appendix E: Environmental Report
7. CD of LRA Suitable for ADAMS
8. List of Regulatory Commitments

CC: (w/Enclosures):

NRC Regional Administrator - Region II  
NRC Senior Resident Inspector - Sequoyah Nuclear Power Plant

**ENCLOSURE 1**

**Tennessee Valley Authority  
Sequoyah Nuclear Plant Units 1 and 2**

**License Renewal Application**

**ENCLOSURE 2**

**Tennessee Valley Authority  
Sequoyah Nuclear Plant Units 1 and 2**

**Appendix A: Updated Final Safety Analysis Report Supplement**

**ENCLOSURE 3**

**Tennessee Valley Authority  
Sequoyah Nuclear Plant Units 1 and 2**

**Appendix B: Aging Management Programs and Activities**

**ENCLOSURE 4**

**Tennessee Valley Authority  
Sequoyah Nuclear Plant Units 1 and 2**

**Appendix C: Response to Applicant Action Items for Inspection and Evaluation  
Guidelines for PWR Internals**

**ENCLOSURE 5**

**Tennessee Valley Authority  
Sequoyah Nuclear Plant Units 1 and 2**

**Appendix D: Sequoyah Nuclear Plant License Renewal Application Technical  
Specifications Changes**

**ENCLOSURE 6**

**Tennessee Valley Authority  
Sequoyah Nuclear Plant Units 1 and 2**

**Appendix E: Environmental Report**

**ENCLOSURE 7**

**Tennessee Valley Authority  
Sequoyah Nuclear Plant Units 1 and 2**

**CD of LRA Suitable for ADAMS**

**ENCLOSURE 8**

**Tennessee Valley Authority  
Sequoyah Nuclear Plant Units 1 and 2**

**List of Regulatory Commitments**

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
1	Implement the <b>Aboveground Metallic Tanks Program</b> as described in LRA Section B.1.1	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.1
2	<p>A. Revise <b>Bolting Integrity Program</b> procedures to ensure the actual yield strength of replacement or newly procured bolts will be less than 150 ksi</p> <p>B. Revise Bolting Integrity Program procedures to include the additional guidance and recommendations of EPRI NP-5769 for replacement of ASME pressure-retaining bolts and the guidance provided in EPRI TR-104213 for the replacement of other pressure-retaining bolts.</p>	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.2
3	Implement the <b>Buried and Underground Piping and Tanks Inspection Program</b> as described in LRA Section B.1.4.	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.4

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
4	<p>A. Revise <b>Compressed Air Monitoring Program</b> procedures to include the standby diesel generator (DG) starting air subsystem.</p> <p>B. Revise Compressed Air Monitoring Program procedures to include maintaining moisture and other contaminants below specified limits in the standby DG starting air subsystem</p> <p>C. Revise Compressed Air Monitoring Program procedures to apply a consideration of the guidance of ASME OM-S/G-1998, Part 17; EPRI NP-7079; and EPRI TR-108147 to the limits specified for the air system contaminants</p> <p>D. Revise Compressed Air Monitoring Program procedures to maintain moisture, particulate size, and particulate quantity below acceptable limits in the standby DG starting air subsystem to mitigate loss of material.</p> <p>E. Revise Compressed Air Monitoring Program procedures to include periodic and opportunistic visual inspections of surface conditions consistent with frequencies described in ASME O/M-SG-1998, Part 17 of accessible internal surfaces such as compressors, dryers, after-coolers, and filter boxes of the following compressed air systems:</p> <ul style="list-style-type: none"> <li>• Diesel starting air subsystem</li> <li>• Auxiliary controlled air subsystem</li> <li>• Nonsafety-related controlled air subsystem</li> </ul> <p>F. Revise Compressed Air Monitoring Program procedures to monitor and trend moisture content in the standby DG starting air subsystem.</p> <p>G. Revise Compressed Air Monitoring Program procedures to include consideration of the guidance for acceptance criteria in ASME OM-S/G-1998, Part 17, EPRI NP-7079; and EPRI TR-108147.</p>	<p>SQN1: Prior to 09/17/20</p> <p>SQN2: Prior to 09/15/21</p>		B.1.5

