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Subject: **Submittal Related to ESBWR Design Certification Application -
Appendix 1D, Summary of Tier 2* Information**

The purpose of this supplement is to resubmit Appendix 1D, Summary of Tier 2* Information, incorporating agreed upon changes. Changed text is identified in Enclosure 1 by the black boxes.

If you have any questions about the information provided, please contact me.

Sincerely,

A handwritten signature in black ink that reads "Richard E. Kingston". The signature is written in a cursive, flowing style.

Richard E. Kingston
Vice President, ESBWR Licensing

Enclosure:

1. Submittal Related to ESBWR Design Certification Application - Appendix 1D, Summary of Tier 2* Information– DCD Markup

cc: AE Cabbage USNRC (with enclosures)
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eDRF Section 0000-0118-2543 Revision 1

Enclosure 1

MFN 10-162 Supplement 1

**Submittal Related to ESBWR Design Certification
Application**

Appendix 1D, Summary of Tier 2* Information

DCD Markup

APPENDIX 1D SUMMARY OF TIER 2* INFORMATION

1D.1 PLANT-SPECIFIC CHANGES TO CERTAIN DESIGNATED MATERIAL IN TIER 2

Certain information within sections of Tier 2 is designated as Tier 2* with brackets, italicized text, and an asterisk after the closing bracket. Table 1D-1 provides a summary of DCD locations that contain Tier 2* information. A plant-specific change to any of this Tier 2* designated information shall require NRC Staff approval prior to implementing the change. A request for departure from Tier 2* will be treated as a request for license amendment under 10 CFR 50.90 and 50.92.

1D.2 EXPIRATION OF TIER 2* INFORMATION

The requirement for prior NRC Staff approval of plant-specific changes will expire for some of the designated information, as indicated in Table 1D-1, when the plant first achieves 100% power.

Tier 2* material related to the following topics has no expiration date and may not be changed without prior NRC approval. A request for a departure will be treated as a request for a license amendment.

- Fuel mechanical and thermal-mechanical design evaluation reports including fuel burnup limits (References 4.2-4 and 4.2-5).
- Control rod mechanical and nuclear design reports (References 4.2-8 and 4.2-9).
- Fuel nuclear design report (referenced in several locations in Chapters 4 and 15).
- Critical power correlation (Reference 4.4-12).
- Fuel licensing acceptance criteria (Appendix 4B).
- Control rod licensing acceptance criteria (Appendix 4C).
- Mechanical and structural design of spent fuel storage racks (Subsection 9.1.2.4 and Reference 9.1-2).

After the plant first achieves full power, Tier 2* material related to the following topics reverts to Tier 2 status and is thereafter subject to the same departure provisions that apply to Tier 2 material.

- ASME Boiler & Pressure Vessel Code, Section III.
- ACI 349 and ANSI/AISC-N690.
- Motor-operated valves.
- Equipment seismic qualification methods.
- Piping design acceptance criteria.
- Instrument Setpoint Methodology

- Safety-Related Distributed Control and Information System (Q-DCIS) performance specifications and architecture.
- Safety System Logic and Control (SSLC) hardware and software qualification.

- Human factors engineering design and implementation process.

Tier 2* material related to the following topics reverts to Tier 2 status after successful completion of testing for the first ESBWR unit, and is thereafter subject to the same departure provisions that apply to Tier 2 material.

- First of a kind testing for reactor stability (Subsection 14.2.8.2.7).
- Reactor Pre-Critical Heatup with RWCU/SDC (Subsection 14.2.8.2.35.1).
- Isolation Condenser System Heatup and Steady State Operation (Subsection 14.2.8.2.35.2).
- Power Maneuvering in the Feedwater Temperature Operating Domain (Subsection 14.2.8.2.35.3).
- Load Maneuvering Capability (Subsection 14.2.8.2.35.4).
- Defense-In-Depth Stability Solution Evaluation Test (Subsection 14.2.8.2.35.5).

