GE-Hitachi Nuclear Energy

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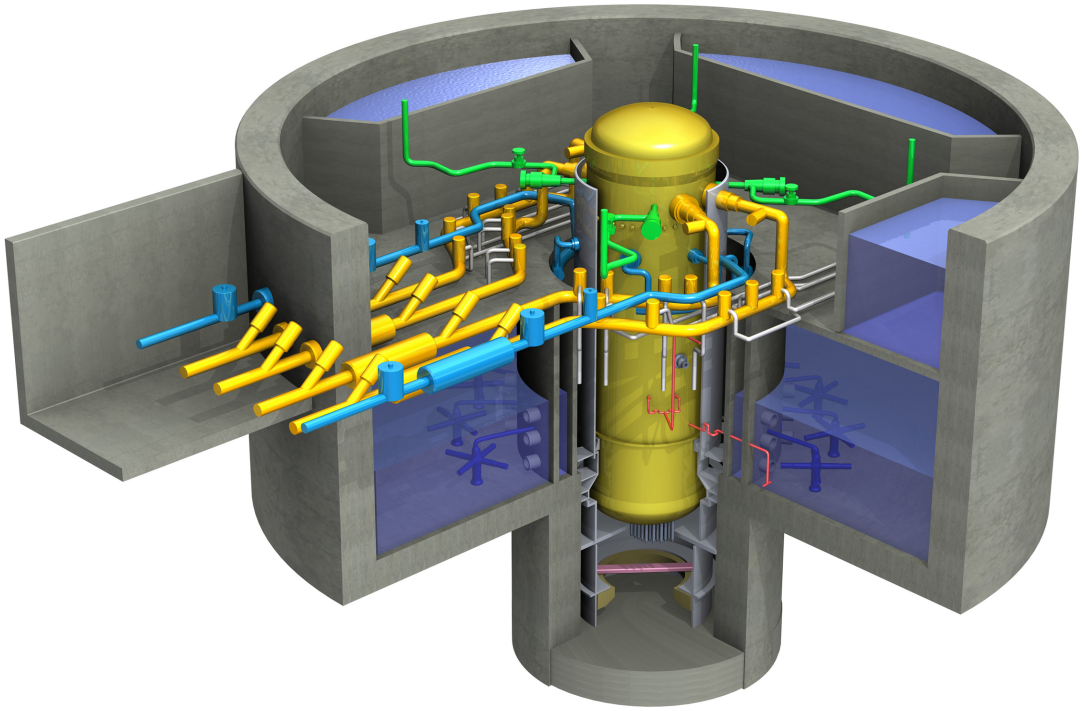

ESBWR Design Control Document
Tier 2

Chapter 2
Site Characteristics

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Abbreviations and Acronyms List

Term	Definition
10 CFR	Title 10, Code of Federal Regulations
COL	Combined Operating License
CSDRS	Certified Seismic Design Response Spectra
DCD	Design Control Document
D/Q	Meteorological Dispersion Coefficient
EAB	Exclusion Area Boundary
FSAR	Final Safety Analysis Report
FWSC	Fire Water Service Complex
HVAC	Heating, Ventilation and Air Conditioning
ITAAC	Inspections, Tests, Analyses and Acceptance Criteria
LPZ	Low Population Zone
MCR	Main Control Room
NRC	Nuclear Regulatory Commission
PMF	Probable Maximum Flood
PMP	Probable Maximum Precipitation
PMWP	Probable Maximum Winter Precipitation
PRA	Probabilistic Risk Assessment
SRP	Standard Review Plan
SSC(s)	Structure, System and Component(s)
SSE	Safe Shutdown Earthquake
TSC	Technical Support Center
X/Q	Meteorological Dispersion Coefficient

2. SITE CHARACTERISTICS

2.0 INTRODUCTION

This chapter defines the envelope of site-related parameters that the ESBWR Standard Plant is designed to accommodate. These parameters envelope most potential sites in the U.S. A list of the site envelope design parameters is given in Table 2.0-1.

Table 2.0-2 references the guidance in NUREG-0800 Standard Review Plan (SRP). Table 2.0-2 defines the limits imposed on the acceptance criteria in Section II of the various SRPs by (1) the envelope of site-related parameters that the ESBWR plant is designed to accommodate, and (2) the assumptions, both implicit and explicit, related to site parameters that were employed in the evaluation of the ESBWR design.

The requirements for site parameters for a standard design are contained in 10 CFR 52.47(a)(1)(iii). A design certification applicant provides postulated site parameters for the design, and an analysis and evaluation of the design in terms of such parameters. The following demonstrate that the standard design meets the above criteria.