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
5	<p>A. Revise <b>Diesel Fuel Monitoring Program</b> procedures to monitor and trend sediment and particulates in the standby DG day tanks.</p> <p>B. Revise Diesel Fuel Monitoring Program procedures to monitor and trend levels of microbiological organisms in the seven-day storage tanks.</p> <p>C. Revise Diesel Fuel Monitoring Program procedures to include a ten-year periodic cleaning and internal visual inspection of the standby DG diesel fuel oil day tanks and high pressure fire protection (HPFP) diesel fuel oil storage tank. These cleanings and internal inspections will be performed at least once during the ten-year period prior to the period of extended operation and at succeeding ten-year intervals. If visual inspection is not possible, a volumetric inspection will be performed.</p> <p>D. Revise Diesel Fuel Monitoring Program procedures to include a volumetric examination of affected areas of the diesel fuel oil tanks, if evidence of degradation is observed during visual inspection. The scope of this enhancement includes the standby DG seven-day fuel oil storage tanks, standby DG fuel oil day tanks, and HPFP diesel fuel oil storage tank and is applicable to the inspections performed during the ten-year period prior to the period of extended operation and succeeding ten-year intervals.</p>	<p>SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21</p>		B.1.8
6	<p>A. Revise <b>External Surfaces Monitoring Program</b> procedures to clarify that periodic inspections of systems in scope and subject to aging management review for license renewal in accordance with 10 CFR 54.4(a)(1) and (a)(3) will be performed. Inspections shall include areas surrounding the subject systems to identify hazards to those systems. Inspections of nearby systems that could impact the subject systems will include SSCs that are in scope and subject to aging management review for license renewal in accordance with 10 CFR 54.4(a)(2).</p> <p>B. Revise External Surfaces Monitoring Program procedures to include instructions to look for the following related to metallic components:</p> <ul style="list-style-type: none"> <li>• Corrosion and material wastage (loss of material).</li> <li>• Leakage from or onto external surfaces loss of material).</li> <li>• Worn, flaking, or oxide-coated surfaces (loss of material).</li> <li>• Corrosion stains on thermal insulation (loss of material).</li> </ul>	<p>SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21</p>		B.1.10

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
6	<ul style="list-style-type: none"> <li>• Protective coating degradation (cracking, flaking, and blistering).</li> <li>• Leakage for detection of cracks on the external surfaces of stainless steel components exposed to an air environment containing halides.</li> </ul> <p>C. Revise External Surfaces Monitoring Program procedures to include instructions for monitoring aging effects for flexible polymeric components, including manual or physical manipulations of the material, with a sample size for manipulation of at least ten percent of the available surface area. The inspection parameters for polymers shall include the following:</p> <ul style="list-style-type: none"> <li>• Surface cracking, crazing, scuffing, dimensional changes (e.g., ballooning and necking)</li> <li>• Discoloration.</li> <li>• Exposure of internal reinforcement for reinforced elastomers (loss of material).</li> <li>• Hardening as evidenced by loss of suppleness during manipulation where the component and material can be manipulated.</li> </ul> <p>D. Revise External Surfaces Monitoring Program procedures to ensure surfaces that are insulated will be inspected when the external surface is exposed (i.e., during maintenance) at such intervals that would ensure that the components' intended function is maintained.</p> <p>E. Revise External Surfaces Monitoring Program procedures to include acceptance criteria. Examples include the following:</p> <ul style="list-style-type: none"> <li>• Stainless steel should have a clean shiny surface with no discoloration.</li> <li>• Other metals should not have any abnormal surface indications.</li> <li>• Flexible polymers should have a uniform surface texture and color with no cracks and no unanticipated dimensional change, no abnormal surface with the material in an as-new condition with respect to hardness, flexibility, physical dimensions, and color.</li> <li>• Rigid polymers should have no erosion, cracking, checking or chalks.</li> </ul>			

