Chapter 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). 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 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. All site parameters specified in Tier 1 have the same values 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 this document. For example, the safe shutdown earthquake (SSE) 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 (maximum static bearing demand, maximum dynamic bearing demand, 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 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 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 Inspections, Tests, Analyses and Acceptance Criteria (ITAAC).

DCD site parameter values for the ESBWR standard plant are identified in Table 2.0-1 and Tier 1, Table 5.1-1.

Table 2.0-201 identifies each DCD site parameter value and the corresponding Fermi 3 site characteristic values. In accordance with 10 CFR 52.79(b) and (d); and SRP Section 2.0, Part 1 of Table 2.0-201 evaluates, as applicable, whether the Fermi 3 site characteristic values fall within DCD site parameter values.

Appendix 2A provides site specific input values used in ARCON96 analysis of on-site X/Q values.

Information on Fermi 3 site characteristics is provided in Section 2.1 through Section 2.5. This information addresses NRC guidance in NUREG-0800 as identified in Table 2.0-2. In the “COL Information” column, the COL Item from the DCD is replaced with information responding to the COL Item and identifying the FSAR section which addresses the SRP section invoked by the COL Item.

2.0.1 COL Information

2.0-1-A Site Characteristics Demonstration

This COL item is addressed in Section 2.0.

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

These COL items are addressed in Section 2.0.

2.0.2 References

2.0-1 GE Hitachi Nuclear Energy, “ESBWR Certification Probabilistic Risk Assessment,” NEDO-33201, Class I (Non-proprietary), Revision 6, October 2010.

2.0-2 (Deleted)

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 (Deleted)

2.0-7 U. S. Nuclear Regulatory Commission, "Interim Staff Guidance on Seismic Issues Associated with High Frequency Ground Motion in Design Certification and Combined License Applications,” COL/DC-ISG-1, May 2008.

2.0-8 Nuclear Energy Institute, “Consistent Site-Response/ Soil-Structure Interaction Analysis and Evaluation,” White Paper, June 12, 2009.

2.0-9 U. S. Nuclear Regulatory Commission, “Interim Staff Guidance on Assessment of Normal and Extreme Winter Precipitation Loads on the Roofs of Seismic Category I Structures,” COL/DC-ISG-7.

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: (13)	*Seismic Category I, II and Radwaste Building Structures* *- 100-year Wind Speed (3-sec gust):* *- Exposure Category:* *Other Seismic Category NS Standard Plant Structures* *- 50-year Wind Speed (3-sec gust):*	 *67.1 ms (150 mph)* *D* *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) *- Maximum Rotational Speed:* *- Translational Speed:* *- Radius:* *- Pressure Drop:* *- Rate of Pressure Drop:* *- Missile Spectrum:* (3)	*147.5 m/s (330 mph)* *116.2 m/s (260 mph)* *31.3 m/s (70 mph)* *45.7 m (150 ft)* *16.6 kPa (2.4 psi)* *11.7 kPa/s (1.7 psi/s)* *Spectrum I of SRP 3.5.1.4, Rev 2 applied to full building height.*
Precipitation (for Roof Design):	*- Maximum Rainfall Rate:* (4) *- Maximum Short Term Rate:* *- Maximum Ground Snow Load* (5) *for normal winter precipitation even:* *- Maximum Ground Snow Load* (5) *for extreme winter precipitation even:*	*49.3 cm/hr (19.4 in/hr)* *15.7 cm (6.2 in) in 5 minutes* *2394 Pa (50 lbf/ft^2)* *7757 Pa (162 lb/ft^2)*

Table 2.0-1 Envelope of ESBWR Standard Plant Site Parameters (1) (continued)

Ambient Design Temperature: (6)	***2% Annual Exceedance Values*** ***- Maximum: 35.6°C (96°F) dry bulb*** *26.1°C (79°F) wet bulb (mean coincident)* *27.2°C (81°F) wet bulb (non-coincident)* ***- Minimum: -23.3°C (-10°F)*** ***1% Annual Exceedance Values*** ***- Maximum: 37.8°C (100°F) dry bulb*** *26.1°C (79°F) wet bulb (mean 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 (mean coincident)* *31.1°C (88°F) wet bulb (non-coincident)* ***- Minimum: -40°C (-40°F)*** ***Maximum Average Dry Bulb Temperature for 0% Exceedance Maximum Temperature Day*** (17) *39.7°C (103.5°F)* ***Minimum Average Dry Bulb Temperature for 0% Exceedance Minimum Temperature Day*** (18) *-32.5°C (-26.5°F)* ***Maximum High Humidity Average Wet Bulb Globe Temperature Index for 0% Exceedance Maximum Wet Bulb Temperature Day*** (19) *30.3°C (86.6°F)*

Table 2.0-1 Envelope of ESBWR Standard Plant Site Parameters [1] (continued)

Soil Properties: [16]	*- Minimum Static Bearing Capacity[7]: Greater than or equal to the maximum static bearing demand.* *- Maximum Static Bearing Demand:* *Reactor/Fuel Building: 699 kPa (14,600 lbf/ft^2)* *Control Building: 292 kPa (6,100 lbf/ft^2)* *Firewater Service Complex: 165 kPa (3,450 lbf/ft^2)* *- Minimum Dynamic Bearing Capacity[7]: Greater than or equal to the maximum dynamic bearing demand.* *- Maximum Dynamic Bearing Demand (SSE + Static):* *Reactor/Fuel Building:* *Soft: 1100 kPa (23,000 lbf/ft^2)* *Medium: 2700 kPa (56,400 lbf/ft^2)* *Hard 1100 kPa (23,000 lbf/ft^2)* *Control Building:* *Soft: 500 kPa (10,500 lbf/ft^2)* *Medium: 2200 kPa (46,000 lbf/ft^2)* *Hard: 420 kPa (8,800 lbf/ft^2)* *Firewater Service Complex (FWSC):* *Soft: 460 kPa (9,600 lbf/ft^2)* *Medium: 690 kPa (14,400 lbf/ft^2)* *Hard: 1200 kPa (25,100 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 (in-situ and backfill): ≥ 35 degrees* *- Backfill on sides of and underneath Seismic Category I structures* *Product of peak ground acceleration α (in g), Poisson's ratio v and density γ.* *$\alpha(0.95v + 0.65)\gamma$: 1220kg/m^3 (76 lbf/ft^3) maximum* *Product of at-rest pressure coefficient k_0 and density:* *$k_0\gamma$: 750 kg/m^3 (47 lbf/ft^3) minimum* *Soil density:* *γ: 2000 kg/m^3 (125 lbf/ft^3) minimum*

Table 2.0-1 Envelope of ESBWR Standard Plant Site Parameters [1] (continued)

Seismology:	*- SSE Horizontal Ground Response Spectra:* [9]	*See Figure 2.0-1*
	- SSE Vertical Ground Response Spectra: [9]	*See Figure 2.0-2*
Hazards in Site Vicinity:	*- Site Proximity Missiles and Aircraft:*	*< about 10^{-7} per year*
	- Volcanic Activity:	*None*
** Maximum toxic gas concentrations at the Main Control Room (MCR) HVAC intakes:*	*- Toxic Gases:*	*None **
	< 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 Parameters (1) (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: **		
	Reactor Building		
	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*
	HELB Blowout Panels / Reactor Building		
	0-2 hours:	*7.00E-03 s/m^3*	*5.90E-03 s/m^3*
	2-8 hours:	*5.00E-03 s/m^3*	*4.70E-03 s/m^3*
	8-24 hours:	*2.10E-03 s/m^3*	*1.50E-03 s/m^3*
	1-4 days:	*1.70E-03 s/m^3*	*1.10E-03 s/m^3*
	4-30 days:	*1.50E-03 s/m^3*	*1.00E-03 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*

Table 2.0-1 Envelope of ESBWR Standard Plant Site Parameters [1] (continued)

Meteorological Dispersion (X/Q):[11] (continued)	*Fuel Building*		
	0-2 hours:	*2.80E-03 s/m^3*	*2.80E-03 s/m^3*
	2-8 hours:	*2.50E-03 s/m^3*	*2.50E-03 s/m^3*
	8-24 hours:	*1.25E-03 s/m^3*	*1.25E-03 s/m^3*
	1-4 days:	*1.10E-03 s/m^3*	*1.10E-03 s/m^3*
	4-30 days:	*1.00E-03 s/m^3*	*1.00E-03 s/m^3*
** First value is for unfiltered inleakage. Second value is for air intakes (emergency and normal)*	*Technical Support Center X/Q:**		
	Reactor Building		
	0-2 hours:	*1.00E-03 s/m^3*	*1.00E-03 s/m^3*
	2-8 hours:	*6.00E-04 s/m^3*	*6.00E-04 s/m^3*
	8-24 hours:	*3.00E-04 s/m^3*	*3.00E-04 s/m^3*
	1-4 days:	*2.00E-04 s/m^3*	*2.00E-04 s/m^3*
	4-30 days:	*1.00E-04 s/m^3*	*1.00E-04 s/m^3*
	Turbine Building		
	0-2 hours:	*2.00E-03 s/m^3*	*2.00E-03 s/m^3*
	2-8 hours:	*1.50E-03 s/m^3*	*1.50E-03 s/m^3*
	8-24 hours:	*8.00E-04 s/m^3*	*8.00E-04 s/m^3*
	1-4 days:	*6.00E-04 s/m^3*	*6.00E-04 s/m^3*
	4-30 days:	*5.00E-04 s/m^3*	*5.00E-04 s/m^3*
	Passive Containment Cooling System / Reactor Building Roof		
	0-2 hours:	*2.00E-03 s/m^3*	*2.00E-03 s/m^3*
	2-8 hours:	*1.10E-03 s/m^3*	*1.10E-03 s/m^3*
	8-24 hours:	*5.00E-04 s/m^3*	*5.00E-04 s/m^3*
	1-4 days:	*4.00E-04 s/m^3*	*4.00E-04 s/m^3*
	4-30 days:	*3.00E-04 s/m^3*	*3.00E-04 s/m^3*
Long Term Dispersion Estimates: [12]	***X/Q:***		
	Reactor/Fuel Building Ventilation Stack	*1.5E-07 s/m^3*	
	Turbine Building Ventilation Stack	*1.2E-07 s/m^3*	
	Radwaste Building Ventilation Stack	*5.0E-06 s/m^3*	
	D/Q:		
	Reactor/Fuel Building Ventilation Stack	*4.8E-09 m^{-2}*	
	Turbine Building Ventilation Stack	*3.5E-09 m^{-2}*	
	Radwaste Building Ventilation Stack	*1.9E-08 m^{-2}*	

Table 2.0-1 Envelope of ESBWR Standard Plant Site Parameters (1) (continued)

Notes for Table 2.0-1:

(1) The site parameters defined in this table are applicable to Seismic Category I, II, and Radwaste Building structures, unless noted otherwise.