Table 1D-1
Summary of Tier 2* Information

<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>Chapter 1</u>		
<u>Table 1.6-1</u>	<u>Selected Licensing Topical Reports (LTRs) consistent with how they are marked at their referenced locations</u>	<u>As marked at their referenced locations later in this table</u>
<u>Table 1.9-22</u>	<u>Applicable Edition/Addenda for ASME Boiler and Pressure Vessel Code, Section III</u>	<u>First Full Power</u>
<u>Chapter 2</u>		
<u>Table 2.0-1</u>	<u>Standard Plant Site Parameters</u>	<u>First Full Power</u>
<u>Figure 2.0-1</u>	<u>Horizontal SSE Design Ground Spectra at Foundation Level</u>	<u>First Full Power</u>
<u>Figure 2.0-2</u>	<u>Vertical SSE Design Ground Response Spectra at Foundation Level</u>	<u>First Full Power</u>
<u>Chapter 3</u>		
<u>S3.6.2.1.1</u>	<u>Locations of Postulated Pipe Breaks</u>	<u>First Full Power</u>
<u>S3.6.2.1.2</u>	<u>Locations of Postulated Pipe Cracks</u>	<u>First Full Power</u>
<u>S3.6.2.5</u>	<u>Pipe Break Analysis Results and Protection Methods</u>	<u>First Full Power</u>
<u>S3.7</u>	<u>Seismic Design</u>	<u>First Full Power</u>
<u>S3.7.1.1.3</u>	<u>Single Envelope Ground Motion</u>	<u>First Full Power</u>
<u>S3.7.1.2</u>	<u>Percentage of Critical Damping Values</u>	<u>First Full Power</u>
<u>S3.7.1.3</u>	<u>Supporting Media for Category I Structures</u>	<u>First Full Power</u>
<u>S3.7.2</u>	<u>Seismic System Analysis</u>	<u>First Full Power</u>
<u>S3.7.2.1.2 b)</u>	<u>Response Spectrum Method, Multi-Supported System with ISMs</u>	<u>First Full Power</u>
<u>S3.7.2.1.3</u>	<u>Static Coefficient Method</u>	<u>First Full Power</u>
<u>S3.7.2.2</u>	<u>Natural Frequencies and Responses</u>	<u>First Full Power</u>
<u>S3.7.2.3</u>	<u>Procedures Used for Analytical Modeling</u>	<u>First Full Power</u>
<u>S3.7.2.4</u>	<u>Soil-Structure Interaction</u>	<u>First Full Power</u>
<u>S3.7.2.5</u>	<u>Development of Floor Response Spectra</u>	<u>First Full Power</u>
<u>S3.7.2.6</u>	<u>Three Components of Earthquake Motion</u>	<u>First Full Power</u>

Table 1D-1
Summary of Tier 2* Information

<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>S3.7.2.7</u>	<u>Combination of Modal Responses</u>	<u>First Full Power</u>
<u>S3.7.2.8.1</u>	<u>Turbine Building</u>	<u>First Full Power</u>
<u>S3.7.2.8.2</u>	<u>Radwaste Building</u>	<u>First Full Power</u>
<u>S3.7.2.8.3</u>	<u>Service Building</u>	<u>First Full Power</u>
<u>S3.7.2.8.4</u>	<u>Ancillary Diesel Building</u>	<u>First Full Power</u>
<u>S3.7.2.9</u>	<u>Effects of Parameter Variations on Floor Response Spectra</u>	<u>First Full Power</u>
<u>S3.7.2.10</u>	<u>Use of Equivalent Vertical Static Factors</u>	<u>First Full Power</u>
<u>S3.7.2.11</u>	<u>Methods Used to Account for Torsional Effects</u>	<u>First Full Power</u>
<u>S3.7.2.13</u>	<u>Analysis Procedure for Damping</u>	<u>First Full Power</u>
<u>S3.7.2.14</u>	<u>Determination of Seismic Category I Structure Overturning Moments</u>	<u>First Full Power</u>
<u>S3.7.3.1</u>	<u>Seismic Analysis Method</u>	<u>First Full Power</u>
<u>S3.7.3.2</u>	<u>Determination of Number of Earthquake Cycles</u>	<u>First Full Power</u>
<u>S3.7.3.3.1</u>	<u>Piping Systems</u>	<u>First Full Power</u>
<u>S3.7.3.3.2</u>	<u>Equipment</u>	<u>First Full Power</u>
<u>S3.7.3.3.3</u>	<u>Modeling of Special Engineered Pipe Supports</u>	<u>First Full Power</u>
<u>S3.7.3.5</u>	<u>Analysis Procedure for Damping</u>	<u>First Full Power</u>
<u>S3.7.3.6</u>	<u>Three Components of Earthquake Motion</u>	<u>First Full Power</u>
<u>S3.7.3.7</u>	<u>Combination of Modal Responses</u>	<u>First Full Power</u>
<u>S3.7.3.8</u>	<u>Interaction of Other Systems with Seismic Category I Systems</u>	<u>First Full Power</u>
<u>S3.7.3.9</u>	<u>Multiple-Supported Equipment and Components with Distinct Inputs</u>	<u>First Full Power</u>
<u>S3.7.3.10</u>	<u>Use of Equivalent Vertical Static Factors</u>	<u>First Full Power</u>
<u>S3.7.3.11</u>	<u>Torsional Effects of Eccentric Masses</u>	<u>First Full Power</u>
<u>S3.7.3.12</u>	<u>Effect of Differential Building Movements</u>	<u>First Full Power</u>
<u>S3.7.3.13</u>	<u>Seismic Category I Buried Piping, Conduits and Tunnels</u>	<u>First Full Power</u>