The site parameters used in the ESBWR Standard Plant design are specified in both DCD Tier 1 and this chapter. The specified site parameters are the top-level bounding site parameters useful in the selection of a suitable site for a facility referencing the ESBWR certified design. Because they were used in bounding evaluations of the certified design, they define the envelope of site parameters used for the design that must be considered for a site. When the site characteristics fall within the site parameter values, a facility built on the site is in conformance with the design certification. Appropriate values for site parameters have been selected that make the design suitable for many sites. The site parameters specified in Tier 1 are the same as those presented in this chapter.

The analyses and evaluations of the design, considering the site parameters of Table 2.0-1, are contained in the various sections of the DCD Tier 2. For example, the safe shutdown earthquake parameters are used in structural and piping analyses in various sections of Chapter 3, atmospheric dispersion parameters are used in radiological analyses throughout Chapter 15, and the elevation parameter is used in the flooding analyses in Section 3.4.

Site parameters are specified for the following parameters:

- Maximum Ground Water Level
- Maximum Flood (or Tsunami) Level
- Precipitation (for roof design)
- Ambient Design Temperature
- Extreme Wind
- Tornado (maximum speed, pressure drop, missile spectrum, etc.)
- Maximum Settlement Values for Seismic Category I Buildings
- Soil Properties (minimum static bearing capacity, minimum dynamic bearing capacity, minimum shear wave velocity, liquefaction potential, angle of internal friction)

- Seismology (SSE response spectra, using figures)
- Hazards in Site Vicinity
- Required Stability of Slopes
- Meteorological Dispersion (Values at Exclusion Area Boundary [EAB] and Low Population Zone [LPZ] at appropriate time intervals for short and long term)

The site parameters include a requirement that liquefaction not occur underneath Seismic Category I structures, systems, and components (SSCs) resulting from a site-specific SSE. In addition, although the ESBWR design is independent of a particular site and takes into consideration the 0.3g Regulatory Guide 1.60 spectra and representative high frequency ground spectra in Central and Eastern U.S., the evaluation of each site for liquefaction potential and slope stability uses the site-specific SSE.

The design basis for protection against missiles is specified in the DCD Tier 2 Section 3.5, such that external missiles are adequately addressed in the design for buildings and structures, and the building/structure design is verified by appropriate ITAAC.

The site characteristics information for each site is addressed in the Combined License (COL) applicant's final safety analysis report (FSAR) in accordance with 10 CFR 52.79. See Subsection 2.0.1, Item 2.0-1-A.

The guidance in NUREG-0800 identifies information needed for evaluation of a proposed site. See Subsection 2.0.1, Items 2.0-2-A through 2.0-30-A.

2.0.1 COL Unit-Specific Information

2.0-1-A Site Characteristics Demonstration

A COL applicant referencing the ESBWR DCD demonstrates that site characteristics for a given site fall within the ESBWR DCD site parameter values per 10 CFR 52.79. (Section 2.0)

2.0-2-A through 2.0-30-A Standard Review Plan Conformance

A COL applicant will provide information in accordance with NRC guidance in NUREG-0800, Standard Review Plan (SRP) sections for site characteristics. A COL applicant follows applicable NRC guidance for preparing the COL application, depending upon whether the applicant will reference an Early Site Permit or not. (Section 2.0 and Table 2.0-2 – see Table 2.0-2 for detailed COL item numbering by SRP section)

2.0.2 References

2.0-1 GE Nuclear Energy, "ESBWR Certification Probabilistic Risk Assessment," NEDO-33201, Class I (Non-proprietary), Revision 1, September 2006.

2.0-2 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures, ASCE 7-02, 2002.

2.0-3 National Weather Service Publication Hydrometeorology Report No. 52 (HMR-52)

2.0-4 Electric Power Research Institute, “Advanced Light Water Reactor Utility Requirements Document,” Revision 6, May 1997.

2.0-5 U. S. Nuclear Regulatory Commission, "A Risk-Informed Approach to Defining the Design Basis Tornado for New Reactor Licensing," SECY 04-0200, October 26, 2004.