(2) Probable maximum flood level, 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. Tornado missiles do not apply to Seismic Category NS and Seismic Category II buildings. For the Radwaste building, the tornado missiles defined in Regulatory Guide 1.143, Table 2, Class RW-IIa apply. The hurricane missile spectrum for Seismic Category NS and Seismic Category II structures that house RTNSS equipment is consistent with the tornado missile spectrum identified in this table. See Tables 19A-3 and 19A-4 for additional details.*

(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. See also Table 3G.1-2.

(5) See Reference 2.0-9 for the definition of normal winter precipitation and extreme winter precipitation events. The maximum ground snow load for extreme winter precipitation event includes the contribution from the normal winter precipitation event. 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. Consistent with Reference 2.0-4, they represent historical limits excluding peaks of less than two hours. One and two percent annual exceedance values were selected in order to bound the values presented in Reference 2.0-4 and available Early Site Permit applications.

(7) At the foundation level of Seismic Category I structures. The dynamic bearing pressure is the toe pressure. The maximum static bearing demand is compared with the site-specific allowable static bearing pressure, which is obtained by dividing the ultimate soil bearing capacity by a factor of safety appropriate for the design load combination. The maximum dynamic bearing demand is compared with the site-specific allowable dynamic bearing pressure, which is obtained by dividing the ultimate soil bearing capacity by a factor of safety appropriate for the design load combination. When a site-specific shear wave velocity is between soft soil and medium soil the larger of the soft or medium maximum dynamic bearing demand will be used. When a site-specific shear wave velocity is between medium soil and hard soil the larger of the medium or hard maximum dynamic bearing demand will be used. Alternatively, for soils with a site-specific shear wave velocity a linearly interpolated dynamic bearing demand between soft and medium soil or between medium and hard soil can be used. 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 minimum shear wave velocity of the supporting foundation material and material surrounding the embedded walls associated with seismic strains for lower bound soil properties at minus one sigma from the mean. The ratio of the largest to the smallest shear wave velocity over the mat foundation width of the supporting foundation material 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 the Firewater Service Complex, which is essentially a surface founded structure, the CSDRS is 1.35 times the values shown in Figures 2.0-1 and 2.0-2 and is defined as free-field outcrop spectra at the foundation level (bottom of the base slab) of the Firewater Service Complex structure.

(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 52.79(a)(1)(vi) and control room operator dose limits provided in General Design Criterion 19 using site-specific X/Q values.

Table 2.0-1 Envelope of ESBWR Standard Plant Site Parameters (1) (continued)

(12) *Subsection 12.2.2.1 provides a discussion regarding the X/Q and D/Q values in this table. Per Subsection 12.2.2.2, a COL applicant is responsible for ensuring that offsite dose (using site-specific generated X/Q and D/Q values) due to radioactive airborne effluents complies with the regulatory dose limits in Sections II.B and II.C of 10 CFR 50, Appendix I.*

(13) *Values were selected to comply with expected requirements of southeastern coastal locations, which include the consideration of hurricanes as described in ASCE 7-02. Wind speeds are considered to be at 10 m (33 ft) above ground per ASCE 7-02. Seismic Category NS buildings that house RTNSS equipment are designed to withstand hurricane Category 5 wind velocity at 87.2 m/s (195 mph), 3-second gust, and missiles generated by that wind velocity. See Tables 19A-3 and 19A-4 for additional details.*

(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.*

(16) *For sites not meeting the soil property requirements, a site-specific analysis is required to demonstrate the adequacy of the standard plant design.*

(17) *The Maximum Average Dry Bulb Temperature for 0% Exceedance Maximum Temperature Day is defined in Appendix 3H Subsection 3H.3.2.1.1*

(18) *The Minimum Average Dry Bulb Temperature for 0% Exceedance Minimum Temperature Day is defined in Appendix 3H Subsection 3H.3.2.1.2.*

(19) *The Maximum High Humidity Average Wet Bulb Globe Temperature Index for 0% Exceedance Maximum Wet Bulb Temperature Day is defined in Appendix 3H Subsection 3.2.1.3.*

Table 2.0-2 Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design (Sheet 1 of 4)

Section	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.1.1	Site Location and Description	None	COL Item 2.0-2-A is addressed in Subsection 2.1.1.
2.1.2	Exclusion Area Authority and Control	None	COL Item 2.0-3-A is addressed in Subsection 2.1.2.
2.1.3	Population Distribution	ESBWR Probabilistic Risk Assessment in Reference 2.0-1 considers a population density of 305 people per square kilometer (790 per square mile), but that is not a limitation for plant siting considerations.	COL Item 2.0-4-A is addressed in Subsection 2.1.3. The population density for offsite analysis provided in Subsection 2.1.3 falls within (is less than) the density used in Reference 2.0-1.
2.2.1–2.2.2	Identification of Potential Hazards in Site Vicinity	Per Table 2.0-1	COL Item 2.0-5-A is addressed in Section 2.2.
2.2.3	Evaluation of Potential Accidents	None considered in vicinity of plant	COL Item 2.0-6-A is addressed in Subsection 2.2.3.
2.3.1	Regional Climatology	Per Table 2.0-1	COL Item 2.0-7-A is addressed in Subsection 2.3.1.
2.3.2	Local Meteorology	None	COL Item 2.0-8-A is addressed in Subsection 2.3.2.
2.3.3	Onsite Meteorological Measurements Programs	None	COL Item 2.0-9-A is addressed in Subsection 2.3.3.

Table 2.0-2 Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design (Sheet 2 of 4)

Section	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.3.4	Short-Term Dispersion Estimates for Accidental Atmospheric Releases	Per Table 2.0-1. See also Chapter 15.	The portion of COL Item 2.0-10-A to supply information in accordance with SRP 2.3.4 is addressed in Subsection 2.3.4. Information provided in Table 2.0-201 shows that the site characteristic short-term meteorological dispersion values fall within the site parameter values. This means that dispersion values given in Chapter 15 remain bounding for this FSAR and less than stipulated in 10 CFR 52.79(a)(1)(vi) and the applicable portions of SRP Sections 11 and 15.
2.3.5	Long-Term Diffusion Estimates	Per Table 2.0-1. See Subsection 2.3.5 and Subsection 12.2.2.1 for a discussion of the generation of these values.	COL Item 2.0-11-A is addressed in Subsection 2.3.5.
2.4.1	Hydraulic Description Maximum Groundwater Level	Per Table 2.0-1	COL Item 2.0-12-A is addressed in Subsection 2.4.1.
2.4.2	Floods	Per Table 2.0-1	COL Item 2.0-13-A is addressed in Subsection 2.4.2.
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 Item 2.0-14-A is addressed in Subsection 2.4.3.
2.4.4	Potential Dam Failures	Potential dam failures do not cause flooding to exceed the maximum flood level defined in Table 2.0-1.	COL Item 2.0-15-A is addressed in Subsection 2.4.4.
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 Item 2.0-16-A is addressed in Subsection 2.4.5.

Table 2.0-2 Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design (Sheet 3 of 4)

Section	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
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 Item 2.0-17-A is addressed in Subsection 2.4.6.
2.4.7	Ice Effects	None	COL Item 2.0-18-A is addressed in Subsection 2.4.7.
2.4.8	Cooling Water Canals and Reservoirs	None	COL Item 2.0-19-A is addressed in Subsection 2.4.8.
2.4.9	Channel Diversions	None	COL Item 2.0-20-A is addressed in Subsection 2.4.9.
2.4.10	Flooding Protection Requirements	None	COL Item 2.0-21-A is addressed in Subsection 2.4.10.
2.4.11	Cooling Water Supply	None	COL Item 2.0-22-A is addressed in Subsection 2.4.11.
2.4.12	Groundwater	Per Table 2.0-1	COL Item 2.0-23-A is addressed in Subsection 2.4.12.
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 Item 2.0-24-A is addressed in Subsection 2.4.13.
2.4.14	Technical Specifications and Emergency Operation Requirements	None	COL Item 2.0-25-A is addressed in Subsection 2.4.14.
2.5.1	Basic Geologic and Seismic Information	None	COL Item 2.0-26-A is addressed in Subsection 2.5.1.

Table 2.0-2 Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design (Sheet 4 of 4)