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
7	<p>A. Revise <b>Fatigue Monitoring Program</b> procedures to monitor and track critical thermal and pressure transients for components that have been identified to have a fatigue Time Limited Aging Analysis.</p> <p>B. Fatigue usage calculations that consider the effects of the reactor water environment will be developed for a set of sample reactor coolant system components. This sample set will include the locations identified in NUREG/CR-6260 and additional plant-specific component locations in the reactor coolant pressure boundary if they are found to be more limiting than those considered in NUREG/CR-6260. <math>F_{en}</math> factors will be determined as described in Section 4.3.3.</p> <p>C. Fatigue usage factors for the reactor coolant system limiting components will be determined to address the Cold Overpressure Mitigation System (COMS) event (i.e., low temperature overpressurization event) and the effects of the structural weld overlays.</p> <p>D. Revise Fatigue Monitoring Program procedures to provide updates of the fatigue usage calculations on an as-needed basis if an allowable cycle limit is approached, or in a case where a transient definition has been changed, unanticipated new thermal events are discovered, or the geometry of components have been modified.</p>	<p>SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21</p>		B.1.11
8	<p>A. Revise <b>Fire Protection Program</b> procedures to include an inspection of fire barrier walls, ceilings, and floors for any signs of degradation such as cracking, spalling, or loss of material caused by freeze thaw, chemical attack, or reaction with aggregates.</p> <p>B. Revise Fire Protection Program procedures to provide acceptance criteria of no significant indications of concrete cracking, spalling, and loss of material of fire barrier walls, ceilings, and floors and in other fire barrier materials.</p>	<p>SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21</p>		B.1.12
<u>9</u>	<p>A. Revise <b>Fire Water System Program</b> procedures to include periodic visual inspection of fire water system internals for evidence of corrosion and loss of wall thickness.</p> <p>B. Revise Fire Water System Program procedures to include one of the following options:</p> <ul style="list-style-type: none"> <li>• Wall thickness evaluations of fire protection piping using non-intrusive techniques (e.g., volumetric testing) to identify evidence of loss of material will be performed prior to the period of extended operation and periodically thereafter.</li> </ul>	<p>SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21</p>		B.1.13

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
9	<p>Results of the initial evaluations will be used to determine the appropriate inspection interval to ensure aging effects are identified prior to loss of intended function.</p> <ul style="list-style-type: none"> <li>• A visual inspection of the internal surface of fire protection piping will be performed upon each entry into the system for routine or corrective maintenance. These inspections will be capable of evaluating (1) wall thickness to ensure against catastrophic failure and (2) the inner diameter of the piping as it applies to the design flow of the fire protection system. Maintenance history shall be used to demonstrate that such inspections have been performed on a representative number of locations prior to the period of extended operation. A representative number is 20% of the population (defined as locations having the same material, environment, and aging effect combination) with a maximum of 25 locations. Additional inspections will be performed as needed to obtain this representative sample prior to the period of extended operation and periodically during the period of extended operation based on the findings from the inspections performed prior to the period of extended operation.</li> </ul> <p>C. Revise Fire Water System Program procedures to ensure a representative sample of sprinkler heads will be tested or replaced before the end of the 50-year sprinkler head service life and at ten-year intervals thereafter during the extended period of operation. NFPA-25 defines a representative sample of sprinklers to consist of a minimum of not less than four sprinklers or one percent of the number of sprinklers per individual sprinkler sample, whichever is greater. If the option to replace the sprinklers is chosen, all sprinkler heads that have been in service for 50 years will be replaced.</p> <p>D. Revise Fire Water System Program procedures to consider implementing the flow testing requirements of NFPA 25 or justify why the flow testing requirements of NFPA should not be implemented.</p> <p>E. Revise Fire Water System Program procedures to include acceptance criteria for periodic visual inspection of fire water system internals for corrosion, minimum wall thickness, and the absence of biofouling in the sprinkler system that could cause corrosion in the sprinklers.</p>			