Table 1D-1
Summary of Tier 2* Information

<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>S3.7.3.14</u>	<u>Methods for Seismic Analysis of Seismic Category I Concrete Dams</u>	<u>First Full Power</u>
<u>S3.7.3.15</u>	<u>Methods for Seismic Analysis of Above-Ground Tanks</u>	<u>First Full Power</u>
<u>S3.7.3.16 (1)</u>	<u>Design of Small Branch and Small Bore Piping</u>	<u>First Full Power</u>
<u>S3.7.5</u>	<u>Site-Specific Information</u>	<u>First Full Power</u>
<u>Table 3.7-2</u>	<u>5%-Damped Target Spectra of Single Envelope Design Ground Motion at Foundation Level</u>	<u>First Full Power</u>
<u>Table 3.7-3</u>	<u>Summary of Methods of Seismic Analysis for Primary Building Structures</u>	<u>First Full Power</u>
<u>Figure 3.7-38</u>	<u>Single Envelope Spectrum Match – H1 Component</u>	<u>First Full Power</u>
<u>Figure 3.7-39</u>	<u>Single Envelope Spectrum Match – H2 Component</u>	<u>First Full Power</u>
<u>Figure 3.7-40</u>	<u>Single Envelope Spectrum Match – Vertical Component</u>	<u>First Full Power</u>
<u>Figure 3.7-41</u>	<u>Single Envelope Time Histories – H1 Component</u>	<u>First Full Power</u>
<u>Figure 3.7-42</u>	<u>Single Envelope Time Histories – H2 Component</u>	<u>First Full Power</u>
<u>Figure 3.7-43</u>	<u>Single Envelope Time Histories – Vertical Component</u>	<u>First Full Power</u>
<u>S3.8.1.1.1</u>	<u>Concrete Containment</u>	<u>First Full Power</u>
<u>S3.8.1.1.3</u>	<u>Containment Boundary</u>	<u>First Full Power</u>
<u>S3.8.1.2.2</u>	<u>Construction Codes of Practice</u>	<u>First Full Power</u>
<u>S3.8.1.2.3</u>	<u>General Design Criteria, Regulatory Guides, and Industry Standards</u>	<u>First Full Power</u>
<u>S3.8.1.3.6</u>	<u>Load Combinations for the Containment Structure and Liner Plate</u>	<u>First Full Power</u>
<u>S3.8.1.4.1.4</u>	<u>Corrosion Prevention</u>	<u>First Full Power</u>
<u>S3.8.1.5</u>	<u>Structural Acceptance Criteria</u>	<u>First Full Power</u>
<u>S3.8.1.6</u>	<u>Materials, Quality Control and Special Construction Techniques</u>	<u>First Full Power</u>
<u>S3.8.1.6.1</u>	<u>Concrete</u>	<u>First Full Power</u>
<u>S3.8.1.6.2</u>	<u>Reinforcing Steel</u>	<u>First Full Power</u>
<u>S3.8.1.6.3</u>	<u>Splices of Reinforcing Steel</u>	<u>First Full Power</u>
<u>S3.8.1.6.4</u>	<u>Liner Plate and Appurtenances</u>	<u>First Full Power</u>

Table 1D-1
Summary of Tier 2* Information

<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>S3.8.1.7.1</u>	<u>Structural Integrity Pressure Test</u>	<u>First Full Power</u>
<u>S3.8.1.7.3.12</u>	<u>Evaluation of Inaccessible Areas</u>	<u>First Full Power</u>
<u>S3.8.2.2.1</u>	<u>Codes, Standards and Regulatory Guides</u>	<u>First Full Power</u>
<u>S3.8.2.2.3</u>	<u>Code Compliance</u>	<u>First Full Power</u>
<u>S3.8.2.3</u>	<u>Loads and Load Combinations</u>	<u>First Full Power</u>
<u>S3.8.2.5</u>	<u>Structural Acceptance Criteria</u>	<u>First Full Power</u>
<u>S3.8.2.6</u>	<u>Materials, Quality Control and Special Construction Techniques</u>	<u>First Full Power</u>
<u>S3.8.3.1.1</u>	<u>Diaphragm Floor</u>	<u>First Full Power</u>
<u>S3.8.3.1.3</u>	<u>Reactor Shield Wall</u>	<u>First Full Power</u>
<u>S3.8.3.1.4</u>	<u>Vent Wall</u>	<u>First Full Power</u>
<u>S3.8.3.2</u>	<u>Applicable Codes, Standards, and Specifications</u>	<u>First Full Power</u>
<u>S3.8.3.3.2</u>	<u>Load Combination</u>	<u>First Full Power</u>
<u>S3.8.3.5.1</u>	<u>Diaphragm Floor</u>	<u>First Full Power</u>
<u>S3.8.3.5.2</u>	<u>Reactor Pressure Vessel Support Brackets</u>	<u>First Full Power</u>
<u>S3.8.3.5.3</u>	<u>Reactor Shield Wall</u>	<u>First Full Power</u>
<u>S3.8.3.5.4</u>	<u>Vent Wall</u>	<u>First Full Power</u>
<u>S3.8.3.5.5</u>	<u>Gravity Driven Cooling System Pool</u>	<u>First Full Power</u>
<u>S3.8.3.5.6</u>	<u>Miscellaneous Platforms</u>	<u>First Full Power</u>
<u>S3.8.3.6.1</u>	<u>Diaphragm Floor</u>	<u>First Full Power</u>
<u>S3.8.3.6.2</u>	<u>Reactor Pressure Vessel Support Brackets</u>	<u>First Full Power</u>
<u>S3.8.3.6.3</u>	<u>Reactor Shield Wall</u>	<u>First Full Power</u>
<u>S3.8.3.6.4</u>	<u>Vent Wall</u>	<u>First Full Power</u>
<u>S3.8.3.6.5</u>	<u>Gravity Driven Cooling System Pool</u>	<u>First Full Power</u>
<u>S3.8.3.6.6</u>	<u>Miscellaneous Platforms</u>	<u>First Full Power</u>
<u>S3.8.4</u>	<u>Other Seismic Category I Structures</u>	<u>First Full Power</u>
<u>S3.8.4.1.1</u>	<u>Reactor Building Structure</u>	<u>First Full Power</u>
<u>S3.8.4.1.2</u>	<u>Control Building</u>	<u>First Full Power</u>
<u>S3.8.4.1.3</u>	<u>Fuel Building</u>	<u>First Full Power</u>