Section	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.5.2	Vibratory Ground Motion	Per Table 2.0-1 (and Figure 2.0-1 and Figure 2.0-2)	The portion of COL Item 2.0-27-A to provide information in accordance with SRP 2.5.2 is addressed in Subsection 2.5.2. Information provided in Table 2.0-201 confirms that reactor building/fuel building (RB/FB), control building (CB), and firewater service complex (FWSC) foundation input response spectra (FIRS) (developed in accordance with the guidance in References 2.0-7 and 2.0-8) are enveloped by the ESBWR certified seismic design response spectra (CSDRS) referenced at foundation level.
2.5.3	Surface Faulting	ESBWR design assumes no permanent ground deformation from tectonic or non-tectonic faulting.	COL Item 2.0-28-A is addressed in Subsection 2.5.3. Information to address permanent ground deformation from tectonic or non-tectonic faulting is provided in Subsection 2.5.3.
2.5.4	Stability of Subsurface Materials and Foundations	Per Table 2.0-1	The portion of COL Item 2.0-29-A to provide information in accordance with SRP 2.5.4 is addressed in Subsection 2.5.4. Information to address localized liquefaction potential under other than Seismic Category I structures is provided in Subsection 2.5.4.8. Information to address settlements and differential settlements is provided in Subsection 2.5.4.10.2.
2.5.5	Stability of Slopes	Per Table 2.0-1	COL Item 2.0-30-A is addressed in Subsection 2.5.5.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 1 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Part 1 – Evaluation of DCD Site Parameters			
Maximum Groundwater Level	0.61 m (2 ft) below plant grade		The DCD site parameter of maximum groundwater level of 0.61 m (2 ft) below plant grade is the same as the design groundwater level in Table 3.4-1. The design plant grade elevation identified in Table 3.4-1 is at 4650 mm, which corresponds to 179.6 m (589.3 ft) NAVD 88 for the Fermi 3 site as described in Subsection 2.1.1. Therefore, the DCD site parameter value of 0.61 m (2 ft) below plant grade corresponds to a maximum groundwater level no higher than 179.0 m (587.3 ft) NAVD88 for the Fermi 3 site.
		1.2 m (3.9 ft) below design plant grade	The Fermi 3 site characteristic value for maximum groundwater level below design plant grade is 1.2 m (3.9 ft) in the power block area based on the assumed maximum groundwater elevation of 178.4 m (585.4 ft) NAVD 88 from Subsection 2.4.12 and by Reference 2.4.5.2.2.2, and the des74ign plant grade elevation of 179.6 m (589.3 ft) NAVD 88. Therefore, the Fermi 3 site characteristic value for maximum groundwater level below design plant grade falls within (is lower than) the DCD site parameter value.
Extreme Wind			
Seismic Category I, II and Radwaste Building Structures			
100-year Wind Speed (3-sec gust)[13]	67.1 m/s (150 mph)	42.9 m/s (96 mph), 3-second gust	The site characteristic value for basic wind speed is defined as the 3-second gust wind speed at 10 m (33 ft) above the ground that has a 1 percent annual probability of being exceeded (100-year mean recurrence interval). The site characteristic value for basic wind speed falls within (is lower than) the DCD site parameter value.
Exposure Category D			Exposure category is determined by a number of variables including wind speed, building shape and location, and surface roughness. A DCD site parameter of Exposure Category D results in the most severe design wind pressures.
		Exposure Category C	The Fermi 3 site characteristic is Exposure Category C. The Fermi 3 site characteristic falls within (is less than) the DCD site parameter value for extreme wind exposure category, i.e., Exposure Category D.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 2 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Other Seismic Category NS Standard Plant Structures			
50-year Wind Speed (3-sec gust)[13]	58.1 m/s (130 mph)	40.2 m/s (90 mph) 3-second gust,	The Fermi 3 site characteristic value of 40.2 m/s (90 mph) for the 50-year wind speed (3-sec gust) falls within (is less than) the DCD site parameter value for the 50-year wind speed (3-sec gust) of 58.1 m/s (130 mph).
Maximum Flood (or Tsunami) Level [2]	0.3 m (1 ft) below plant grade		The DCD site parameter of maximum flood (or tsunami) water level of 0.3 m (1 ft) below plant grade is the same as the design flood level in Table 3.4-1. The design plant grade elevation identified in Table 3.4-1 is at 4650 mm, which corresponds to 179.6 m (589.3 ft) NAVD 88 for the Fermi 3. Therefore, the DCD site parameter value of 0.3 m (1 ft) below plant grade corresponds to a maximum flood water level below 179.3 m (588.3 ft) for the Fermi 3 site.
		1.2 m (3.9 ft) below design plant grade based on PMP	The Fermi 3 site characteristic value for PMF of 178.4 m (585.4 ft) NAVD 88 is provided in Subsection 2.4.5, and falls within (is less than) the DCD site parameter value. The Fermi 3 site characteristic value for maximum flood water level below design plant grade is due to the 100-year still-water level in addition to the 100-year storm surge. Therefore, the Fermi 3 site characteristic value for maximum flood water level below design plant grade falls within (is lower than) the DCD site parameter value.
Tornado			
Maximum Tornado Wind Speed[3]	147.5 m/s (330 mph)	102.8 m/s (230 mph)	The site characteristic value for design basis tornado maximum wind speed is defined as the maximum wind speed resulting from passage of a tornado having a probability of occurrence of 10^{-7} per year. The site characteristic value falls within (is lower than) the DCD site parameter value.
Maximum Rotational Speed	116.2 m/s (260 mph)	82.3 m/s (184 mph)	The site characteristic value for design basis tornado maximum rotational speed is defined as the rotation component of the maximum tornado wind speed. The site characteristic value falls within (is lower than) the DCD site parameter value.
Translational Speed	31.3 m/s (70 mph)	20.6 m/s (46 mph)	The site characteristic value for design basis tornado maximum translational speed is defined as the translational component of the maximum tornado wind speed. The site characteristic value falls within (is lower than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 3 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Tornado (continued)			
Radius	45.7 m (150 ft)	45.7 m (150 ft)	The site characteristic value for design basis tornado radius of maximum rotational speed is defined as the distance from the center of the tornado at which the maximum rotational wind speed occurs. The site characteristic value falls within (is the same as) the DCD site parameter value.
Pressure Drop	16.6 kPa (2.4 psi)	8.3 kPa (1.2 psi)	The site characteristic value for design basis tornado pressure drop is defined as the decrease in ambient pressure from normal atmospheric pressure resulting from passage of the tornado. The site characteristic value falls within (is lower than) the DCD site parameter value.
Rate of Pressure Drop	11.7 kPa/s (1.7 psi/s)	3.4 kPa/s (0.5 psi/s)	The site characteristic value for design basis tornado maximum rate of pressure drop is defined as the rate of pressure drop resulting from the passage of the tornado. The site characteristic value falls within (is lower than) the DCD site parameter value.
Missile Spectrum[3]	Spectrum I of SRP 3.5.1.4, Rev. 2 applied to full building height.	Spectrum I of SRP 3.5.1.4, Rev. 2 applied to full building height	The Fermi 3 site characteristic for tornado missile spectrum is Spectrum I of SRP 3.5.1.4, Rev. 2, applied to full building height. This spectrum fully addresses variations in grade levels at the Fermi 3 site and this Fermi 3 site characteristic value falls within (is the same as) the DCD site parameter value for tornado missile spectrum.
Precipitation (for Roof Design)			
Maximum Rainfall Rate[4]	49.3 cm/hr (19.4 in/hr)	43.9 cm/hr (17.3 in/hr)	The Fermi 3 site characteristic value of 43.9 cm/hr for the Maximum Rainfall Rate is less than the Maximum Rainfall Rate precipitation value provided in the DCD site parameter value.
Maximum Short Term Rate	15.7 cm (6.2 in) in 5 min	15 cm (5.8 in) in 5 min	The Fermi 3 site characteristic value for the Maximum Short Term Rate is less than the Maximum Short Term (5 min) precipitation value provided in the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 4 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Precipitation (for Roof Design) (continued)			
Maximum Ground Snow Load for Normal Winter Precipitation Event[5]	2394 Pa (50 lbf/ft^2)	1551 Pa (32.4 lbf/ft^2)	The Fermi 3 site characteristic value for maximum Ground Snow Load for Normal Winter Precipitation Event is based on site characteristic value for the historical maximum snow pack. The Fermi 3 site characteristic value of 1551 pa (32.4 lbf/ft^2) falls within (is lower than) the DCD site parameter value of 2394 pa (50 lbf/ft^2).
Maximum Ground Snow Load for Extreme Winter Precipitation Event[5]	7757 Pa (162 lbf/ft^2)	2466 Pa (51.5 lbf/ft^2)	The site characteristic value for maximum ground snow load for Extreme Frozen Winter Precipitation Event is defined as the combined weight of the historical maximum snowpack and the historical maximum snowfall event. The site characteristic value falls within (is lower than) the DCD site parameter value.
Ambient Design Temperature[6]			
2% Annual Exceedance Values			
Maximum	35.6°C (96°F) dry bulb 26.1°C (79°F) wet bulb (mean coincident)	29.3°C (84.7°F) dry bulb with 21.6°C (70.8°F) wet bulb (mean coincident) (2% Annual exceedance values)	The Fermi 3 site characteristic values for maximum dry-bulb temperature with mean coincident wet-bulb temperature for 2% annual exceedance are the ambient dry-bulb temperature (and mean coincident wet-bulb temperature) that will be exceeded 2% of the time annually. The site characteristic values fall within (are lower than) the DCD site parameter values.
	27.2°C (81°F) wet bulb (non-coincident)	22.8°C (73.1°F) wet bulb (non-coincident)	The Fermi 3 site characteristic value for the maximum wet bulb temperature (non-coincident) for 2% annual exceedance is defined as the ambient wet-bulb temperature that will be exceeded 2% of the time annually. This value falls within (is less than) the DCD site parameter value for 2% exceedance.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 5 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Ambient Design Temperature (continued)			
Minimum	-23.3°C (-10°F)	-14.8°C (5.3°F) (99% Annual exceedance value)	The Fermi 3 site characteristic value is the site characteristic value for the minimum dry bulb temperature for 1% annual exceedance. This value is defined as the ambient dry-bulb temperature below which dry-bulb temperatures will fall 1% of the time annually. This value falls within (is higher than) the DCD site parameter value for 2% Annual exceedance (i.e., the ambient dry-bulb temperature below which dry-bulb temperatures will fall 2% of the time annually). Because the minimum temperature site characteristic value for 2% is even higher than the 1% value, the site's 2% value also falls within (is higher than) the DCD site parameter value for 1% annual exceedance.
1% Annual Exceedance Values			
Maximum	37.8°C (100°F) dry bulb 26.1°C (79°F) wet bulb (mean coincident)	30.7°C (87.3°F) dry bulb with 22.3°C (72.2°F) wet bulb (mean coincident)	The Fermi 3 site characteristic values for the maximum dry bulb temperature with mean coincident wet bulb temperatures for 1% annual exceedance. These values are the ambient dry-bulb temperature (and mean coincident wet-bulb temperature) that will be exceeded 1 percent of the time annually. These values are 30.7°C (87.3°F) dry bulb with 22.3°C (72.2°F) wet bulb (mean coincident) and fall within (are less than) the DCD site parameter values for 1% exceedance.
Maximum	27.8°C (82°F) wet bulb (non-coincident)	23.8°C (74.8°F) wet-bulb (non-coincident)	The Fermi 3 site characteristic value for the maximum wet bulb temperature (non-coincident) for 0.4% annual exceedance. This value is defined as the ambient wet-bulb temperature that will be exceeded 1% of the time annually. This value is 23.8°C (74.8°F) wet bulb (non-coincident) and falls within (is less than) the DCD site parameter value for 1% Annual exceedance.
Minimum	-23.3°C (-10°F)	-14.8°C (5.3°F) (1% Annual exceedance value)	The Fermi 3 site characteristic value is the site characteristic value for the minimum dry bulb temperature for 1% annual exceedance. This value is defined as the ambient dry-bulb temperature below which dry-bulb temperatures will fall 1% of the time annually. This value falls within (is less than) the DCD site parameter value for 1% Annual exceedance.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 6 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Ambient Design Temperature (continued)			
0% Exceedance Values			
Maximum	47.2°C (117°F) dry bulb 26.7°C (80°F) wet bulb (mean coincident)	40.1°C (104.1°F) dry-bulb with 23.3°C (73.9°F) wet bulb coincident (0% exceedance values)	The Fermi 3 site characteristic values for the 0% maximum dry bulb and wet bulb, coincident temperatures are the 100-year return period values. These values are 40.1°C (104.1°F) dry-bulb with 23.3°C (73.9°F) wet bulb coincident fall within (are less than) the DCD site parameter values for 0% exceedance.
	31.1°C (88°F) wet bulb (non-coincident)	30.0°C (86.0°F) wet-bulb (non-coincident) (0% exceedance value)	The Fermi 3 site characteristic value for the 0% maximum wet bulb temperature (non-coincident) is the 100-year return period value . This value is 30.0°C (86.0°F) wet-bulb (non-coincident) and falls within (is less than) the DCD site parameter value for 0% exceedance.
Minimum	-40°C (-40°F)	-34.9°C (-30.8°F)	The Fermi 3 site characteristic value for minimum temperature is the 100-year return period value. This value is -34.9°C (-30.8°F) and falls within (is higher than) the DCD site parameter value for 0% exceedance.
Maximum Average Dry Bulb Temperature for 0% Exceedance Maximum Temperature Day	39.7°C (103.5°F)	29.48°C (85.1°F)	The Fermi 3 site characteristic value for Maximum Average Dry Bulb Temperature for 0% Exceedance Maximum Temperature Day is 29.48°C (85.1°F). This value falls within (is less than) the DCD site parameter value for Maximum Average Dry Bulb Temperature for 0% Exceedance Maximum Temperature Day.
Minimum Average Dry Bulb Temperature for 0% Exceedance Minimum Temperature Day	-32.5°C (-26.5°F)	-26.35°C (-15.4°F)	The Fermi 3 site characteristic value for Minimum Average Dry Bulb Temperature for 0% Exceedance Minimum Temperature Day is -26.35°C (-15.4°F). This value falls within (is greater than) the DCD site parameter value for Minimum Average Dry Bulb Temperature for 0% Exceedance Minimum Temperature Day.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 7 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Ambient Design Temperature (continued)			
Maximum High Humidity Average Wet Bulb Globe Temperature Index for 0% Exceedance Maximum Wet Bulb Temperature Day	30.3°C (86.6°F)	28.78°C (83.8°F)	The Fermi 3 site characteristic value for Maximum High Humidity Average Wet Bulb Globe Temperature Index for 0% Exceedance Maximum Wet Bulb Temperature Day is 28.78°C (83.8°F). This value falls within (is less than) the DCD site parameter value for Maximum High Humidity Average Wet Bulb Globe Temperature Index for 0% Exceedance Maximum Wet Bulb Temperature Day.
Soil Properties			
Minimum Static Bearing Capacity[7] Greater than or equal to the Maximum Static Bearing Demand.			
Maximum Static Bearing Demand:			
Reactor/Fuel Building	699 kPa (14,600 lbf/ft^2)	4,500 kPa (94,000 lbf/ft^2)	The Fermi 3 site characteristic value for allowable bearing capacity from Table 2.5.4-227 for the R/FB falls within (is greater than) the DCD site parameter value.
Control Building	292 kPa (6,100 lbf/ft^2)	14,029 kPa (293,000 lbf/ft^2)	The Fermi 3 site characteristic value for allowable bearing capacity from Table 2.5.4-227 for the CB falls within (is greater than) the DCD site parameter value.
Fire Water Service Complex	165 kPa (3450 lbf/ft^2)	1,532 kPa (32,000 lbf/ft^2)	The Fermi 3 site characteristic value for allowable bearing capacity from Table 2.5.4-227 for the FWSC falls within (is greater than) the DCD site parameter value.
Reactor/Fuel Building			
Soft	1,100 kPa (23,000 lbf/ft^2)	5,980 kPa (125,000 lbf/ft^2)	The Fermi 3 site characteristic value for allowable dynamic bearing capacity for the RB/FB structure is from Table 2.5.4-227 and falls within (is greater than) the DCD site parameter value. In accordance with Note Number 16 of Table 2.0-1, Fermi 3 site-specific soil structure interaction (SSI) analyses were performed for the RB/FB. The DCD site parameter value for dynamic bearing demand envelopes (is greater than) the SSI dynamic bearing demand for the RB/FB.
Medium	2,700 kPa (56,400 lbf/ft^2)		
Hard	1,100 kPa (23,000 lbf/ft^2)		