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
10	Revise <b>Flow Accelerated Corrosion Program</b> procedures to implement NSAC-202L guidance for examination of components upstream of piping surfaces where significant wear is detected.	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.14
11	Revise <b>Flux Thimble Tube Inspection Program</b> procedures to include a requirement to address if the predictive trending projects that a tube will exceed 80% wall wear prior to the next planned inspection, then initiate a Service Request (SR) to define actions (i.e., plugging, repositioning, replacement, evaluations, etc.) required to ensure that the projected wall wear does not exceed 80%. If any tube is found to be >80% through wall wear, then initiate a SR to evaluate the predictive methodology used and modify as required to define corrective actions (i.e., plugging, repositioning, replacement, etc).	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.15
12	Revise <b>Inservice Inspection-IWF Program</b> procedures to clarify that detection of aging effects will include monitoring anchor bolts for loss of material, loose or missing nuts, and cracking of concrete around the anchor bolts.	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.17
13	<p>Inspection of <b>Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems:</b></p> <p>A. Revise program procedures to specify the inspection scope will include monitoring of rails in the rail system for wear; monitoring structural components of the bridge, trolley and hoists for the aging effect of deformation, cracking, and loss of material due to corrosion; and monitoring structural connections/bolting for loose or missing bolts, nuts, pins or rivets and any other conditions indicative of loss of bolting integrity.</p> <p>B. Revise program procedures to include the inspection and inspection frequency requirements of ASME B30.2.</p> <p>C. Revise program procedures to clarify that the acceptance criteria will include requirements for evaluation in accordance with ASME B30.2 of significant loss of material for structural components and structural bolts and significant wear of rail in the rail system.</p> <p>D. Revise program procedures to clarify that the acceptance criteria and maintenance and repair activities use the guidance provided in ASME B30.2</p>	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.18
14	Implement the <b>Internal Surfaces in Miscellaneous Piping and Ducting Components Program</b> as described in LRA Section B.1.19.	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.19

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No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
15	Implement the <b>Metal Enclosed Bus Inspection Program</b> as described in LRA Section B.1.21.	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.21
16	<p>A. Revise <b>Neutron Absorbing Material Monitoring Program</b> procedures to perform blackness testing of the Boral coupons within the ten years prior to the period of extended operation and at least every ten years thereafter based on initial testing to determine possible changes in boron-10 areal density.</p> <p>B. Revise Neutron Absorbing Material Monitoring Program procedures to relate physical measurements of Boral coupons to the need to perform additional testing.</p> <p>C. Revise Neutron Absorbing Material Monitoring Program procedures to perform trending of coupon testing results to determine the rate of degradation and to take action as needed to maintain the intended function of the Boral.</p>	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.22
17	Implement the <b>Non-EQ Cable Connections Program</b> as described in LRA Section B.1.24	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.24
18	Implement the <b>Non-EQ Inaccessible Power Cable (400 V to 35 kV) Program</b> as described in LRA Section B.1.25	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.25
19	Implement the <b>Non-EQ Instrumentation Circuits Test Review Program</b> as described in LRA Section B.1.26.	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.26
20	Implement the <b>Non-EQ Insulated Cables and Connections Program</b> as described in LRA Section B.1.27	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.27
21	<p>A. Revise <b>Oil Analysis Program</b> procedures to monitor and maintain contaminants in the 161-kV oil filled cable system within acceptable limits through periodic sampling in accordance with industry standards, manufacturer's recommendations and plant-specific operating experience.</p> <p>B. Revise Oil Analysis Program procedures to trend oil contaminant levels and initiate a problem evaluation report if contaminants exceed alert levels or limits in the 161-kV oil-filled cable system.</p>	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.28
22	Implement the <b>One-Time Inspection Program</b> as described in LRA Section B.1.29.	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.29
23	Implement the <b>One-Time Inspection – Small Bore Piping Program</b> as described in LRA Section B.1.30	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.30