Table 1D-1
Summary of Tier 2* Information

<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>S3.8.4.1.4</u>	<u>Firewater Service Complex</u>	<u>First Full Power</u>
<u>S3.8.4.1.5</u>	<u>Radwaste Building</u>	<u>First Full Power</u>
<u>S3.8.4.2.1</u>	<u>Reactor Building</u>	<u>First Full Power</u>
<u>S3.8.4.2.2</u>	<u>Control Building</u>	<u>First Full Power</u>
<u>S3.8.4.2.3</u>	<u>Fuel Building</u>	<u>First Full Power</u>
<u>S3.8.4.2.4</u>	<u>Radwaste Building</u>	<u>First Full Power</u>
<u>S3.8.4.2.5</u>	<u>Welding of Pool Liners</u>	<u>First Full Power</u>
<u>S3.8.4.3.1.2</u>	<u>Load Combinations for Concrete Members</u>	<u>First Full Power</u>
<u>S3.8.4.3.1.3</u>	<u>Load Combinations for Steel Members</u>	<u>First Full Power</u>
<u>S3.8.4.3.2</u>	<u>Control Building</u>	<u>First Full Power</u>
<u>S3.8.4.3.3</u>	<u>Fuel Building</u>	<u>First Full Power</u>
<u>S3.8.4.3.4</u>	<u>Radwaste Building</u>	<u>First Full Power</u>
<u>S3.8.4.3.5</u>	<u>Firewater Service Complex</u>	<u>First Full Power</u>
<u>S3.8.4.5.1</u>	<u>Reactor Building</u>	<u>First Full Power</u>
<u>S3.8.4.5.2</u>	<u>Control Building</u>	<u>First Full Power</u>
<u>S3.8.4.5.3</u>	<u>Fuel Building</u>	<u>First Full Power</u>
<u>S3.8.4.5.4</u>	<u>Radwaste Building</u>	<u>First Full Power</u>
<u>S3.8.4.5.5</u>	<u>Firewater Service Complex</u>	<u>First Full Power</u>
<u>S3.8.4.6.1</u>	<u>Concrete</u>	<u>First Full Power</u>
<u>S3.8.4.6.2</u>	<u>Reinforcing Steel</u>	<u>First Full Power</u>
<u>S3.8.4.6.3</u>	<u>Splices of Reinforcing Steel</u>	<u>First Full Power</u>
<u>S3.8.4.6.4</u>	<u>Quality Control</u>	<u>First Full Power</u>
<u>S3.8.5.1</u>	<u>Description of the Foundations</u>	<u>First Full Power</u>
<u>S3.8.5.2</u>	<u>Applicable Codes, Standards and Specifications</u>	<u>First Full Power</u>
<u>S3.8.5.3</u>	<u>Loads and Load Combinations</u>	<u>First Full Power</u>
<u>S3.8.5.5</u>	<u>Structural Acceptance Criteria</u>	<u>First Full Power</u>
<u>S3.8.5.6</u>	<u>Materials, Quality Control, and Special Construction Techniques</u>	<u>First Full Power</u>
<u>S3.8.6.1</u>	<u>Foundation Waterproofing</u>	<u>First Full Power</u>

Table 1D-1
Summary of Tier 2* Information

<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>S3.8.6.2</u>	<u>Site-Specific Physical Properties and Foundation Settlement</u>	<u>First Full Power</u>
<u>Table 3.8-1</u>	<u>Key Dimensions of Concrete Containment</u>	<u>First Full Power</u>
<u>Table 3.8-2</u>	<u>Load Combinations, Load Factors and Acceptance Criteria for the Reinforced Concrete Containment</u>	<u>First Full Power</u>
<u>Table 3.8-3</u>	<u>Major Allowable Stresses in Concrete and Reinforcing Steel</u>	<u>First Full Power</u>
<u>Table 3.8-4</u>	<u>Load Combination, Load Factors and Acceptance Criteria for Steel Containment Components of the RCCV</u>	<u>First Full Power</u>
<u>Table 3.8-5</u>	<u>Welding Activities and Weld Examination Requirements for Containment Vessel</u>	<u>First Full Power</u>
<u>Table 3.8-6</u>	<u>Codes, Standards, Specifications, and Regulations Used in the Design and Construction of Seismic Category I Internal Structures of the Containment</u>	<u>First Full Power</u>
<u>Table 3.8-7</u>	<u>Load Combination, Load Factors and Acceptance Criteria for Steel Structures Inside the Containment</u>	<u>First Full Power</u>
<u>Table 3.8-8</u>	<u>Key Dimensions of RB, CB, FB, RW and FWSC</u>	<u>First Full Power</u>
<u>Table 3.8-9</u>	<u>Codes, Standards, Specifications, and Regulatory Guides Used in the Design and Construction of Seismic Category I Structures</u>	<u>First Full Power</u>
<u>Table 3.8-10</u>	<u>Temperatures During Operating Conditions (RB)</u>	<u>First Full Power</u>
<u>Table 3.8-11</u>	<u>Temperatures During Operating Conditions (CB)</u>	<u>First Full Power</u>
<u>Table 3.8-12</u>	<u>Temperatures During Operating Conditions (FB)</u>	<u>First Full Power</u>
<u>Table 3.8-13</u>	<u>Key Dimensions of Foundations</u>	<u>First Full Power</u>
<u>Table 3.8-14</u>	<u>Load Combinations and Factor of Safety for Foundation Design</u>	<u>First Full Power</u>
<u>Table 3.8-15</u>	<u>Load Combinations, Load Factors and Acceptance Criteria for the Safety-Related Reinforced Concrete Structures</u>	<u>First Full Power</u>
<u>Table 3.8-16</u>	<u>Load Combinations, Load Factors and Acceptance Criteria for the Safety-Related Steel Structures</u>	<u>First Full Power</u>
<u>Table 3.8-18</u>	<u>Temperatures During Operating Conditions (FWSC)</u>	<u>First Full Power</u>