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 8 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Soil Properties (continued)			
Minimum Dynamic Bearing Capacity[7]	Greater than or equal to the Maximum Dynamic Bearing Demand.		
Maximum Dynamic Bearing Demand (SSE & Static):			
Control Building			
Soft	500 kPa (10,500 lbf/ft^2)	18,700 kPa (391,000 lbf/ft^2)	The Fermi 3 site characteristic value for allowable dynamic bearing capacity for the CB structure is from Table 2.5.4-227 and falls within (is greater than) the DCD site parameter value. In accordance with Note Number 16 of Table 2.0-1, Fermi 3 site-specific soil structure interaction (SSI) analyses were performed for the CB. The DCD site parameter value for dynamic bearing demand envelopes (is greater than) the SSI dynamic bearing demand for the CB.
Medium	2,200 kPa (46,000 lbf/ft^2)		
Hard	420 kPa (8,800 lbf/ft^2)		
Fire Water Service Complex (FWSC)			
Soft	460 kPa (9,600 lbf/ft^2)	2100 kPa (43,000 lbf/ft^2)	The Fermi 3 site characteristic value for allowable dynamic bearing capacity for the FWSC structure is from Table 2.5.4-227 and falls within (is greater than) the DCD site parameter value
Medium	690 kPa (14,400 lbf/ft^2)		
Hard	1,200 kPa (25,100 lbf/ft^2)		

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 9 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Soil Properties (continued)			
Minimum Shear Wave Velocity[8]	300 m/s (1000 ft/s)	Value for supporting material for each Seismic Category I structure; RB/FB, CB, and FWSC greater than 1,000 ft/sec Value for surrounding material for each Seismic Category I structure: – Below top of bedrock – greater than 1,000 ft.sec – Above top of bedrock – neglected	In accordance with Note Number 16 of Table 2.0-1, Fermi 3 site-specific soil structure interaction (SSI) analyses were performed for the RB/FB and CB. The Fermi 3 site-specific SSI were performed with and without engineered granular backfill above the Bass Islands Group bedrock. Without engineered granular backfill above the Bass Islands Group bedrock, the SSI results are within (less than) the DCD requirements; therefore, the DCD site parameters for engineered granular backfill above the top of the Bass Islands Group bedrock do not apply. Fill concrete is used as backfill below the top of bedrock surrounding the RB/FB and CB, and below the FWSC to the top of bedrock. Fill concrete and supporting bedrock meet the DCD requirement. For supporting foundation material the shear wave velocity for each structure falls within (is greater than) the DCD site parameter value. As shown in Figure 2.5.4-215 and Figure 2.5.4-216, the RB/FB, CB, and FWSC foundations are founded on uniform material. Therefore, the ratio of the largest of the smallest shear wave velocity over each mat foundation level does not exceed 1.7.
Liquefaction Potential			
Seismic Category I structures	None under footprint of Seismic Category I structures resulting from site-specific SSE	None at site-specific SSE under Seismic Category I structures	The Fermi 3 Category I structures are founded on bedrock or fill concrete and there is no potential for liquefaction under Fermi 3 Seismic Category I structures at the site-specific SSE ground motion.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 10 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Soil Properties (continued)			
Other than Seismic Category I structures	See Note (14)	See Evaluation column	Note (14) in Table 2.0-1 identifies a requirement to address liquefaction potential under other than Seismic Category I structures. Backfill below Seismic Category II structures from the base of the foundation to the top of bedrock is fill concrete; therefore, liquefaction analysis for soil below Seismic Category II structures is not necessary. Subsection 2.5.4.8 provides the results of the analysis for the engineered granular backfill and glacial till at the Fermi 3 site and addresses potential liquefaction under other than Seismic Category I and II structures. Based on the analysis provided, the engineered granular backfill and glacial till are not susceptible to liquefaction.
Angle of Internal Friction (in-situ and backfill)	≥35 degrees	≥35 degrees	The Fermi 3 site characteristic value for angle of internal friction is provided in Subsection 2.5.4.10 and falls within (is the same as) the DCD site parameter value.
Backfill on sides of and underneath Seismic Category I structures		See Evaluation Column	The Fermi 3 site characteristic values for the backfill on the sides of seismic Category I structures are specified in Subsection 2.5.4.5.4.2. In accordance with Note Number 16 of Table 2.0-1, Fermi 3 site-specific SSI analyses were performed for the RB/FB and CB. The Fermi 3 site-specific sliding analysis for the RB/FB, CB, and FWSC does not require backfill for sliding stability. Therefore, the Referenced DCD $k_o\gamma$ site parameter for backfill above the top of the bedrock is not required. The engineered granular backfill will meet the values listed in the Fermi 3 Site Characteristic column.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 11 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Soil Properties (continued)			
i. Product of peak ground acceleration α (in g), Poisson's ratio ν and density γ	$\alpha(0.95\nu + 0.65)\gamma$: 1220 kg/m^3 (76 lbf/ft^3) maximum	$\alpha(0.95\nu + 0.65)\gamma$: 1220 kg/m^3 (76 lbf/ft^3) maximum	
ii. Product of at-rest pressure coefficient k_o and density:	$k_o\gamma$: 750 kg/m^3 (47 lbf/ft^3) minimum		
iii. Soil density	γ: 2000 kg/m^3 (125 lbf/ft^3) minimum	γ: 2000 kg/m^3 (125 lbf/ft^3) minimum	
Seismology			
SSE Horizontal Ground Response Spectra[9]	See Figure 2.0-1		The DCD site parameter values for SSE response spectra at foundation level are identified as the certified seismic design response spectra (CSDRS). The CSDRS for the control building (CB) and reactor building/fuel building (RB/FB) are shown in Figure 2.0-1 (horizontal) and in Figure 2.0-2 (vertical). The CSDRS for the firewater service complex (FWSC) are 1.35 times the accelerations shown in Figure 2.0-1 (horizontal) and in Figure 2.0-2 (vertical) per Note (9) in Table 2.0-1.
SSE Vertical Ground Response Spectra[9]	See Figure 2.0-1		

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 12 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Seismology (continued)			
		See Figure 3.7.1-228, Figure 3.7.1-229, and Figure 3.7.1-238	The Fermi 3 site characteristic values are identified as the foundation input response spectra (FIRS). The CB enhanced Soil Column Outcrop Response (SCOR) FIRS are shown in Figure 3.7.1-229. The RB/FB enhanced SCOR FIRS are shown in Figure 3.7.1-228. The FWSC FIRS are shown in Figure 3.7.1-238. The comparisons of the DCD site parameter (CSDRS for the CB and RB/FB) and Fermi 3 site characteristic values (enhanced SCOR FIRS for the CB and RB/FB) are provided in Figure 2.0-201 and Figure 2.0-202. These comparisons demonstrate that the Fermi 3 site characteristic values fall within (are less than) the values established by the DCD site parameters. The comparisons of the DCD site parameter (CSDRS for the FWSC) and Fermi 3 site characteristic values (FIRS for the FWSC) are provided in Figure 2.0-203. These comparisons demonstrate that the Fermi 3 site characteristic values fall within (are less than) the values established by the DCD site parameters.
Hazards in Site Vicinity			
Site Proximity Missiles and Aircraft	< about 10^{-7} per year (for site proximity missile hazards)	No site proximity missile hazards identified	The Fermi 3 site characteristic value for site proximity missiles value is that there are no site proximity missile sources identified. As provided in Subsection 2.2.1, there are no missile sources identified in the site vicinity and this value falls within (is less than) the DCD site parameter value.
	< about 10^{-7} per year (for aircraft hazards)	Annual aircraft crash probability of < about 1×10^{-7} (includes civil and military aircraft)	The Fermi 3 site characteristic value for total probability per year of a civil or military aircraft crashing was estimated per NUREG-0800 as shown in Subsection 2.2.3.1.3 and the total accident probability falls within (is the same as) the DCD site parameter value except as noted for Mills Field in Subsection 2.2.3.1.3.1.
Volcanic Activity	None	No volcanic activity at the site	The Fermi 3 site characteristic value for volcanic activity is that there is no evidence of non-tectonic deformation at the site, such as volcanic intrusion, as presented in Subsection 2.5.3. The Fermi 3 site characteristic value falls within (is the same as) the DCD site parameter value.
Toxic Gases	None*		