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No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
24	Revise <b>Periodic Surveillance and Preventive Maintenance Program</b> procedures as necessary to include all activities described in the table provided in the LRA Section B.1.31 program description.	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.31
25	<p>A. Revise <b>Protective Coating Program</b> procedures to clarify that detection of aging effects will include inspection of coatings near sumps or screens associated with the emergency core cooling system.</p> <p>B. Revise Protective Coating Program procedures to clarify that instruments and equipment needed for inspection may include, but not be limited to, flashlights, spotlights, marker pen, mirror, measuring tape, magnifier, binoculars, camera with or without wide-angle lens, and self-sealing polyethylene sample bags.</p> <p>C. Revise Protective Coating Program procedures to clarify that the last two performance monitoring reports pertaining to the coating systems will be reviewed prior to the inspection or monitoring process.</p>	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.32
26	<p>A. Revise <b>Reactor Head Closure Studs Program</b> procedures to ensure that replacement studs are fabricated from bolting material with actual measured yield strength less than 150 ksi.</p> <p>B. Revise Reactor Head Closure Studs Program procedures to exclude the use of molybdenum disulfide (MoS<sub>2</sub>) on the reactor vessel closure studs and to refer to Reg. Guide 1.65, Rev1.</p>	SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21		B.1.33
27	<p>A. Revise <b>Reactor Vessel Internals Program</b> procedures to take physical measurements of the Type 304 stainless steel hold-down springs in Unit 1 at each refueling outage to ensure preload is adequate for continued operation.</p> <p>B. Revise Reactor Vessel Internals Program procedures to include preload acceptance criteria for the Type 304 stainless steel hold-down springs in Unit 1.</p>	SQN1: Prior to 09/17/20 SQN2: Not Applicable		B.1.34

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No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
28	<p><b>A. Revise Reactor Vessel Surveillance Program</b> procedures to consider the area outside the beltline such as nozzles, penetrations and discontinuities to determine if more restrictive pressure-temperature limits are required than would be determined by just considering the reactor vessel beltline materials.</p> <p><b>B. Revise Reactor Vessel Surveillance Program</b> procedures to develop an NRC-approved schedule for capsule withdrawals to meet ASTM-E185-82 requirements, including the possibility of operation beyond 60 years.</p> <p><b>C. Revise Reactor Vessel Surveillance Program</b> procedures to withdraw and test a standby capsule to cover the peak fluence expected at the end of the period of extended operation.</p>	<p>SQN1: Prior to 09/17/20</p> <p>SQN2: Prior to 09/15/21</p>		B.1.35
29	Implement the <b>Selective Leaching Program</b> as described in LRA Section B.1.37.	<p>SQN1: Prior to 09/17/20</p> <p>SQN2: Prior to 09/15/21</p>		B.1.37
30	Revise <b>Steam Generator Integrity Program</b> procedures to ensure that corrosion resistant materials are used for replacement steam generator tube plugs.	<p>SQN1: Prior to 09/17/20</p> <p>SQN2: Prior to 09/15/21</p>		B.1.39
<u>31</u>	<p><b>A. Revise Structures Monitoring Program</b> procedures to include the following in-scope structures:</p> <ul style="list-style-type: none"> <li>• Carbon dioxide building</li> <li>• Condensate storage tanks' (CSTs) foundations and pipe trench</li> <li>• East steam valve room Units 1 &amp; 2</li> <li>• Essential raw cooling water (ERCW) pumping station</li> <li>• High pressure fire protection (HPFP) pump house and water storage tanks' foundations</li> <li>• Radiation monitoring station (or particulate iodine and noble gas station) Units 1 &amp; 2</li> <li>• Skimmer wall (Cell No. 12)</li> <li>• Transformer and switchyard support structures and foundations</li> </ul> <p><b>B. Revise Structures Monitoring Program</b> procedures to specify the following list of in-scope structures are included in the RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants Program (Section B.1.36):</p> <ul style="list-style-type: none"> <li>• Condenser cooling water (CCW) pumping station (also known as intake pumping station) and retaining walls</li> <li>• CCW pumping station intake channel</li> <li>• ERCW discharge box</li> <li>• ERCW protective dike</li> <li>• ERCW pumping station and access cells</li> </ul>	<p>SQN1: Prior to 09/17/20</p> <p>SQN2: Prior to 09/15/21</p>		B.1.40

