Chapter 3 Design of Structures, Components, Equipment, and Systems

3.1 Conformance with NRC General Design Criteria

This section of the referenced DCD is incorporated by reference with no departures or supplements.

3.2 Classification of Structures, Systems and Components

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

Table 3.2-1 Classification Summary

Replace the note for System P73 with the following.

STD CDI The site-specific plant design includes the Hydrogen Water Chemistry System (HWCS). See Subsection 9.3.9 for further details.

Replace the note for System P74 with the following.

STD CDI The site-specific plant design does not include the Zinc Injection System.

3.3 Wind and Tornado Loadings

This section of the referenced DCD is incorporated by reference with no departures or supplements.

3.4 Water Level (Flood) Design

This section of the referenced DCD is incorporated by reference with no departures or supplements.

3.5 Missile Protection

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

3.5.1.5 Site Proximity Missiles (Except Aircraft)

Add the following sentence after the first sentence in the first paragraph.

STD SUP 3.5-1 Site-specific missile sources are addressed in Section 2.2.

3.5.1.6 Aircraft Hazards

Add the following at the end of the first paragraph.

STD SUP 3.5-2 Site-specific aircraft hazard analysis and the site-specific critical areas are addressed in Section 2.2.

3.6 Protection Against Dynamic Effects Associated with the Postulated Rupture of Piping

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

3.6.2.5 Pipe Break Analysis Results and Protection Methods

Replace the first sentence in this section with the following.

STD COL 3.6.5-1-A **[START COM 3.6-001]** The pipe break evaluation report will be completed in conjunction with closure of DCD Tier 1 Table 3.1-1, Item 3. **[END COM 3.6-001] [START COM 3.6-002]** This information will be included in the FSAR as part of a subsequent FSAR update. **[END COM 3.6-002]** The pipe break evaluation report includes the following.

3.6.5 COL Information

3.6.5.1-1-H Pipe Break Analysis Results and Protection Methods

STD COL 3.6.5-1-A This COL item is addressed in Subsection 3.6.2.5.

3.7 Seismic Design

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

3.7.1.1 Design Ground Motion

Add the following sections.

EF3 SUP 3.7-1

3.7.1.1.4 Site-Specific Design Ground Motion Response Spectra

The site-specific design Ground Motion Response Spectra (GMRS) and the FIRS are described in Subsection 2.5.2. The CSDRS are compared with the FIRS in Table 2.0-201.

3.7.1.1.5 Site-Specific Design Ground Motion Time History

EF3 SUP 3.7-2

The site-specific earthquake ground motion time history is described in Subsection 2.5.4.

3.7.1.3 Supporting Media for Seismic Category I Structures

Add the following at the end of the first paragraph.

EF3 SUP 3.7-3

Subsection 2.5.4 provides site-specific properties of subsurface materials.

3.7.2.4 Soil/Structure Interaction

Add the following at the end of the first paragraph.

EF3 SUP 3.7-4

Subsection 2.5.4 describes the site-specific properties of subsurface materials.

3.7.2.8 Interaction of Non-Category I Structures with Seismic Category I Structures

Add the following second paragraph.

EF3 SUP 3.7-5

The locations of structures are provided in Figure 2.1-204.

3.7.4 Seismic Instrumentation

Add the following at the end of the first paragraph.

EF3 SUP 3.7-6

[START COM 3.7-001] The seismic monitoring program described in this subsection, including the necessary test and operating procedures, will be implemented prior to receipt of fuel on site. **[END COM 3.7-001]**

3.8 Seismic Category I Structures

This section of the referenced DCD is incorporated by reference with no departures or supplements.

3.9 Mechanical Systems and Components

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

3.9.2.4 Initial Startup Flow-Induced Vibration Testing of Reactor Internals

Replace the last two paragraphs with the following.

EF3 COL 3.9.9-1-H

[START COM 3.9-001] A vibration assessment program as specified in RG 1.20 will be completed no later than six months after the lead plant has completed its vibration assessment program. **[END COM 3.9-001]**

3.9.3.1 Loading Combinations, Design Transients and Stress Limits

Replace the last sentence with the following.

STD COL 3.9.9-2-H

[START COM 3.9-002] The piping stress reports identified in this DCD section will be completed within six months of completion of DCD ITAAC Table 3.1-1. **[END COM 3.9-002] [START COM 3.9-004]** The FSAR will be revised as necessary in a subsequent update to address the results of this analysis. **[END COM 3.9-004]**

3.9.3.7.1(3)e Snubber Pre-service and In-service Examination Testing

Replace the last two sentences at the end of this section with the following.

STD COL 3.9.9-4-A

The inservice testing program for snubbers will be completed in accordance with milestones described in Section 13.4.

	3.9.3.7.1(3)f **Snubber Audit Support Data**
	Replace the first sentence of this section with the following:
STD COL 3.9.9-4-A	**[START COM 3.9-003]** A plant specific table will be prepared in conjunction with closure of DCD ITAAC Table 3.1-1 and include the following specific snubber information: **[END COM 3.9-003]**
	Add the following at the end of this section.
STD COL 3.9.9-4-A	**[START COM 3.9-005]** This information will be included in the FSAR as part of a subsequent FSAR update. **[END COM 3.9-005]**
	3.9.6 **In-Service Testing of Pumps and Valves**
	Replace the last sentence of this section with the following.
STD COL 3.9.9-3-A	Milestones for implementation of the ASME OM Code preservice and inservice testing programs and the motor operated valve testing program are defined in Section 13.4.
	3.9.6.6 **10 CFR 50.55a Relief Requests and Code Cases**
	Add the following at the end of the first paragraph.
STD SUP 3.9-1	No relief from or alternative to the ASME OM Code is being requested beyond what is identified in the DCD.
	3.9.7 **Risk-Informed Inservice Testing**
	Replace the text in this section with the following.
STD SUP 3.9-2	Risk informed inservice testing is not being utilized.
	3.9.8 **Risk-Informed Inservice Inspection of Piping**
	Replace the text in this section with the following.