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 13 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Hazards in Site Vicinity (continued)			
* Maximum toxic gas concentrations at the Main Control Room (MCR) HVAC intakes	<toxicity limits	<toxicity limits	The Fermi 3 site characteristic value for toxic gases is that the control room concentration for each chemical analyzed does not exceed the applicable toxicity limit. Based on this result, Seismic Category I Class 1E toxic gas monitoring instrumentation is not required for the MCR HVAC air intakes. The Fermi 3 site characteristic value for toxic gases (control room concentrations < toxicity limits) is presented in Subsection 6.4.5 and falls within (is the same as) the DCD site parameter value for toxic gases (control room concentrations < toxicity limits).
Required Stability of Slopes[10]			Note (10) in Table 2.0-1 identifies that factors of safety for stability of slopes are not site parameters. These factors are used with slope design features to ensure stability for static and dynamic loading.
Factor of safety for static (non-seismic) loading	1.5	See Evaluation column	As described in Subsection 2.5.5, there are no natural or man-made slopes that could adversely affect Fermi 3 Seismic Category I structures. Figure 2.4-214 and Figure 2.4-215 present ground surface contours for the existing and final site grade, and shows the site is relatively level. The foundations for all Category I structures are founded on the bedrock, or fill concrete that extends to the bedrock. Therefore, slope stability in the fill will not impact Category I structures
Factor of safety for dynamic (seismic) loading due to site-specific SSE	1.1	See Evaluation column	
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)	13.2 mm (0.52 in) for the maximum settlement of a RB/FB corner	The Fermi 3 site characteristic value for the maximum settlement of a corner for the reactor building/fuel building (RB/FB) foundation is provided in Table 2.5.4-232 and falls within (is less than) the DCD site parameter value.
Under Control Building	18 mm (0.7 inches)	14.2 mm (0.56 in) for the maximum settlement of a CB corner	The Fermi 3 site characteristic value for the maximum settlement of a corner for the control building (CB) foundation is provided in Table 2.5.4-232 and falls within (is less than) the DCD site parameter value.
Under FWSC Structure	17 mm (0.7 inches)	4.6 mm (0.18 in) for the maximum settlement of a FWSC corner	The Fermi 3 site characteristic value for the maximum settlement of a corner for the firewater service complex (FWSC) foundation is provided in Table 2.5.4-232 and falls within (is less than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 14 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Averaged Settlement at four corners of basemat			
Under Reactor/Fuel Building	65 mm (2.6 inches)	12.2 mm (0.48 in) for the maximum settlement of a RB/FB corner	The maximum settlement of a corner for the RB/FB foundation is provided in Table 2.5.4-231 and falls within (is less than) the DCD site parameter value.
Under Control Building	12 mm (0.5 inches)	11.9 mm (0.47 in) for the maximum settlement of a CB corner	The maximum settlement of a corner for the CB foundation is provided in Table 2.5.4-231 and falls within (is less than) the DCD site parameter value.
Under FWSC Structure	10 mm (0.4 inches)	3.6 mm (0.14 in) for the maximum settlement of a FWSC corner	The maximum settlement of a corner for the FWSC foundation is provided in Table 2.5.4-231 and falls within (is less than) the DCD site parameter value.
Maximum Differential Settlement along the longest mat foundation dimension			
Within Reactor/Fuel Building	77 mm (3.0 inches)	8.6 mm (0.34 in)	The Fermi 3 site characteristic value for the maximum differential settlement along the longest mat foundation dimension is provided in Table 2.5.4-232 which, as shown, falls within (is less than) the DCD site parameter value.
Within Control Building	14 mm (0.6 inches)	4.3 mm (0.17 in)	The Fermi 3 site characteristic value for the maximum differential settlement along the longest mat foundation dimension is provided in Table 2.5.4-232 which, as shown, falls within (is less than) the DCD site parameter value.
Under FWSC Structure	12 mm (0.5 inches)	1.8 mm (0.07 in)	The Fermi 3 site characteristic value for the maximum differential settlement along the longest mat foundation dimension is provided in Table 2.5.4-232 which, as shown, falls within (is less than) the DCD site parameter value.
	85 mm (3.3 inches)	9.4 mm (0.37 in)	The Fermi 3 site characteristic value for the maximum differential displacement between the RB/FB foundation and the CB foundation is provided in Table 2.5.4-232 which, as shown, falls within (is less than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 15 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Meteorological Dispersion (X/Q)[11]			
EAB X/Q			
0–2 hours	2.00E-03 s/m^3	3.95E-04 s/m^3	The site characteristic value for short-term (accident release) atmospheric dispersion for 0–2 hr X/Q value at the EAB is defined as the 0–2 hour atmospheric dispersion factor to be used to estimate dose consequences of accidental airborne releases at the EAB. The site characteristic value falls within (is lower than) the DCD site parameter value.
LPZ X/Q			
0–8 hours	1.90E-04 s/m^3	3.46E-05 s/m^3	The site characteristic value for short-term (accident release) atmospheric dispersion for 0–8 hr X/Q value at the LPZ is defined as the 0–8 hour atmospheric dispersion factor to be used to estimate dose consequences of accidental airborne releases at the LPZ. The site characteristic value falls within (is lower than) the DCD site parameter value.
8–24 hours	1.40E-04 s/m^3	2.37E-05 s/m^3	The site characteristic value for short-term (accident release) atmospheric dispersion for 8–24 hr X/Q value at the LPZ is defined as the 8–24 hour atmospheric dispersion factor to be used to estimate dose consequences of accidental airborne releases at the LPZ. The site characteristic value falls within (is lower than) the DCD site parameter value
1–4 days	7.50E-05 s/m^3	1.05E-05 s/m^3	The site characteristic value for short-term (accident release) atmospheric dispersion for 1–4 day X/Q value at the LPZ is defined as the 1–4 day atmospheric dispersion factor to be used to estimate dose consequences of accidental airborne releases at the LPZ. The site characteristic value falls within (is lower than) the DCD site parameter value.
4–30 days	3.00E-05 s/m^3	3.22E-06 s/m^3	The site characteristic value for short-term (accident release) atmospheric dispersion for 4–30 day X/Q value at the LPZ is defined as the 4–30 day atmospheric dispersion factor to be used to estimate dose consequences of accidental airborne releases at the LPZ. The site characteristic value falls within (is lower than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 16 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Meteorological Dispersion (X/Q) (continued)			
Control Room X/Q * * First value is for unfiltered inleakage. Second value is for air intakes (emergency and normal).			Control Room X/Q values shown on the same row in Table 2.0-1 are in sets below: first a set for unfiltered inleakage, followed by a set for air intakes (emergency and normal).
Reactor Building			
Unfiltered inleakage			
0–2 hours	1.90E-03 s/m^3	1.7E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value
2–8 hours	1.30E-03 s/m^3	1.1E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	5.90E-04 s/m^3	4.3E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	5.00E-04 s/m^3	3.3E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	4.40E-04 s/m^3	2.5E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Air intakes (maximum of emergency and normal)			
0–2 hours	1.50E-03 s/m^3	1.1E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
2–8 hours	1.10E-03 s/m^3	7.9E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 17 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Meteorological Dispersion (X/Q) (continued)			
Control Room X/Q (continued)			
Reactor Building – (continued)			
Air intakes (maximum of emergency and normal) (continued)			
8–24 hours	5.00E-04 s/m^3	3.0E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	4.20E-04 s/m^3	2.4E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	3.80E-04 s/m^3	1.9E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Passive Containment Cooling System/Reactor Building Roof			
Unfiltered inleakage			
0–2 hours	3.40E-03 s/m^3	1.7E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
2–8 hours	2.70E-03 s/m^3	1.2E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	1.40E-03 s/m^3	4.5E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	1.10E-03 s/m^3	2.9E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	7.90E-04 s/m^3	2.2E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Air intakes (maximum of emergency and normal)			
0–2 hours	3.00E-03 s/m^3	1.4E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 18 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Meteorological Dispersion (X/Q) (continued)			
Control Room X/Q (continued)			
Passive Containment Cooling System/Reactor Building Roof (continued)			
Air intakes (maximum of emergency and normal) (continued)			
2–8 hours	2.50E-03 s/m^3	1.0E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	1.20E-03 s/m^3	3.9E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	9.00E-04 s/m^3	2.7E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	7.00E-04 s/m^3	2.0E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Blowout Panels/Reactor Building Roof			
Unfiltered inleakage			
0–2 hours	7.00E-03 s/m^3	4.6E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
2–8 hours	5.00E-03 s/m^3	3.9E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 days	2.10E-03 s/m^3	1.6E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	1.70E-03 s/m^3	1.3E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	1.50E-03 s/m^3	1.1E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 19 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Meteorological Dispersion (X/Q) (continued)			
Control Room X/Q (continued)			
Blowout Panels/Reactor Building Roof (continued)			
Air intakes (maximum of emergency and normal)			
0–2 hours	5.90E-03 s/m^3	3.7E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
2–8 hours	4.70E-03 s/m^3	3.0E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 days	1.50E-03 s/m^3	1.2E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	1.10E-03 s/m^3	9.1E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	1.00E-03 s/m^3	7.0E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Turbine Building			
Unfiltered inleakage			
0–2 hours	1.20E-03 s/m^3	6.4E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
2–8 hours	9.80E-04 s/m^3	3.8E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	3.90E-04 s/m^3	1.5E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	3.80E-04 s/m^3	1.1E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	3.20E-04 s/m^3	8.5E-05 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 20 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Meteorological Dispersion (X/Q) (continued)			
Control Room X/Q (continued)			
Turbine Building (continued)			
Air intakes (maximum of emergency and normal)			
0–2 hours	1.20E-03 s/m^3	6.8E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
2–8 hours	9.80E-04 s/m^3	4.0E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	3.90E-04 s/m^3	1.5E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	3.80E-04 s/m^3	1.2E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	3.20E-04 s/m^3	9.1E-05 s/m3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Fuel Building			
Unfiltered inleakage			
0–2 hours	2.80E-03 s/m^3	2.2E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value
2–8 hours	2.50E-03 s/m^3	1.6E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	1.25E-03 s/m^3	6.4E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 21 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Meteorological Dispersion (X/Q) (continued)			
Control Room X/Q (continued)			
Fuel Building (continued)			
Unfiltered inleakage (continued)			
1–4 days	1.10E-03 s/m^3	5.5E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	1.00E-03 s/m^3	4.5E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Air intakes (maximum of normal and emergency)			
0–2 hours	2.80E-03 s/m^3	2.0E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value
2–8 hours	2.50E-03 s/m^3	1.6E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	1.25E-03 s/m^3	6.2E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	1.10E-03 s/m^3	4.9E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	1.00E-03 s/m^3	4.0E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Radwaste Building Unfiltered inleakage			
			The PCCS vent X/Q values are assumed to bound the X/Q values for any release from the RW Building based on distance and direction to the CR receptors, and the PCCS vent X/Q values are used to evaluate releases from the RW Building (Section 15.3.16). The PCCS X/Q values are compared to the RW Building X/Q results.
0–2 hours	3.40E-03 s/m^3	1.7E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 22 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Meteorological Dispersion (X/Q) (continued)			
Control Room X/Q (continued) Radwaste Building (continued) Unfiltered inleakage (continued)			
2–8 hours	2.70E-03 s/m^3	1.2E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	1.40E-03 s/m^3	4.5E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	1.10E-03 s/m^3	2.9E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	7.90E-04 s/m^3	2.2E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Air Intakes (maximum of normal and emergency)			
0–2 hours	3.00E-03 s/m^3	1.4E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
2–8 hours	2.50E-03 s/m^3	1.0E-03 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	1.20E-04 s/m^3	3.9E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	9.00E-04 s/m^3	2.7E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	7.00E-04 s/m^3	2.0E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 23 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Meteorological Dispersion (X/Q) (continued)			
Reactor Building			
TSC Unfiltered Inleakage and TSC Air Intakes (emergency and normal)			
0–2 hours	1.00E-03 s/m^3	2.4E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
2–8 hours	6.00E-04 s/m^3	2.0E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	3.00E-04 s/m^3	8.2E-05 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	2.00E-04 s/m^3	6.8E-05 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	1.00E-04 s/m^3	5.8E-05 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Turbine Building			
TSC Unfiltered Inleakage and TSC Air Intakes (emergency and normal)			
0–2 hours	2.00E-03 s/m^3	6.6E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
2–8 hours	1.50E-03 s/m^3	4.2E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	8.00E-04 s/m^3	1.7E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	6.00E-04 s/m^3	1.4E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	5.00E-04 s/m^3	1.2E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 24 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Meteorological Dispersion (X/Q) (continued)			
Passive Containment Cooling System/Reactor Building Roof			
TSC Unfiltered Inleakage and TSC Air Intakes (emergency and normal)			
0–2 hours	2.00E-03 s/m^3	3.6E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
2–8 hours	1.10E-03 s/m^3	2.8E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
8–24 hours	5.00E-04 s/m^3	1.1E-04 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
1–4 days	4.00E-04 s/m^3	9.3E-05 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
4–30 days	3.00E-04 s/m^3	7.3E-05 s/m^3	The Fermi 3 site characteristic value is provided in Table 2.3-301 and Table 2.3-378 and falls within (is less than) the DCD site parameter value.
Long Term Dispersion Estimates[12]			
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	The site characteristic values for long term (routine release) atmospheric dispersion estimates are based on the maximally exposed individual (MEI) for each pathway.	The site characteristic values for long term (routine release) atmospheric dispersion estimates are defined based on type of sensitive receptor (MEI) and decay time. Each of these values is compared with the appropriate DCD site parameter value, X/Q or D/Q, below. Each site characteristic value that is equal to or less than the DCD site parameter value results in a lower estimated dose for the same source term, and conversely, a higher X/Q or D/Q results in a higher estimated dose.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 25 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Long Term Dispersion Estimates (continued)			
D/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 4.8E-09 m^{-2} 3.5E-09 m^{-2} 1.9E-08 m^{-2}	The characteristic values assume conservatively, that each sensitive receptor (meat animal, vegetable garden, residence) is at the location of the closest receptor.	As shown below, every site characteristic value does not fall within (some are greater than) the DCD site parameter value. Per Note (12) of Table 2.0-1, if a site-specific X/Q value exceeds the site parameter value, the release concentrations in Table 12.2-17 must be adjusted proportionate to the change in X/Q values using the stack release information in Table 12.2-16 to show the 10 CFR 20 limits are met; and the annual average doses in Table 12.2-18b must be changed to show the 10 CFR 50 Appendix I doses are met. Per COL Item 12.2-2-A, calculation bases in Tables 12.2-15 and 12.2-18a are replaced with site-specific values for calculation of airborne concentrations and doses. UFSAR Table 12.2-15 and UFSAR Table 12.2-18a identify the replacement DCD information. This table identifies that there are Fermi 3 site characteristic values that do not fall within (are greater than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
Site Boundary Annual Average			
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m^3	 8.7×10^{-7} s/m^3 9.6×10^{-7} s/m^3 1.1×10^{-5} s/m^3 undepleted/no decay	The site characteristic value for this long term dispersion estimate is defined as the maximum annual average site boundary undepleted/no decay X/Q value for use in determining gaseous pathway doses to the maximally exposed individual. The site characteristic value is provided in Table 2.3-305, Table 2.3-306 and Table 2.3-307(based on the 2002-2007 met data) and Table 2.3-345, Table 2.3-346, and Table 2.3-347 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 26 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Long Term Dispersion Estimates (continued)			
Site Boundary Annual Average (continued)			
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 8.7×10^{-7} s/m^3 9.6×10^{-7} s/m^3 1.1×10^{-5} s/m^3 undepleted/2.26-day	The site characteristic value for this long term dispersion estimate is defined as the maximum annual average site boundary undepleted/2.26-day decay X/Q value for use in determining gaseous pathway doses to the maximally exposed individual. The site characteristic value is provided in Table 2.3-305, Table 2.3-306 and Table 2.3-307 (based on the 2002-2007 met data) and Table 2.3-345, Table 2.3-346, and Table 2.3-347 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 8.1×10^{-7} s/m^3 8.9×10^{-7} s/m^3 1.0×10^{-5} s/m^3 depleted/8.00-day decay	The site characteristic value for this long term dispersion estimate is defined as the maximum annual average site boundary depleted/8.00-day decay X/Q value for use in determining gaseous pathway doses to the maximally exposed individual. The site characteristic value is provided in Table 2.3-305, Table 2.3-306 and Table 2.3-307 (based on the 2002-2007 met data) and Table 2.3-345, Table 2.3-346, and Table 2.3-347 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
D/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 4.8E-09 m^{-2} 3.5E-09 m^{-2} 1.9E-08 m^{-2}	 1.7×10^{-8} $1/m^2$ 1.5×10^{-8} $1/m^2$ 4.9×10^{-8} $1/m^2$	The site characteristic value for this long term dispersion estimate is defined as the maximum annual average site boundary D/Q value for use in determining gaseous pathway doses to the maximally exposed individual. The site characteristic value is provided in Table 2.3-305, Table 2.3-306 and Table 2.3-307 (based on the 2002-2007 met data) and Table 2.3-345, Table 2.3-346, and Table 2.3-347 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 27 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Long Term Dispersion Estimates (continued)			
Annual Average Nearest Residence			
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 6.8×10^{-7} s/m^3 7.2×10^{-7} s/m^3 7.0×10^{-6} s/m^3 undepleted/no decay	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-308, Table 2.3-309 and Table 2.3-310 (based on the 2002-2007 met data) and Table 2.3-348, Table 2.3-349, and Table 2.3-350 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 6.8×10^{-7} s/m^3 7.2×10^{-7} s/m^3 7.0×10^{-6} s/m^3 undepleted/2.26-day decay	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-308, Table 2.3-309 and Table 2.3-310 (based on the 2002-2007 met data) and Table 2.3-348, Table 2.3-349, and Table 2.3-350 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 6.3×10^{-7} s/m^3 6.6×10^{-7} s/m^3 6.3×10^{-6} s/m^3 depleted/8.00-day decay,	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-308, Table 2.3-309 and Table 2.3-310 (based on the 2002-2007 met data) and Table 2.3-348, Table 2.3-349, and Table 2.3-350 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
D/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 4.8E-09 m^{-2} 3.5E-09 m^{-2} 1.9E-08 m^{-}	 1.2×10^{-8} $1/m^2$ 1.2×10^{-8} $1/m^2$ 3.4×10^{-8} $1/m^2$	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-308, Table 2.3-309 and Table 2.3-310 (based on the 2002-2007 met data) and Table 2.3-348, Table 2.3-349, and Table 2.3-350 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 28 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Long Term Dispersion Estimates (continued)			
Annual Average Nearest Meat Animal			
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 4.8×10^{-8} s/m^3 4.3×10^{-8} s/m^3 1.9×10^{-7} s/m^3 undepleted/no decay	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-320, Table 2.3-321 and Table 2.3-322 (based on the 2002-2007 met data) and Table 2.3-360, Table 2.3-361, and Table 2.3-362 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is less than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 4.8×10^{-8} s/m^3 4.3×10^{-8} s/m^3 1.8×10^{-7} s/m^3 undepleted/2.26-day decay	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-320, Table 2.3-321 and Table 2.3-322 (based on the 2002-2007 met data) and Table 2.3-360, Table 2.3-361, and Table 2.3-362 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is less than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 4.3×10^{-8} s/m^3 3.8×10^{-8} s/m^3 1.4×10^{-7} s/m^3 depleted/8.00-day decay	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-320, Table 2.3-321 and Table 2.3-322 (based on the 2002-2007 met data) and Table 2.3-360, Table 2.3-361, and Table 2.3-362 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is less than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
D/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 4.8E-09 m^{-2} 3.5E-09 m^{-2} 1.9E-08 m^{-}	 3.4×10^{-10} $1/m^2$ 3.3×10^{-10} $1/m^2$ 6.4×10^{-10} $1/m^2$	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-320, Table 2.3-321 and Table 2.3-322 (based on the 2002-2007 met data) and Table 2.3-360, Table 2.3-361, and Table 2.3-362 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is less than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 29 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Long Term Dispersion Estimates (continued)			
Annual Average Nearest Garden			
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 6.8×10^{-7} s/m^3 7.1×10^{-7} s/m^3 7.0×10^{-6} s/m^3 undepleted/no decay	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-311, Table 2.3-312 and Table 2.3-313 (based on the 2002-2007 met data) and Table 2.3-351, Table 2.3-352, and Table 2.3-353 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 6.8×10^{-7} s/m^3 7.1×10^{-7} s/m^3 7.0×10^{-6} s/m^3 undepleted/2.26-day decay	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-311, Table 2.3-312 and Table 2.3-313 (based on the 2002-2007 met data) and Table 2.3-360, Table 2.3-361, and Table 2.3-362 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 6.3×10^{-7} s/m^3 6.5×10^{-7} s/m^3 6.3×10^{-6} s/m^3 depleted/8.00-day decay	The Fermi 3 site characteristic value for this long term dispersion estimate is provided in Table 2.3-311, Table 2.3-312 and Table 2.3-313 (based on the 2002-2007 met data) and Table 2.3-360, Table 2.3-361, and Table 2.3-362 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
D/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 4.8E-09 m^{-2} 3.5E-09 m^{-2} 1.9E-08 m^{-}	 1.2×10^{-8} $1/m^2$ 1.1×10^{-8} $1/m^2$ 3.4×10^{-8} $1/m^2$	The Fermi 3 site characteristic value for this long term dispersion estimate taken is provided in Table 2.3-311, Table 2.3-312 and Table 2.3-313 (based on the 2002-2007 met data) and Table 2.3-360, Table 2.3-361, and Table 2.3-362 (based on the 1985-1989 met data). The Fermi 3 site characteristic values do not fall within (is greater than) all of the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 30 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Long Term Dispersion Estimates (continued)			
Annual Average Nearest Milk Cow			
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 8.4×10^{-8} s/m^3 7.6×10^{-8} s/m^3 3.4×10^{-7} s/m^3 undepleted/no decay	The Fermi 3 site characteristic values for this long term dispersion estimate is provided in Table 2.3-323, Table 2.3-324 and Table 2.3-325 (based on the 2002-2007 met data) and Table 2.3-363, Table 2.3-364, and Table 2.3-365 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is smaller than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 8.4×10^{-8} s/m^3 7.5×10^{-8} s/m^3 3.3×10^{-7} s/m^3 undepleted/2.26-day decay	The Fermi 3 site characteristic values for this long term dispersion estimate is provided in Table 2.3-323, Table 2.3-324 and Table 2.3-325 (based on the 2002-2007 met data) and Table 2.3-363, Table 2.3-364, and Table 2.3-365 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is smaller than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 7.7×10^{-8} s/m^3 6.8×10^{-8} s/m^3 2.8×10^{-7} s/m^3 depleted/8.00-day decay	The Fermi 3 site characteristic values for this long term dispersion estimate is provided in Table 2.3-323, Table 2.3-324 and Table 2.3-325 (based on the 2002-2007 met data) and Table 2.3-363, Table 2.3-364, and Table 2.3-365 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is smaller than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
D/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 4.8E-09 m^{-2} 3.5E-09 m^{-2} 1.9E-08 m^{-}	 9.5×10^{-10} $1/m^2$ 8.9×10^{-10} $1/m^2$ 1.7×10^{-9} $1/m^2$	The Fermi 3 site characteristic values for this long term dispersion estimate is provided in Table 2.3-323, Table 2.3-324 and Table 2.3-325 (based on the 2002-2007 met data) and Table 2.3-363, Table 2.3-364, and Table 2.3-365 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is smaller than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Sheet 31 of 31)