Table 1D-1
Summary of Tier 2* Information

<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>Figure 3.8-1</u>	<u>Configuration of Concrete Containment</u>	<u>First Full Power</u>
<u>S3.9.2.3</u>	<u>Dynamic Response of Reactor Internals Under Operational Flow Transients and Steady-State Conditions</u>	<u>First Full Power</u>
<u>S3.9.3.1</u>	<u>Loading Combinations, Design Transients and Stress Limits</u>	<u>First Full Power</u>
<u>S3.9.3.1.1</u>	<u>Plant Conditions – Correlation of Plant Condition with Event Probability</u>	<u>First Full Power</u>
<u>S3.9.3.1.2</u>	<u>Inspections/Testing Following the Reactor Coolant System Exceeding Service Level B Pressure Limit</u>	<u>First Full Power</u>
<u>S3.9.3.2</u>	<u>Reactor Pressure Vessel Assembly</u>	<u>First Full Power</u>
<u>S3.9.3.3</u>	<u>Main Steam System Piping</u>	<u>First Full Power</u>
<u>S3.9.3.4</u>	<u>Other Components:</u> <ul style="list-style-type: none"> • <u>Main Steamline Isolation, Safety Relief, and Depressurization Valves</u> • <u>ASME Class 1, 2 and 3 Piping</u> 	<u>First Full Power</u>
<u>S3.9.3.5</u>	<u>Valve Operability Assurance</u>	<u>First Full Power</u>
<u>S3.9.3.6</u>	<u>Design and Installation of Pressure Relief Devices:</u> <ul style="list-style-type: none"> • <u>Main Steam Safety Relief Valves</u> • <u>Other Safety Relief and Vacuum Breaker Valves</u> 	<u>First Full Power</u>
<u>S3.9.3.7</u>	<u>Component Supports</u>	<u>First Full Power</u>
<u>S3.9.3.7.1</u>	<u>Piping Supports</u>	<u>First Full Power</u>
<u>S3.9.3.7.1 Item (3) b.</u>	<u>Inspection, Testing, Repair and/or Replacement of Snubbers</u>	<u>First Full Power</u>
<u>S3.9.3.7.1 Item (3) c. iii.</u>	<u>Snubber Design and Testing</u>	<u>First Full Power</u>
<u>S3.9.3.7.1 Item (e)</u>	<u>Snubber Preservice and Inservice Examination and Testing</u>	<u>First Full Power</u>
<u>S3.9.3.7.2</u>	<u>Reactor Pressure Vessel Sliding Supports</u>	<u>First Full Power</u>
<u>S3.9.3.9.1</u>	<u>Threaded Fasteners – ASME B&PV Code Class 1, 2 and 3 – Material Selection</u>	<u>First Full Power</u>