2.0-6 National Weather Service Publication Hydrometeorology Report No. 53 (HMR-53)

Table 2.0-1

Envelope of ESBWR Standard Plant Site Parameters [1]

Maximum Ground Water Level:	0.61 m (2 ft) below plant grade
Extreme Wind:	**Seismic Category I and II Structures** - 100-year Wind Speed (3-sec gust): [13] 67.1 m/s (150 mph) - Exposure Category: D **Non-Seismic Standard Plant Structures** - 50-year Wind Speed (3-sec gust): 58.1 m/s (130 mph)
Maximum Flood (or Tsunami) Level: [2]	0.3 m (1 ft) below plant grade
Tornado:	- Maximum Tornado Wind Speed: [3] 147.5 m/s (330 mph) - Maximum Rotational Speed: 116.2 m/s (260 mph) - Translational Speed: 31.3 m/s (70 mph) - Radius: 45.7 m (150 ft) - Pressure Drop: 16.6 kPa (2.4 psi) - Rate of Pressure Drop: 11.7 kPa/s (1.7 psi/s) - Missile Spectrum: [3] Spectrum I of SRP 3.5.1.4, Rev 2 applied to full building height.
Precipitation (for Roof Design):	- Maximum Rainfall Rate: [4] 49.3 cm/hr (19.4 in/hr) - Maximum Short Term Rate: 15.7 cm (6.2 in) in 5 minutes - Maximum Roof Load: [5] 2873 Pa (60 lbf/ft^2) - Maximum Ground Snow Load [5] (100-year recurrence interval): 2394 Pa (50 lbf/ft^2) - Maximum 48-hr Winter Rainfall: [5] 91.4 cm (36 in)
Ambient Design Temperature: [6]	**2% Exceedance Values** - Maximum: 35.6°C (96°F) dry bulb 26.1°C (79°F) wet bulb (coincident) 27.2°C (81°F) wet bulb (non-coincident) - Minimum: -23.3°C (-10°F) **1% Exceedance Values** - Maximum: 37.8°C (100°F) dry bulb 26.1°C (79°F) wet bulb (coincident) 27.8°C (82°F) wet bulb (non-coincident) - Minimum: -23.3°C (-10°F) **0% Exceedance Values** - Maximum: 47.2°C (117°F) dry bulb 26.7°C (80°F) wet bulb (coincident) 31.1°C (88°F) wet bulb (non-coincident) - Minimum: -40°C (-40°F)

Table 2.0-1

Envelope of ESBWR Standard Plant Site Parameters (continued)

Soil Properties:	- Minimum Static Bearing Capacity: (7)	
	Reactor/Fuel Building:	699 kPa (14,600 lbf/ft^2)
	Control Building:	292 kPa (6,100 lbf/ft^2)
	Fire Water Service Complex:	165 kPa (3,450 lbf/ft^2)
	- Minimum Dynamic Bearing Capacity: (7)	
	Reactor/Fuel Building:	
	Soft:	2700 kPa (56,400 lbf/ft^2)
	Medium:	7300 kPa (152,500 lbf/ft^2)
	Hard:	5400 kPa (112,800 lbf/ft^2)
	Control Building:	
	Soft:	2800 kPa (58,500 lbf/ft^2)
	Medium:	2500 kPa (52,300 lbf/ft^2)
	Hard:	2400 kPa (50,200 lbf/ft^2)
	Fire Water Service Complex (FWSC):	
	Soft:	440 kPa (9,200 lbf/ft^2)
	Medium:	540 kPa (11,300 lbf/ft^2)
	Hard:	670 kPa (14,000 lbf/ft^2)
	- Minimum Shear Wave Velocity: (8)	300 m/s (1000 ft/s)
	- Liquefaction Potential:	
	Seismic Category I Structures	None under footprint of Seismic Category I structures resulting from site-specific SSE.
	Other than Seismic Category I Structures	See Note (14)
	- Angle of Internal Friction	≥ 30 degrees
Seismology:	- SSE Horizontal Ground Response Spectra: (9)	See Figure 2.0-1
	- SSE Vertical Ground Response Spectra: (9)	See Figure 2.0-2

Table 2.0-1

Envelope of ESBWR Standard Plant Site Design Parameters (continued)

Hazards in Site Vicinity:	- Site Proximity Missiles and Aircraft:	< about 10^{-7} per year
	- Volcanic Activity:	None
	- Toxic Gases:	None *
* Maximum toxic gas concentrations at the Main Control Room (MCR) HVAC intakes:	< toxicity limits	
Required Stability of Slopes: (10)	- Factor of safety for static (non-seismic) loading	1.5
	- Factor of safety for dynamic (seismic) loading due to site-specific SSE	1.1
Maximum Settlement Values for Seismic Category I Buildings : (15)		
Maximum Settlement at any corner of basemat	- Under Reactor/Fuel Building	103 mm (4.0 inches)
	- Under Control Building	18 mm (0.7 inches)
	- Under FWSC Structure	17 mm (0.7 inches)
Averaged Settlement at four corners of basemat	- Under Reactor/Fuel Building	65 mm (2.6 inches)
	- Under Control Building	12 mm (0.5 inches)
	- Under FWSC Structure	10 mm (0.4 inches)
Maximum Differential Settlement along the longest mat foundation dimension	- within Reactor/Fuel Building	77 mm (3.0 inches)
	- within Control Building	14 mm (0.6 inches)
	- Under FWSC Structure	12 mm (0.5 inches)
Maximum Differential Displacement between Reactor/Fuel Buildings and Control Building		85 mm (3.3 inches)