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
31	<ul style="list-style-type: none"> <li>• Skimmer wall, skimmer wall Dike A and underwater dam</li> </ul> <p>C. Revise Structures Monitoring Program procedures to include the following in-scope structural components and commodities:</p> <ul style="list-style-type: none"> <li>• Anchor bolts</li> <li>• Anchorage/embedments (e.g., plates, channels, unistrut, angles, other structural shapes)</li> <li>• Beams, columns and base plates (steel)</li> <li>• Beams, columns, floor slabs and interior walls (concrete)</li> <li>• Beams, columns, floor slabs and interior walls (reactor cavity and primary shield walls; pressurizer and reactor coolant pump compartments; refueling canal, steam generator compartments; crane wall and missile shield slabs and barriers)</li> <li>• Building concrete at locations of expansion and grouted anchors; grout pads for support base plates</li> <li>• Cable tray</li> <li>• Cable tunnel</li> <li>• Canal gate bulkhead</li> <li>• Compressible joints and seals</li> <li>• Concrete cover for the rock walls of approach channel</li> <li>• Concrete shield blocks</li> <li>• Conduit</li> <li>• Control rod drive missile shield</li> <li>• Control room ceiling support system</li> <li>• Curbs</li> <li>• Discharge box and foundation</li> <li>• Doors (including air locks and bulkhead doors)</li> <li>• Duct banks</li> <li>• Earthen embankment</li> <li>• Equipment pads/foundations</li> <li>• Explosion bolts (E. G. Smith aluminum bolts)</li> <li>• Exterior above and below grade; foundation (concrete)</li> <li>• Exterior concrete slabs (missile barrier) and concrete caps</li> <li>• Exterior walls: above and below grade (concrete)</li> <li>• Foundations: building, electrical components, switchyard, transformers, circuit breakers, tanks, etc.</li> <li>• Ice baskets</li> <li>• Ice baskets lattice support frames</li> <li>• Ice condenser support floor (concrete)</li> <li>• Intermediate deck and top deck of ice condenser</li> </ul>			

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
31	<ul style="list-style-type: none"> <li>• Kick plates and curbs (steel - inside steel containment vessel)</li> <li>• Lower inlet doors (inside steel containment vessel)</li> <li>• Lower support structure structural steel: beams, columns, plates (inside steel containment vessel)</li> <li>• Manholes and handholes</li> <li>• Manways, hatches, manhole covers, and hatch covers (concrete)</li> <li>• Manways, hatches, manhole covers, and hatch covers (steel)</li> <li>• Masonry walls</li> <li>• Metal siding</li> <li>• Miscellaneous steel (decking, grating, handrails, ladders, platforms, enclosure plates, stairs, vents and louvers, framing steel, etc.)</li> <li>• Missile barriers/shields (concrete)</li> <li>• Missile barriers/shields (steel)</li> <li>• Monorails</li> <li>• Penetration seals</li> <li>• Penetration seals (steel end caps)</li> <li>• Penetration sleeves (mechanical and electrical not penetrating primary containment boundary)</li> <li>• Personnel access doors, equipment access floor hatch and escape hatches</li> <li>• Piles</li> <li>• Pipe tunnel</li> <li>• Precast bulkheads</li> <li>• Pressure relief or blowout panels</li> <li>• Racks, panels, cabinets and enclosures for electrical equipment and instrumentation</li> <li>• Riprap</li> <li>• Rock embankment</li> <li>• Roof or floor decking</li> <li>• Roof membranes</li> <li>• Roof slabs</li> <li>• RWST rainwater diversion skirt</li> <li>• RWST storage basin</li> <li>• Seals and gaskets (doors, manways and hatches)</li> <li>• Seismic/expansion joint</li> <li>• Shield building concrete foundation, wall, tension ring beam and dome: interior, exterior above and below grade</li> <li>• Steel liner plate</li> <li>• Steel sheet piles</li> <li>• Structural bolting</li> <li>• Sumps (concrete)</li> <li>• Sumps (steel)</li> <li>• Sump liners (steel)</li> </ul>			