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<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>S3.9.3.9.2</u>	<u>Threaded Fasteners – ASME B&PV Code Class 1, 2 and 3 – Special Materials Fabrication Processes and Special Controls</u>	<u>First Full Power</u>
<u>S3.9.3.9.3</u>	<u>Threaded Fasteners – ASME B&PV Code Class 1, 2 and 3 – Preservice and Inservice Inspection Requirements</u>	<u>First Full Power</u>
<u>Table 3.9-2</u>	<u>Load Combinations and Acceptance Criteria for Safety-Related, ASME B&PV Code Class 1, 2 and 3 Components, Component Supports, and Class CS Structures</u>	<u>First Full Power</u>
<u>Table 3.9-9</u>	<u>Load Combinations and Acceptance Criteria for Class 1 Piping Systems</u>	<u>First Full Power</u>
<u>Table 3.9-10</u>	<u>Snubber Loads</u>	<u>First Full Power</u>
<u>Table 3.9-11</u>	<u>Strut Loads</u>	<u>First Full Power</u>
<u>Table 3.9-12</u>	<u>Linear Type (Anchor and Guide) Main Steam Piping Support</u>	<u>First Full Power</u>
<u>S3.10.1.1</u>	<u>Selection of Qualification Method</u>	<u>First Full Power</u>
<u>Ref 3.11-6</u>	<u>LTR NEDE-33516P, ESBWR Qualification Plan Requirements for a 72-Hour Duty Cycle Battery</u>	<u>First Full Power</u>
<u>S3A.2</u>	<u>RB/FB complex, CB and FWSC shape, dimensions and embedment depths</u>	<u>First Full Power</u>
<u>Table 3A.2-1</u>	<u>Standard ESBWR Building Dimensions</u>	<u>First Full Power</u>
<u>S3A.3.1</u>	<u>Generic Site Conditions</u>	<u>First Full Power</u>
<u>S3A.3.2</u>	<u>North Anna ESP Site Conditions</u>	<u>First Full Power</u>
<u>Table 3A.3-1</u>	<u>Generic Site Properties for SSI Analysis</u>	<u>First Full Power</u>
<u>Table 3A.3-2</u>	<u>North Anna Site-specific Properties for SSI Analysis</u>	<u>First Full Power</u>
<u>Table 3A.3-3</u>	<u>Layered Site Cases</u>	<u>First Full Power</u>
<u>S3A.4.1</u>	<u>Input motion for SSI analysis</u>	<u>First Full Power</u>
<u>S3A.5</u> <u>S3A.5.1</u> <u>S3A.5.2</u>	<u>Soil-Structure Interaction Analysis Method</u>	<u>First Full Power</u>
<u>Table 3A.5-1</u>	<u>Soil Spring and Damping Coefficient for RB/FB complex</u>	<u>First Full Power</u>

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<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>Table 3A.5-2</u>	<u>Soil Spring and Damping Coefficient for CB</u>	<u>First Full Power</u>
<u>Table 3A.5-3</u>	<u>Soil Spring and Damping Coefficient for FWSC</u>	<u>First Full Power</u>
<u>Figure 3A.5-1</u>	<u>Method for Frequency-Independent Soil Properties</u>	<u>First Full Power</u>
<u>S3A.6</u>	<u>Soil-Structure Interaction Analysis Cases</u>	<u>First Full Power</u>
<u>Table 3A.6-1</u>	<u>Seismic SSI Analysis Cases</u>	<u>First Full Power</u>
<u>S3A.7</u> <u>S3A.7.1</u> <u>S3A.7.2</u> <u>S3A.7.3</u>	<u>Analysis Models</u>	<u>First Full Power</u>
<u>Table 3A.7-1</u>	<u>Eigenvalue Analysis Results for RB/FB model at Soft Site</u>	<u>First Full Power</u>
<u>Table 3A.7-2</u>	<u>Eigenvalue Analysis Results for RB/FB model at Medium Site</u>	<u>First Full Power</u>
<u>Table 3A.7-3</u>	<u>Eigenvalue Analysis Results for RB/FB model at Hard Site</u>	<u>First Full Power</u>
<u>Table 3A.7-4</u>	<u>Eigenvalue Analysis Results for RB/FB model in Fixed-base Case</u>	<u>First Full Power</u>
<u>Table 3A.7-5</u>	<u>Eigenvalue Analysis Results for RB/FB model at Best-estimate North Anna Site</u>	<u>First Full Power</u>
<u>Table 3A.7-6</u>	<u>Eigenvalue Analysis Results for RB/FB model at Upper-bound North Anna Site</u>	<u>First Full Power</u>
<u>Table 3A.7-7</u>	<u>Eigenvalue Analysis Results for RB/FB model at Lower-bound North Anna Site</u>	<u>First Full Power</u>
<u>Table 3A.7-8</u>	<u>Eigenvalue Analysis Results for CB Model at Soft Site</u>	<u>First Full Power</u>
<u>Table 3A.7-9</u>	<u>Eigenvalue Analysis Results for CB Model at Medium Site</u>	<u>First Full Power</u>
<u>Table 3A.7-10</u>	<u>Eigenvalue Analysis Results for CB Model at Hard Site</u>	<u>First Full Power</u>
<u>Table 3A.7-11</u>	<u>Eigenvalue Analysis Results for CB Model in Fixed-base Case</u>	<u>First Full Power</u>
<u>Table 3A.7-12</u>	<u>Eigenvalue Analysis Results for CB Model at Best-estimate North Anna Site</u>	<u>First Full Power</u>
<u>Table 3A.7-13</u>	<u>Eigenvalue Analysis Results for CB Model at Upper-bound North Anna Site</u>	<u>First Full Power</u>