Table 2.0-1

Envelope of ESBWR Standard Plant Site Design Parameters (continued)

Meteorological Dispersion (X/Q): (11)	EAB X/Q:		
	0-2 hours:	2.00E-03 s/m^3	
	LPZ X/Q:		
	0-8 hours:	1.90E-04 s/m^3	
	8-24 hours:	1.40E-04 s/m^3	
	1-4 days:	7.50E-05 s/m^3	
	4-30 days:	3.00E-05 s/m^3	
* First value is for unfiltered inleakage. Second value is for air intakes (emergency and normal)	Control Room X/Q: *		
** Due to symmetry, Turbine Building X/Q values are identical for unfiltered inleakage and air intakes.	Reactor Building – Diffuse Source		
NA Values are not required for any dose analysis.	0-2 hours:	1.90E-03 s/m^3	1.50E-03 s/m^3
	2-8 hours:	1.30E-03 s/m^3	1.10E-03 s/m^3
	8-24 hours:	5.90E-04 s/m^3	5.00E-04 s/m^3
	1-4 days:	5.00E-04 s/m^3	4.20E-04 s/m^3
	4-30 days	4.40E-04 s/m^3	3.80E-04 s/m^3
	Passive Containment Cooling System / Reactor Building Roof		
	0-2 hours:	3.40E-03 s/m^3	3.00E-03 s/m^3
	2-8 hours:	2.70E-03 s/m^3	2.50E-03 s/m^3
	8-24 hours:	1.40E-03 s/m^3	1.20E-03 s/m^3
	1-4 days:	1.10E-03 s/m^3	9.00E-04 s/m^3
	4-30 days	7.90E-04 s/m^3	7.00E-04 s/m^3
	Turbine Building **		
	0-2 hours:	1.20E-03 s/m^3	1.20E-03 s/m^3
	2-8 hours:	9.80E-04 s/m^3	9.80E-04 s/m^3
	8-24 hours:	3.90E-04 s/m^3	3.90E-04 s/m^3
	1-4 days:	3.80E-04 s/m^3	3.80E-04 s/m^3
	4-30 days	3.20E-04 s/m^3	3.20E-04 s/m^3
	Fuel Building – Diffuse Source		
	0-2 hours:	NA	2.80E-03 s/m^3
	2-8 hours:	NA	2.50E-03 s/m^3
	8-24 hours:	NA	1.25E-03 s/m^3
	1-4 days:	NA	1.10E-03 s/m^3
	4-30 days:	NA	1.00E-03 s/m^3
	Fuel Building Cask Doors		
	0-2 hours:	NA	1.50E-03 s/m^3
	2-8 hours:	NA	1.30E-03 s/m^3
	8-24 hours:	NA	6.80E-04 s/m^3
	1-4 days:	NA	5.60E-04 s/m^3
	4-30 days:	NA	4.30E-04 s/m^3

Table 2.0-1

Envelope of ESBWR Standard Plant Site Design Parameters (continued)

Meteorological Dispersion (X/Q): (11) **(continued)**	Radwaste Building		
	0-2 hours:	NA	1.50E-03 s/m^3
	2-8 hours:	NA	1.30E-03 s/m^3
	8-24 hours:	NA	6.80E-04 s/m^3
	1-4 days:	NA	5.60E-04 s/m^3
	4-30 days:	NA	4.30E-04 s/m^3
Long Term Dispersion Estimates: (12)	X/Q:	2.0E-06 s/m^3	
	D/Q:	4.0E-09 m^{-2}	

Notes for Table 2.0-1:

(1) The design of the Radwaste Building uses a set of design parameters that are specified in Regulatory Guide 1.143, Table 2, Class RW-IIa instead of the corresponding values given in this table.

(2) Probable maximum flood level (PMF), as defined in Table 1.2-6 of Volume III of Reference 2.0-4.

(3) Maximum speed selected is based on Attachment 1 of Reference 2.0-5, which summarizes the NRC Interim Position on Regulatory Guide 1.76. Concrete structures designed to resist Spectrum I missiles of SRP 3.5.1.4, Rev. 2, also resist missiles postulated in Regulatory Guide 1.76, Revision 1.

(4) Based on probable maximum precipitation (PMP) for one hour over 2.6 km^2 (one square mile) with a ratio of 5 minutes to one hour PMP of 0.32 as found in Reference 2.0-3. Roof scuppers and drains are designed independently to limit water accumulation on the roof to no more than 100 mm (4 in) during PMP conditions. See also Table 3G.1-2.