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
31	<ul style="list-style-type: none"> <li>• Sump screens</li> <li>• Support members; welds; bolted connections; support anchorages to building structure (e.g., non-ASME piping and components supports, conduit supports, cable tray supports, HVAC duct supports, instrument tubing supports, tube track supports, pipe whip restraints, jet impingement shields, masonry walls, racks, panels, cabinets and enclosures for electrical equipment and instrumentation)</li> <li>• Support pedestals (concrete)</li> <li>• Transmission, angle and pull-off towers</li> <li>• Trash racks</li> <li>• Trash racks associated structural support framing</li> <li>• Traveling screen casing and associated structural support framing</li> <li>• Trenches (concrete)</li> <li>• Tube track</li> <li>• Turning vanes</li> <li>• Vibration isolators</li> </ul> <p>D. Revise Structures Monitoring Program procedures to include periodic sampling and chemical analysis of ground water chemistry for pH, chlorides, and sulfates on a frequency of at least every five years.</p> <p>E. Revise Masonry Wall Program procedures to specify masonry walls located in the following in-scope structures are in the scope of the Masonry Wall Program:</p> <ul style="list-style-type: none"> <li>• Auxiliary building</li> <li>• Reactor building Units 1 &amp; 2</li> <li>• Control bay</li> <li>• ERCW pumping station</li> <li>• HPFP pump house</li> <li>• Turbine building</li> </ul> <p>F. Revise Structures Monitoring Program procedures to include the following parameters to be monitored or inspected:</p> <ul style="list-style-type: none"> <li>• Requirements for concrete structures based on ACI 349-3R and ASCE 11 and include monitoring the surface condition for loss of material, loss of bond, increase in porosity and permeability, loss of strength, and reduction in concrete anchor capacity due to local concrete degradation.</li> <li>• Loose or missing nuts for structural bolting.</li> <li>• Monitoring gaps between the structural steel supports and masonry walls that could potentially affect wall qualification.</li> </ul>			

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No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
31	<p>G. Revise Structures Monitoring Program procedures to include the following components to be monitored for the associated parameters:</p> <ul style="list-style-type: none"> <li>• Anchors/fasteners (nuts and bolts) will be monitored for loose or missing nuts and/or bolts, and cracking of concrete around the anchor bolts.</li> <li>• Elastomeric vibration isolators and structural sealants will be monitored for cracking, loss of material, loss of sealing, and change in material properties (e.g., hardening).</li> </ul> <p>H. Revise Structures Monitoring Program procedures to include the following for detection of aging effects:</p> <ul style="list-style-type: none"> <li>• Inspection of structural bolting for loose or missing nuts.</li> <li>• Inspection of anchor bolts for loose or missing nuts and/or bolts, and cracking of concrete around the anchor bolts.</li> <li>• Inspection of elastomeric material for cracking, loss of material, loss of sealing, and change in material properties (e.g., hardening), and supplement inspection by feel or touch to detect hardening if the intended function of the elastomeric material is suspect. Include instructions to augment the visual examination of elastomeric material with physical manipulation of at least ten percent of available surface area.</li> <li>• Opportunistic inspections when normally inaccessible areas (e.g., high radiation areas, below grade concrete walls or foundations, buried or submerged structures) become accessible due to required plant activities. Additionally, inspections will be performed of inaccessible areas in environments where observed conditions in accessible areas exposed to the same environment indicate that significant degradation is occurring.</li> <li>• Inspection of submerged structures at least once every five years. Inspections of water control structures should be conducted under the direction of qualified personnel experienced in the investigation, design, construction, and operation of these types of facilities. Inspections of water control structures shall be performed on an interval not to exceed five years.</li> <li>• Perform special inspections of water control structures immediately (within 30 days) following the occurrence of significant natural phenomena, such as large floods,</li> </ul>			