Subject [16]	DCD Site Parameter Value[1][16]	Fermi 3 Site Characteristic	Evaluation
Long Term Dispersion Estimates (continued)			
Annual Average Nearest Milk Goat			
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 7.7×10^{-8} s/m^3 6.9×10^{-8} s/m^3 3.0×10^{-7} s/m^3 undepleted/no decay	The Fermi 3 site characteristic values for this long term dispersion estimate is provided in Table 2.3-317, Table 2.3-318 and Table 2.3-319 (based on the 2002-2007 met data) and Table 2.3-357, Table 2.3-358, and Table 2.3-359 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is smaller than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 7.7×10^{-8} s/m^3 6.9×10^{-8} s/m^3 3.0×10^{-7} s/m^3 undepleted/2.26-day decay	The Fermi 3 site characteristic values for this long term dispersion estimate is provided in Table 2.3-317, Table 2.3-318 and Table 2.3-319 (based on the 2002-2007 met data) and Table 2.3-357, Table 2.3-358, and Table 2.3-359 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is smaller than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
X/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 1.5E-07 s/m^3 1.2E-07 s/m^3 5.0E-06 s/m	 7.0×10^{-8} s/m^3 6.1×10^{-8} s/m^3 2.4×10^{-7} s/m^3 depleted/8.00-day decay	The Fermi 3 site characteristic values for this long term dispersion estimate is provided in Table 2.3-317, Table 2.3-318 and Table 2.3-319 (based on the 2002-2007 met data) and Table 2.3-357, Table 2.3-358, and Table 2.3-359 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is smaller than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.
D/Q RB/FB Vent Stack TB Vent Stack RWB Vent Stack	 4.8E-09 m^{-2} 3.5E-09 m^{-2} 1.9E-08 m^{-}	 8.4×10^{-10} $1/m^2$ 7.9×10^{-10} $1/m^2$ 1.5×10^{-9} $1/m^2$	The Fermi 3 site characteristic values for this long term dispersion estimate is provided in Table 2.3-317, Table 2.3-318 and Table 2.3-319 (based on the 2002-2007 met data) and Table 2.3-357, Table 2.3-358, and Table 2.3-359 (based on the 1985-1989 met data). The Fermi 3 site characteristic values fall within (is smaller than) the DCD site parameter values. See Section 12.2 for the site-specific concentration and dose analysis inputs and results.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Notes) (Sheet 1 of 2)