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<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>Table 3A.7-14</u>	<u>Eigenvalue Analysis Results for CB Model at Lower-bound North Anna Site</u>	<u>First Full Power</u>
<u>Table 3A.7-15</u>	<u>Eigenvalue Analysis Results for FWSC Model at Soft Site</u>	<u>First Full Power</u>
<u>S3A.9</u> , <u>S3A.9.1</u> , <u>S3A.9.2</u> , <u>S3A.9.3</u>	<u>Site Envelope Seismic Responses</u>	<u>First Full Power</u>
<u>Table 3A.9-1a to 3A.9-1h</u>	<u>Enveloping Seismic Loads</u>	<u>First Full Power</u>
<u>Table 3A.9-2a to 3A.9-2e</u>	<u>Enveloping Seismic Loads for LOCA Flooding</u>	<u>First Full Power</u>
<u>Table 3A.9-3a to 3A.9-3i</u>	<u>Enveloping Maximum Vertical Acceleration</u>	<u>First Full Power</u>
<u>Table 3A.9-4a to 3A.9-4e</u>	<u>Enveloping Maximum Vertical Acceleration for LOCA Flooding</u>	<u>First Full Power</u>
<u>Figure 3A.9-1a to 3A.9-3l</u>	<u>Enveloping Floor Response Spectra</u>	<u>First Full Power</u>
<u>Appendix 3B</u>	<u>Containment Hydrodynamic Load Definitions</u>	<u>First Full Power</u>
<u>Table 3D.1-1</u>	<u>Computer Program User Details</u>	<u>First Full Power</u>
<u>Appendix 3F</u>	<u>Response of Structures to Containment Loads</u>	<u>First Full Power</u>
<u>Appendix 3G</u>	<u>Design Details and Evaluation Results of Seismic Category I Structures</u>	<u>First Full Power</u>
<u>Ref 3H.4-8</u>	<u>LTR NEDE-33536P/NEDO-33536, Control Building and Reactor Building Environmental Temperature Analysis for ESBWR</u>	<u>First Full Power</u>
<u>Appendix 3I</u>	<u>Designated NEDE-24326-1-P Material Which May Not Change Without Prior NRC Approval</u>	<u>First Full Power</u>
<u>Chapter 4</u>		
<u>Ref 4.2-4</u>	<u>LTR NEDE-33240P/NEDO-33240, GE14E Fuel Assembly Mechanical Design Report</u>	<u>None</u>
<u>Ref 4.2-5</u>	<u>LTR NEDC-33242P/NEDO-33242, GE14E for ESBWR Fuel Rod Thermal-Mechanical Design Report</u>	<u>None</u>

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<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
Ref 4.2-8	LTR NEDE-33244P/NEDO-33244, ESBWR Marathon Control Rod Mechanical Design Report	None
Ref 4.2-9	LTR NEDE-33243P/NEDO-33243, ESBWR Marathon Control Rod Nuclear Design Report	None
Ref 4.3-8, 4.4-21, 4A-2, 4D-27	LTR NEDC-33239P/NEDO-33239, GE14 for ESBWR Nuclear Design Report	None
Ref 4.3-10, 4.4-20, 4A-1, 4D-23	LTR NEDC-33326P/NEDO-33326, GE14E for ESBWR Initial Core Nuclear Design Report	First Full Power
Ref 4.4-12	LTR NEDC-33237P/NEDO-33237, GE14 for ESBWR Critical Power Correlation, Uncertainty, and OLMCPR Development	None
Ref 4.4-22	LTR NEDC-33456P/NEDO-33456, Full-Scale Pressure Drop Testing for a Simulated GE14E Fuel Bundle	First Full Power
S4B.1	Fuel Licensing Acceptance Criteria – General	None
S4B.3	Fuel Licensing Acceptance Criteria – Nuclear	None
S4B.6	Fuel Licensing Acceptance Criteria – Critical Power	None
Table 4B-1	Fuel Rod Thermal-Mechanical Design Criteria	None
S4C.1	Control Rod Licensing Acceptance Criteria - General	None
Ref 4D-19	LTR NEDE-33217P/NEDO-33217, ESBWR Man-Machine Interface System and Human Factors Engineering Implementation Plan	First Full Power
<u>Chapter 5</u>		
S5.2.1.1	10 CFR 50.55a compliance for seismic design of piping	First Full Power
S5.2.4.2	Accessibility requirements to support ASME B&PV Code Section XI examinations	First Full Power
<u>Chapter 6</u>		
S6.6.2	Accessibility requirements to support ASME B&PV Code Section XI examinations	First Full Power
<u>Chapter 7</u>		
Ref 7.1-8, 7B.3-3	LTR NEDE-33295P/NEDO-33295, ESBWR Cyber Security Program Plan	First Full Power

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<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
Ref 7.1-9, 7.2-1, 7.3-2, 7.4-2, 7.5-2, 7.8-4	LTR NEDE-33304P/NEDO-33304P, GEH ESBWR Setpoint Methodology	First Full Power
Ref 7.1-10, 7.2-4, 7.3-4, 7.8-3, 7B.3-2	LTR NEDE-33245P/NEDO-33245, ESBWR – Software Quality Assurance Program Manual	First Full Power
Ref 7.1-12, 7.2-3, 7.3-3, 7B.3-1	LTR NEDE-33226P/NEDO-33226, ESBWR – Software Management Program Manual	First Full Power
S7.2.1.3.5, S7.2.2.3.5, S7.3.5.3.5	BTP HICB-14 discussions about Software Management Program Manual and Software Quality Assurance Program Manual LTRs	First Full Power
S7.8.2.1	Software Quality Assurance Program Manual LTR	First Full Power
S7B.1	Software Development	First Full Power
Ref 7B.3-4	LTR NEDE-33217P/NEDO-33217, ESBWR Man- Machine Interface System and Human Factors Engineering Implementation Plan	First Full Power
<u>Chapter 8</u>		
	None	N/A
<u>Chapter 9</u>		
S9.1.2.4	Mechanical and structural design of spent fuel racks	None
Ref 9.1-2	LTR NEDC-33374P/NEDO-33374, Criticality Analysis for ESBWR Fuel Racks	None
<u>Chapter 10</u>		
	None	N/A
<u>Chapter 11</u>		
	None	N/A
<u>Chapter 12</u>		
	None	N/A