(5) Maximum design roof load accommodates snow load and 48-hour probable maximum winter precipitation (PMWP) in References 2.0-2 and 2.0-6. Roof scuppers and drains are designed independently to limit water accumulation on the roof to no more than 100 mm (4 in) during PMWP conditions. See also Table 3G.1-2.

(6) Zero percent exceedance values are based on conservative estimates of historical high and low values for potential sites. One and two percent exceedance values were selected in order to bound the values presented in Reference 2.0-4 and available Early Site Permit applications.

(7) At foundation level of Seismic Category I structures. For minimum dynamic bearing capacity site-specific application, use the larger value or a linearly interpolated value of the applicable range of shear wave velocities at the foundation level. The shear wave velocities of soft, medium and hard soils are 300 m/sec (1000 ft/sec), 800 m/sec (2600 ft/sec) and greater than or equal to 1700 m/sec (5600 ft/sec), respectively.

(8) This is the equivalent uniform shear wave velocity (V_{eq}) over the entire soil column at seismic strain, which is a lower bound value after taking into account uncertainties. V_{eq} is calculated to achieve the same wave traveling time over the depth equal to the embedment depth plus 2 times the largest foundation plan dimension below the foundation as follows:

$$V_{eq} = \frac{\sum d_i}{\sum \frac{d_i}{V_i}}$$

where d_i and V_i are the depth and shear wave velocity, respectively, of the ith layer. The ratio of the largest to the smallest shear wave velocity over the mat foundation width at the foundation level does not exceed 1.7.

(9) Safe Shutdown Earthquake (SSE) design ground response spectra of 5% damping, also termed Certified Seismic Design Response Spectra (CSDRS), are defined as free-field

outcrop spectra at the foundation level (bottom of the base slab) of the Reactor/Fuel and Control Building structures. For ground surface founded Fire Water Service Complex structures, the CSDRS is 1.35 times the values shown in Figures 2.0-1 and 2.0-2.

(10) Values reported here are actually design criteria rather than site design parameters. They are included here because they do not appear elsewhere in the DCD.

(11) If a selected site has a X/Q value that exceeds the ESBWR reference site value, the COL applicant will address how the radiological consequences associated with the controlling design basis accident continue to meet the dose reference values provided in 10 CFR 50.34(a) and control room operator dose limits provided in General Design Criterion 19 using site-specific X/Q values.

(12) If a selected site has a X/Q value that exceeds the ESBWR reference site value, the release concentrations in Table 12.2-17 would be adjusted proportionate to the change in X/Q. In addition, for a site selected that exceeds the bounding X/Q or D/Q values, the COL applicant will address how the resulting annual average doses (Table 12.2-18b) continue to meet the dose reference values provided in 10 CFR 50 Appendix I using site-specific X/Q and D/Q values.

(13) Value was selected to comply with expected requirements of southeastern coastal locations.

(14) Localized liquefaction potential under other than Seismic Category I structures is addressed per SRP 2.5.4 in Table 2.0-2.

(15) Settlement values are long-term (post-construction) values except for differential settlement within the foundation mat. The design of the foundation mat accommodates immediate and long-term (post-construction) differential settlements after the installation of the basemat.

Table 2.0-2

Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design

Subsection	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.1.1	Site Location and Description	None.	COL applicant to supply site-specific information in accordance with SRP 2.1.1. (COL Item 2.0-2-A)
2.1.2	Exclusion Area Authority and Control	None.	COL applicant to supply site-specific information in accordance with SRP 2.1.2. (COL Item 2.0-3-A)
2.1.3	Population Distribution	ESBWR PRA offsite consequence analysis in Reference 2.0-1 is based on a population density of 305 people per square kilometer (790 per square mile).	COL applicant to describe the population distribution in accordance with SRP 2.1.3. (COL Item 2.0-4-A)
2.2.1 – 2.2.2	Identification of Potential Hazards in Site Vicinity	Per Table 2.0-1.	COL applicant to identify and evaluate potential hazards in the site vicinity, in accordance with SRP 2.2.1 – 2.2.2. Potential hazards include manufacturing plants, chemical plants, refineries, storage facilities, mining and quarrying operations, military bases, missile sites, transportation routes (air, land and water), transportation facilities (docks, anchorages, airports), oil and gas pipelines, drilling operations and wells, and underground gas storage facilities. See also Subsection 9.4.1.6. (COL Item 2.0-5-A)