1. The site parameters defined in this table are applicable to Seismic Category I, II, and Radwaste Building structures, unless noted otherwise.
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 I of Reference 2.0-5, which summarizes the NRC Interim Position on RG 1.76. Concrete structures designed to resist Spectrum I missiles of SRP 3.5.1.4, Rev. 2, will also resist missiles postulated in RG 1.76, Revision 1. Tornado missiles do not apply to Seismic Category NS and Seismic Category II buildings. For the Radwaste building, the tornado missiles defined in Regulatory Guide 1.143, Table 2, Class RW-IIa apply. The hurricane missile spectrum for the Seismic Category NS and Seismic Category II structures that house RTNSS equipment is consistent with the tornado missile spectrum identified in this table. See Tables 19A-3 and 19A-4 for additional details
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. See also Table 3G.1-2.
5. See Reference 2.0-9 for the definition of normal winter precipitation and extreme winter precipitation events. The maximum ground snow load for extreme winter precipitation event includes the contribution from the normal winter precipitation event. 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. They represent historical limits excluding peaks of less than one hour: which are conservative relative to Reference 2.0-4. 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 the foundation level of Seismic Category I structures, the dynamic bearing pressure is the toe pressure. The maximum static bearing demand is compared with the site-specific allowable static bearing pressure, which is obtained by dividing the ultimate soil bearing capacity by a factor of safety appropriate for the design load combination. The maximum dynamic bearing demand is compared with the site-specific allowable dynamic bearing pressure, which is obtained by dividing the ultimate soil bearing capacity by a factor of safety appropriate for the design load combination. When a site specific shear wave velocity is between soft soil and medium soil the larger of the soft or medium maximum dynamic bearing demand will be used. When a site-specific shear wave velocity is between medium soil and hard soil the larger of the medium or hard maximum dynamic bearing demand will be used. Alternatively, for soils with a site-specific shear wave velocity a linearly interpolated dynamic bearing demand between soft and medium soil or between medium and hard soil can be used. 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 minimum shear wave velocity of the supporting foundation material and material surrounding the embedded walls associated with seismic strains for lower bound soil properties at minus one sigma from the mean. The ratio of the largest to the smallest shear wave velocity over the mat foundation width of the supporting foundation material 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 the Firewater Service Complex, which is essentially a surface founded structure, the CSDRS is 1.35 times the values shown in Figure 2.0-1 and 2.0-2 and is defined as free-field outcrop spectra at the foundation level (bottom of the base slab) of the Firewater Service Complex structure.

Table 2.0-201 Evaluation of Site/Design Parameters and Characteristics (Notes) (Sheet 2 of 2)

10. Values reported here are actually design criteria rather than site parameters. They are included here because they don't appear elsewhere in the.
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 52.79(a)(1)(vi) 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 values using the stack release information in Table 12.2-16. 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. Values were selected to comply with expected requirements of southeastern coastal locations, which include the consideration of hurricanes as described in ASCE 7-02. Wind speeds are considered to be at 10 m (33 ft) above ground per ASCE 7-02. Seismic Category NS buildings that house RTNSS equipment are desinged to withstand hurricane Category 5 wind velocity at 87.2 m/s (195 mph), 3-second gust, and missiles generated by that wind velocity. See Tables 19A-3 and 19A-4 for additional details.
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.
16. Information in this column and notes (1) through (15) are from Table 2.0-1.

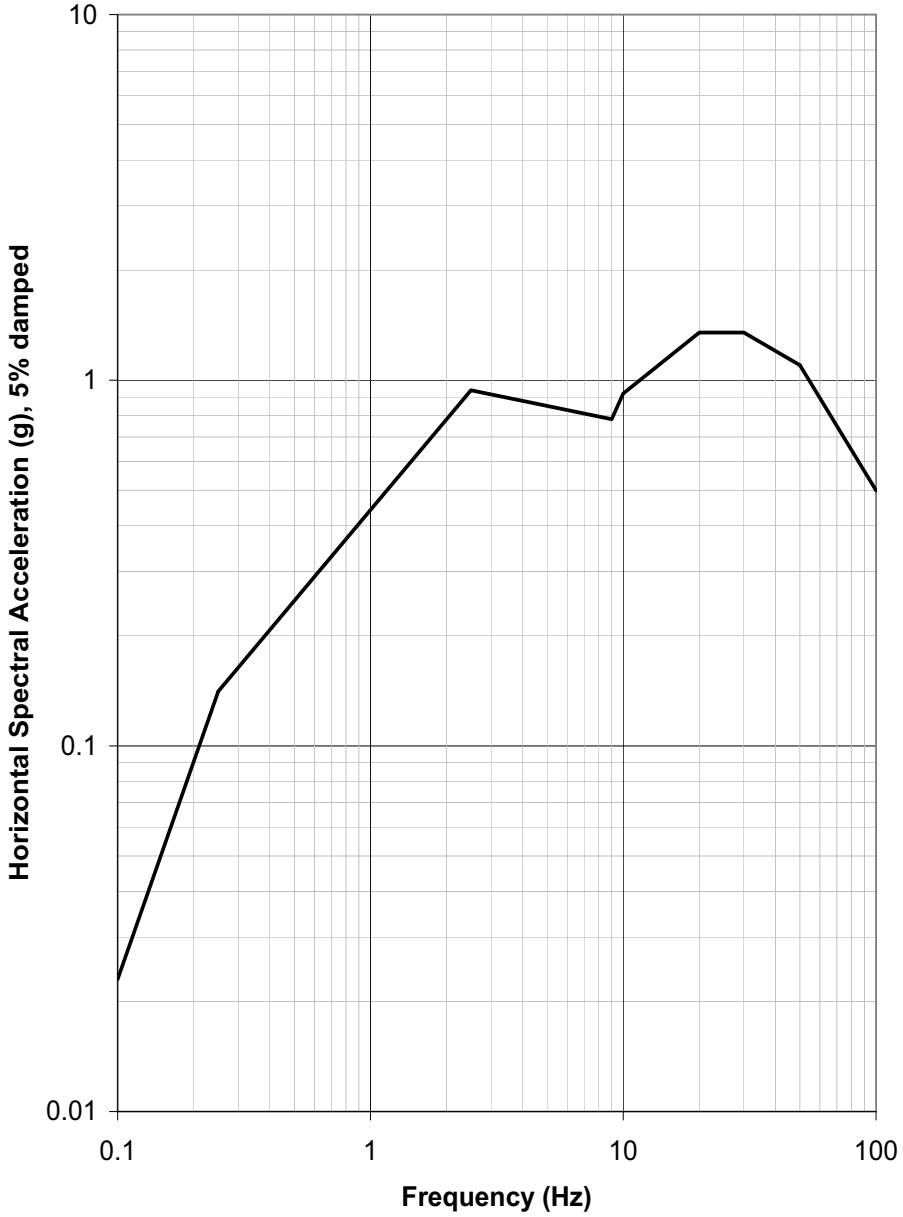


Figure 2.0-1. ESBWR Horizontal SSE Design Ground Spectra at Foundation Level(1)

Note:
1. Figures with pink titles are designated as Tier 2*.