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<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>Chapter 13</u>		
<u>Ref 13.3-1, 13.5-1</u>	<u>LTR NEDE-33217P/NEDO-33217, ESBWR Man-Machine Interface System and Human Factors Engineering Implementation Plan</u>	<u>First Full Power</u>
<u>Chapter 14</u>		
<u>S14.2.8.2.7</u>	<u>First of a kind testing for reactor stability</u>	<u>Successful completion of testing for First ESBWR</u>
<u>S14.2.8.2.35, S14.2.8.2.35.1, S14.2.8.2.35.2, S14.2.8.2.35.3, S14.2.8.2.35.4, S14.2.8.2.35.5</u>	<u>First of a Kind Tests</u>	<u>Successful completion of testing for First ESBWR</u>
<u>S14.3A.2</u>	<u>Design Acceptance Criteria ITAAC for Piping Design</u>	<u>First Full Power</u>
<u>S14.3A.3</u>	<u>Digital Instrumentation and Control Design Acceptance Criteria ITAAC Closure</u>	<u>First Full Power</u>
<u>S14.3A.4</u>	<u>Human Factors Engineering Design Acceptance Criteria ITAAC Closure</u>	<u>First Full Power</u>
<u>Chapter 15</u>		
<u>Ref 15.0-6, 15.2-2, 15.3-4, 15.5-6</u>	<u>LTR NEDC-33239P/NEDO-33239, GE14 for ESBWR Nuclear Design Report</u>	<u>None</u>
<u>Ref 15.0-7, 15.2-3, 15.3-5, 15.5-3</u>	<u>LTR NEDC-33326P/NEDO-33326, GE14E for ESBWR Initial Core Nuclear Design Report</u>	<u>First Full Power</u>
<u>Chapter 16 and 16B</u>		
	<u>None</u>	<u>N/A</u>
<u>Chapter 17</u>		
<u>S17.1.3</u>	<u>Software Quality Assurance Program Manual LTR, Software design verification and validation</u>	<u>First Full Power</u>
<u>Ref 17.1-2</u>	<u>LTR NEDE-33245P/NEDO-33245, ESBWR – Software Quality Assurance Program Manual</u>	<u>First Full Power</u>

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<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>Chapter 18</u>		
<u>Ref 18.1-1,</u> <u>18.2-1, 18.3-1,</u> <u>18.4-1, 18.5-1,</u> <u>18.6-1, 18.7-1,</u> <u>18.8-1, 18.9-1,</u> <u>18.10-1,</u> <u>18.11-1,</u> <u>18.12-1,</u> <u>18.13-1</u>	<u>LTR NEDE-33217P/NEDO-33217, ESBWR Man-Machine Interface System and Human Factors Engineering Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.3-2</u>	<u>LTR NEDO-33262, ESBWR Human Factors Engineering Operating Experience Review Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.4-2</u>	<u>LTR NEDO-33219, ESBWR Human Factors Engineering Functional Requirements Analysis Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.4-3</u>	<u>LTR NEDE-33220P/NEDO-33220, ESBWR Human Factors Engineering Allocation of Function Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.5-2</u>	<u>LTR NEDE-33221P/NEDO-33221, ESBWR Human Factors Engineering Task Analysis Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.6-2</u>	<u>LTR NEDO-33266, ESBWR Human Factors Engineering Staffing and Qualifications Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.7-2</u>	<u>LTR NEDO-33267, ESBWR Human Factors Engineering Human Reliability Analysis Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.8-2</u>	<u>LTR NEDE-33268P/NEDO-33268, ESBWR Human Factors Engineering Human-System Interface Design Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.9-2</u>	<u>LTR NEDO-33274, ESBWR Human Factors Engineering Procedures Development Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.10-2</u>	<u>LTR NEDO-33275, ESBWR Human Factors Engineering Training Development Implementation Plan</u>	<u>First Full Power</u>

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<u>Location</u>	<u>Short Description of Tier 2* Information</u>	<u>Expiration</u>
<u>Ref 18.11-2</u>	<u>LTR NEDE-33276P/NEDO-33276, ESBWR Human Factors Engineering Verification and Validation Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.12-2</u>	<u>LTR NEDO-33278, ESBWR Human Factors Engineering Design Implementation Plan</u>	<u>First Full Power</u>
<u>Ref 18.13-2</u>	<u>LTR NEDO-33277, ESBWR Human Factors Engineering Human Performance Monitoring Implementation Plan</u>	<u>First Full Power</u>
<u>Chapter 19</u>		
	<u>None</u>	<u>N/A</u>