Table 2.0-2

Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design

Subsection	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.2.3	Evaluation of Potential Accidents	None considered in vicinity of plant.	COL applicant to identify and evaluate potential accidents emanating from those potential hazards identified in SRP 2.2.1 – 2.2.2 above, that have a probability of occurrence > 10^{-7} per year which involve: (1) missiles more energetic than the tornado missile spectrum, or (2) pressure effects in excess of the design basis tornado, or (3) explosions, or (4) fires, or (5) aircraft impacts, or (6) release of flammable vapor clouds, or (7) release of toxic chemicals. (COL Item 2.0-6-A)
2.3.1	Regional Climatology	Per Table 2.0-1.	COL applicant to determine basic speed of extreme wind for use in design of nonsafety-related structures that are not included as part of the ESBWR Standard Plant design. COL applicant to confirm or reanalyze in accordance with SRP 2.3.1. (COL Item 2.0-7-A)
2.3.2	Local Meteorology	None.	COL applicant to supply site-specific information in accordance with SRP 2.3.2. (COL Item 2.0-8-A)

Table 2.0-2

Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design

Subsection	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.3.3	Onsite Meteorological Measurements Programs	None.	COL applicant to supply site-specific information in accordance with the SRP 2.3.3. (COL Item 2.0-9-A)
2.3.4	Short-Term Dispersion Estimates for Accidental Atmospheric Releases	Per Table 2.0-1. See also Chapter 15.	COL applicant to supply site-specific information in accordance with the SRP 2.3.4 to show that the site meteorological dispersion values as calculated in accordance with Regulatory Guides 1.145 and 1.194, and compared to dose values given in Chapter 15, result in doses less than stipulated in 10 CFR 50.34(a) and the applicable portions of SRP Sections 11 and 15. (COL Item 2.0-10-A)
2.3.5	Long-Term Diffusion Estimates	Per Table 2.0-1. See Subsection 12.2.2.1 for a discussion of the generation of these values.	COL applicant to supply site-specific information in accordance with the SRP 2.3.5. (COL Item 2.0-11-A)
2.4.1	Hydraulic Description Maximum Ground Water Level	Per Table 2.0-1.	COL applicant to supply site-specific information in accordance with SRP 2.4.1. (COL Item 2.0-12-A)
2.4.2	Floods	Per Table 2.0-1.	COL applicant to supply site-specific information in accordance with SRP 2.4.2. (COL Item 2.0-13-A)

Table 2.0-2

Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design

Subsection	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.4.3	Probable Maximum Flood on Streams and Rivers	Probable maximum flooding level on streams and rivers does not exceed the maximum flood level defined in Table 2.0-1.	COL applicant to supply site-specific information in accordance with SRP 2.4.3. (COL Item 2.0-14-A)
2.4.4	Potential Dam Failures Seismically Induced	Potential seismically induced dam failures do not cause flooding to exceed the maximum flood level defined in Table 2.0-1.	COL applicant to supply site-specific information in accordance with SRP 2.4.4. COL applicant to demonstrate that failure of existing and potential upstream or downstream water control structures will not cause flooding to exceed 0.3 m (1 ft) below plant grade. (COL Item 2.0-15-A)
2.4.5	Probable Maximum Surge and Seiche Flooding	Probable maximum surge and seiche flooding level does not exceed the maximum flood level defined in Table 2.0-1.	COL applicant to supply site-specific information in accordance with SRP 2.4.5. (COL Item 2.0-16-A)
2.4.6	Probable Maximum Tsunami Flooding	Probable maximum tsunami flooding level does not exceed the maximum flood level defined in Table 2.0-1.	COL applicant to supply site-specific information in accordance with SRP 2.4.6. (COL Item 2.0-17-A)
2.4.7	Ice Effects	None.	COL applicant to supply site-specific information in accordance with SRP 2.4.7. (COL Item 2.0-18-A)
2.4.8	Cooling Water Canals and Reservoirs	None.	COL applicant to supply site-specific information in accordance with SRP 2.4.8. (COL Item 2.0-19-A)

Table 2.0-2

Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design

Subsection	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.4.9	Channel Diversions	None.	COL applicant to supply site-specific information in accordance with SRP 2.4.9. (COL Item 2.0-20-A)
2.4.10	Flooding Protection Requirements	None.	COL applicant to supply site-specific information in accordance with SRP 2.4.10. (COL Item 2.0-21-A)
2.4.11	Cooling Water Supply	None.	COL applicant to supply site-specific information in accordance with SRP 2.4.11. (COL Item 2.0-22-A)
2.4.12	Groundwater	Per Table 2.0-1.	COL applicant to supply site-specific information in accordance with SRP 2.4.12. (COL Item 2.0-23-A)
2.4.13	Accidental Releases of Liquid Effluents in Ground and Surface Waters	The source term provided in Table 12.2-13a, "Liquid Waste Management System Equipment Drain Collection Tank Activity," is used in the effects analysis.	COL applicant to address SRP 2.4.13. (COL Item 2.0-24-A)
2.4.14	Technical Specifications and Emergency Operation Requirements	None.	COL applicant to provide site-specific information in accordance with SRP 2.4.14. (COL Item 2.0-25-A)
2.5.1	Basic Geologic and Seismic Information	None.	COL applicant to provide site-specific information in accordance with SRP 2.5.1. (COL Item 2.0-26-A)