## List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
31	<p>earthquakes, hurricanes, tornadoes, and intense local rainfalls.</p> <p>I. Verify acceptance criteria in Structures Monitoring Program procedures is based on information provided in industry codes, standards, and guidelines including NEI 96-03, ACI 201.1R-92, ANSI/ASCE 11-99 and ACI 349.3R-02. Industry and plant-specific operating experience will also be considered in the development of the acceptance criteria.</p>			
32	<p>Implement the <b>Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS) Program</b> as described in LRA Section B.1.41</p>	<p>SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21</p>		B.1.41
<b>33</b>	<p>A. Revise <b>Water Chemistry Control - Closed Treated Water Systems Program</b> procedures to provide a corrosion inhibitor for the following chilled water subsystems in accordance with industry guidelines and vendor recommendations:</p> <ul style="list-style-type: none"> <li>• Auxiliary building cooling</li> <li>• Incore Chiller 1A, 1B, 2A, &amp; 2B</li> <li>• 6.9 kV Shutdown Board Room A &amp; B</li> </ul> <p>B. Revise Water Chemistry Control - Closed Treated Water Systems Program procedures to conduct inspections whenever a boundary is opened for the following systems:</p> <ul style="list-style-type: none"> <li>• Standby diesel generator jacket water subsystem</li> <li>• Component cooling system</li> <li>• Glycol cooling loop system</li> <li>• High pressure fire protection diesel jacket water system</li> <li>• Chilled water portion of miscellaneous HVAC systems (i.e., auxiliary building, Incore Chiller 1A, 1B, 2A, &amp; 2B, and 6.9 kV Shutdown Board Room A &amp; B)</li> </ul> <p>C. Revise Water Chemistry Control-Closed Treated Water Systems Program procedures to state these inspections will be conducted in accordance with applicable ASME Code requirements, industry standards, or other plant-specific inspection and personnel qualification procedures that are capable of detecting corrosion or cracking.</p> <p>D. Revise Water Chemistry Control - Closed Treated Water Systems Program procedures to perform sampling and analysis of the glycol cooling system per industry standards and in no case greater than quarterly unless justified with an additional analysis.</p>	<p>SQN1: Prior to 09/17/20 SQN2: Prior to 09/15/21</p>		B.1.42

### List of Regulatory Commitments

No.	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
33	<p>E. Revise Water Chemistry Control - Closed Treated Water Systems Program procedures to inspect a representative sample of piping and components at a frequency of once every ten years for the following systems:</p> <ul style="list-style-type: none"> <li>• Standby diesel generator jacket water subsystem</li> <li>• Component cooling system</li> <li>• Glycol cooling loop system</li> <li>• High pressure fire protection diesel jacket water system</li> <li>• Chilled water portion of miscellaneous HVAC systems (i.e., auxiliary building, Incore Chiller 1A, 1B, 2A, &amp; 2B, and 6.9 kV Shutdown Board Room A &amp; B)</li> </ul> <p>F. Components inspected will be those with the highest likelihood of corrosion or cracking. A representative sample is 20% of the population (defined as components having the same material, environment, and aging effect combination) with a maximum of 25 components. These inspections will be in accordance with applicable ASME Code requirements, industry standards, or other plant-specific inspection and personnel qualification procedures that ensure the capability of detecting corrosion or cracking.</p>			

The above table identifies 33 commitments by TVA in Enclosure 8 for the SQN License Renewal Amendment (LRA). Any other statements in this LRA submittal are provided for information purposes and are not considered to be regulatory commitments