STD SUP 3.9-3 Risk informed inservice inspection of piping is not being utilized.

3.9.9 COL Information

3.9.9-1-H Reactor Internals Vibration Analysis, Measurement and Inspection Program

EF3 COL 3.9.9-1-H This COL item is addressed in Subsection 3.9.2.4.

3.9.9-2-H ASME Class 2 or 3 or Quality Group D Components with 60 Year Design Life

STD COL 3.9.9-2-H This COL item is addressed in Subsection 3.9.3.1.

3.9.9.3-A Inservice Testing Programs

STD COL 3.9.9-3-A This COL item is addressed in Subsection 3.9.6.

3.9.9.4-A Snubber Inspection and Test Program

STD COL 3.9.9-4-A This COL item is addressed in Subsection 3.9.3.7.1(3)e and Subsection 3.9.3.7.1(3)f.

3.10 Seismic and Dynamic Qualification of Mechanical and Electrical Equipment

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

3.10.1.4 Dynamic Qualification Report

Replace the last sentence in this section with the following:

STD COL 3.10.4-1-A **[START COM 3.10-001]** The Dynamic Qualification Report will be completed prior to fuel load. **[END COM 3.10-001] [START COM 3.10-002]** FSAR information will be revised, as necessary, as part of a subsequent FSAR update. **[END COM 3.10-002]**

STD SUP 3.10-1 Section 17.5 defines the Quality Assurance Program requirements that are applied to equipment qualification files, including requirements for handling safety-related quality records, control of purchased material, equipment and services, test control, and other quality related processes.

3.10.4 Combined Operating License Information

STD COL 3.10.4-1-A 3.10.4-1-A **Dynamic Qualification Report**

This COL item is addressed in Subsection 3.10.1.4.

3.11 Environmental Qualification of Mechanical and Electrical Equipment

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

3.11.2.2 Qualification Program, Methods and Documentation

Add the following paragraphs at the end of this section:

STD COL 3.11-1-A Implementation of the environmental qualification program, including development of the plant specific Equipment Qualification Document (EQD), will be in accordance with the milestone defined in Section 13.4.

[START COM 3.11-001] Following program implementation, DCD Table 3.11-1 will be supplemented, as necessary, in a subsequent FSAR update to include additional equipment covered by the program but not identified in the table. **[END COM 3.11-001]**

3.11.5 Combined Operating License Information

3.11-1-A Equipment Qualification Document

STD COL 3.11-1-A This COL item is addressed in Subsection 3.11.2.2.

STD SUP 3.12-1

3.12 Piping Design Review

Information on seismic Category I and II, and nonseismic piping analysis and their associated supports is presented in DCD Sections 3.7, 3.9, 3D, 3K, 5.2 and 5.4.

STD SUP 3.12-2 **[START COM 3.12-001]** The location and distance between piping systems will be established as part of the completion of DCD ITAAC Table 3.1-1. **[END COM 3.12-001] [START COM 3.12-002]** The FSAR will be revised as necessary, in a subsequent update to include this information. **[END COM 3.12-002]**

STD SUP 3.13-1

3.13 Threaded Fasteners - ASME Code Class 1, 2, and 3

Criteria applied to the selection of materials, design, inspection and testing of threaded fasteners (i.e., threaded bolts, studs, etc.) are presented in DCD Section 3.9.3.9, with supporting information in DCD Sections 4.5.1, 5.2.3, and 6.1.1.

Appendix 3A Seismic Soil-Structure Interaction Analysis

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

3A.1 Introduction

Replace the last sentence in the second paragraph with the following.

EF3 CDI

Site-specific geotechnical data is described in Chapter 2. This data is compatible with the site enveloping parameters considered in the standard design.

3A.2 ESBWR Standard Plant Site Plan

Replace the first two sentences of the first paragraph with the following.

EF3 CDI

The site plan is shown in Figure 2.1-204. The plan orientation is denoted on the figure.

Appendix 3B Containment Hydrodynamic Load Definitions

This section of the referenced DCD is incorporated by reference with no departures or supplements.

Appendix 3C Computer Programs Used in the Design and Analysis of Seismic Category I Structures

This section of the referenced DCD is incorporated by reference with no departures or supplements.

Appendix 3D Computer Programs Used in the Design of Components, Equipment and Structures

This section of the referenced DCD is incorporated by reference with no departures or supplements.

Appendix 3E Design Details and Evaluation Results of Seismic Category I Structures

This section of the referenced DCD is incorporated by reference with no departures or supplements.

Appendix 3F Response of Structures to Containment Loads

This section of the referenced DCD is incorporated by reference with no departures or supplements.

Appendix 3G Design Details and Evaluation Results of Seismic Category I Structures

This section of the referenced DCD is incorporated by reference with no departures or supplements.

Appendix 3H Equipment Qualification Design Environmental Conditions

This section of the referenced DCD is incorporated by reference with no departures or supplements.

Appendix 3I Designated NEDE-24326-1-P Material Which May Not Change Without Prior NRC Approval

This section of the referenced DCD is incorporated by reference with no departures or supplements.

Appendix 3J Evaluation of Postulated Ruptures in High Energy Pipes

This section of the referenced DCD is incorporated by reference with no departures or supplements.

Appendix 3K Resolution of Intersystem Loss of Coolant Accident

This section of the referenced DCD is incorporated by reference with no departures or supplements.

Appendix 3L Reactor Internals Flow Induced Vibration Program

This section of the referenced DCD is incorporated by reference with no departures or supplements.