Table 2.0-2

Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design

Subsection	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.5.2	Vibratory Ground Motion	Per Table 2.0-1 (and Figures 2.0-1 and 2.0-2).	COL applicant to provide site-specific information in accordance with SRP 2.5.2 and confirm that it is enveloped by the ESBWR design response spectra referenced at the foundation level. (COL Item 2.0-27-A)
2.5.3	Surface Faulting	ESBWR design assumes no permanent ground deformation from tectonic or non-tectonic faulting.	COL applicant to provide site-specific information in accordance with SRP 2.5.3. (COL Item 2.0-28-A)
2.5.4	Stability of Subsurface Materials and Foundations	Per Table 2.0-1.	COL applicant to provide site-specific information in accordance with SRP 2.5.4 and address localized liquefaction potential under other than Seismic Category I structures. (COL Item 2.0-29-A)
2.5.5	Stability of Slopes	Per Table 2.0-1.	COL applicant to provide site-specific information in accordance with SRP 2.5.5. (COL Item 2.0-30-A)

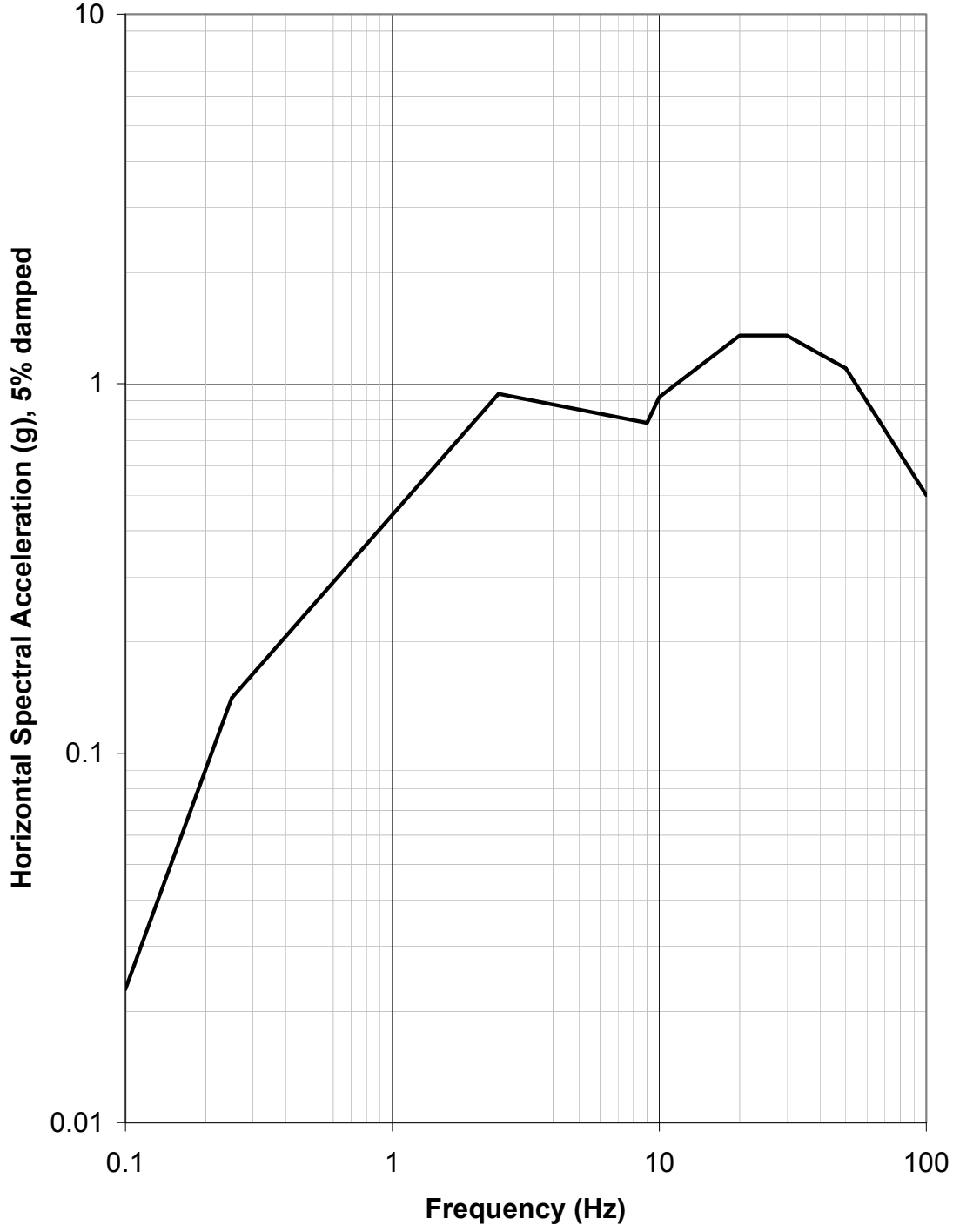

Figure 2.0-1. ESBWR Horizontal SSE Design Ground Spectra at Foundation Level

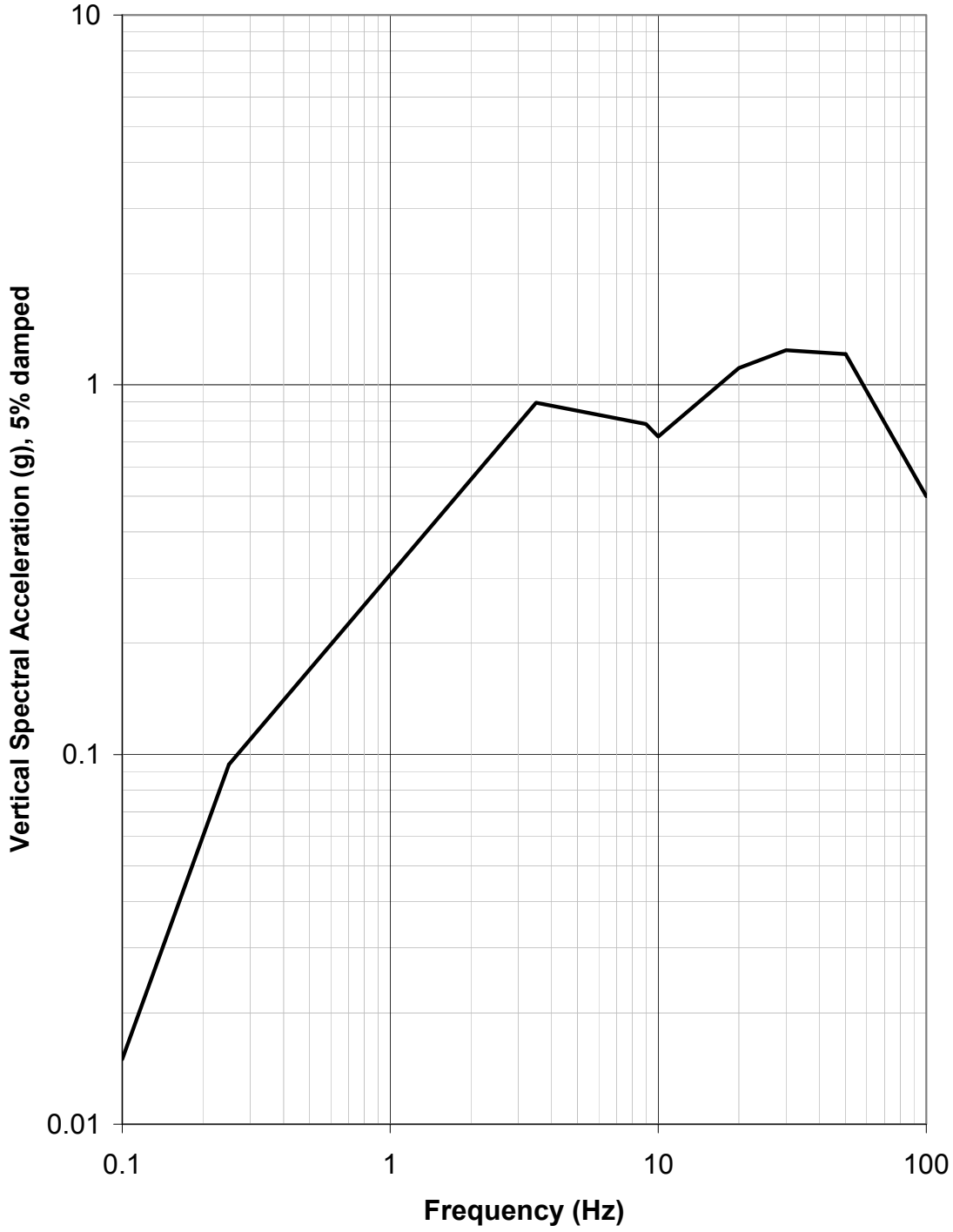

Figure 2.0-2. ESBWR Vertical SSE Design Ground Response Spectra at Foundation Level