Prior NRC approval is required to change.

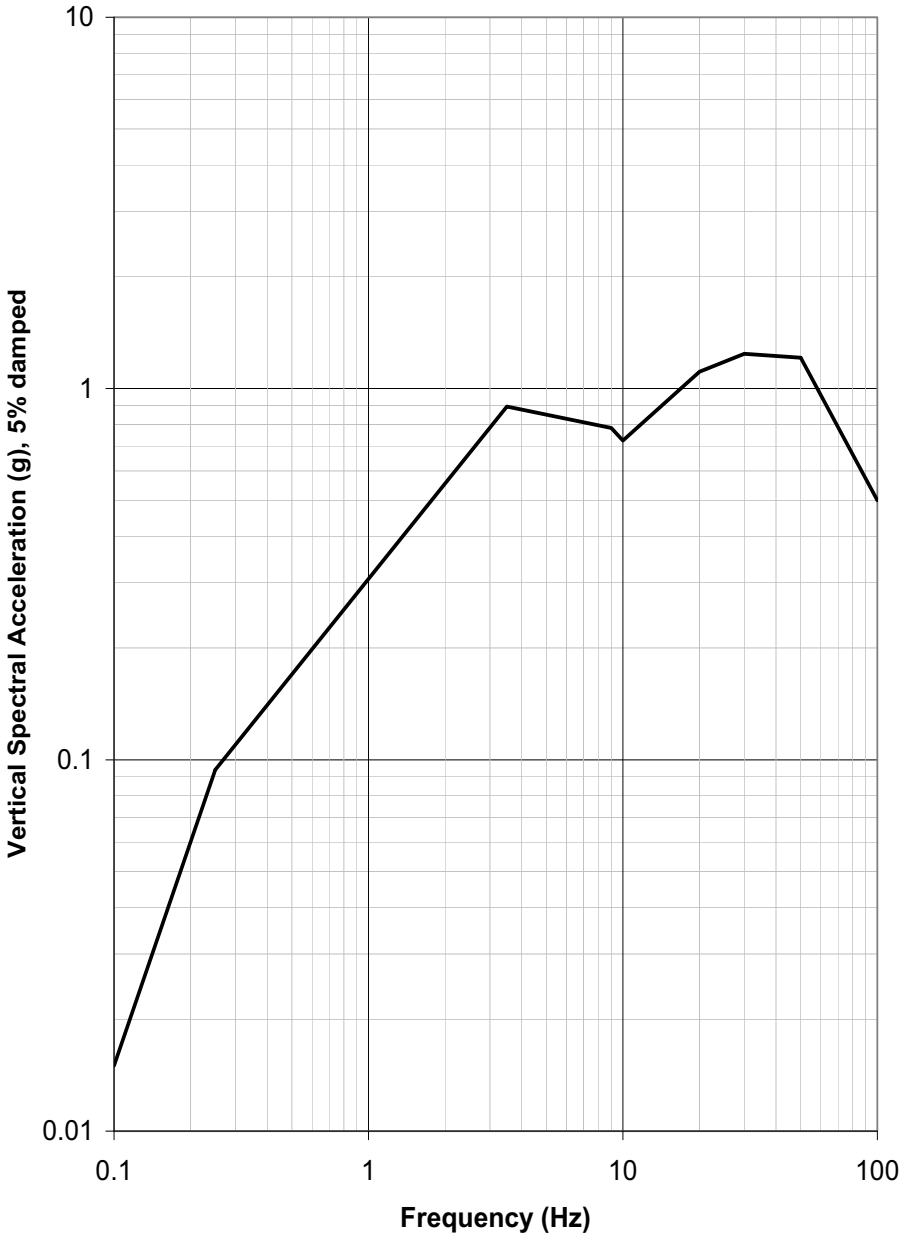
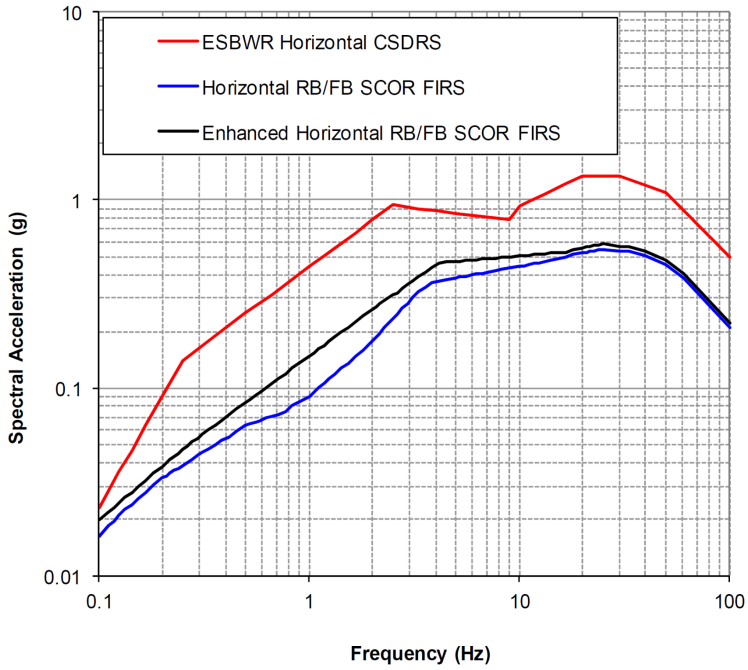


Figure 2.0-2. ESBWR Vertical SSE Design Ground Response Spectra at Foundation Level(1)

Note:
1. Figures with pink titles are designated as Tier 2*.

Prior NRC approval is required to change.

Figure 2.0-201 Horizontal and Vertical RB/FB Enhanced SCOR FIRS and CSDRS [5 Percent Damping] (FIRS are developed in Subsection 3.7.1)



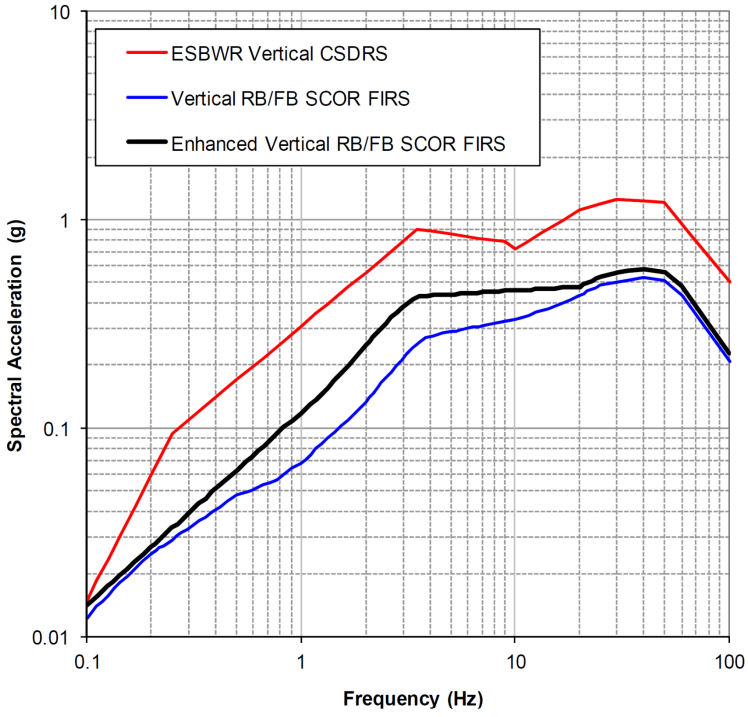
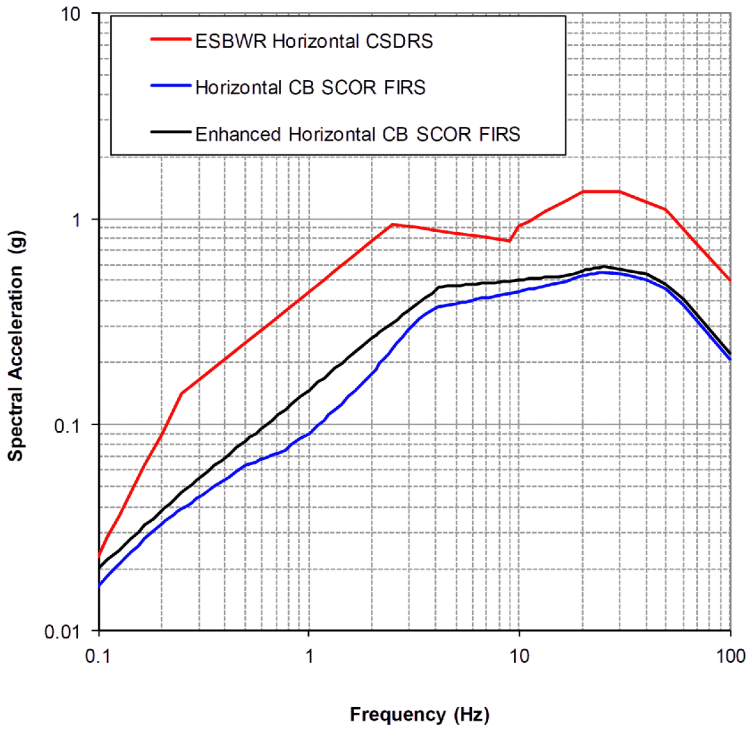


Figure 2.0-202 Horizontal and Vertical CB Enhanced SCOR FIRS and CSDRS [5 Percent Damping] (FIRS are developed in Subsection 3.7.1)



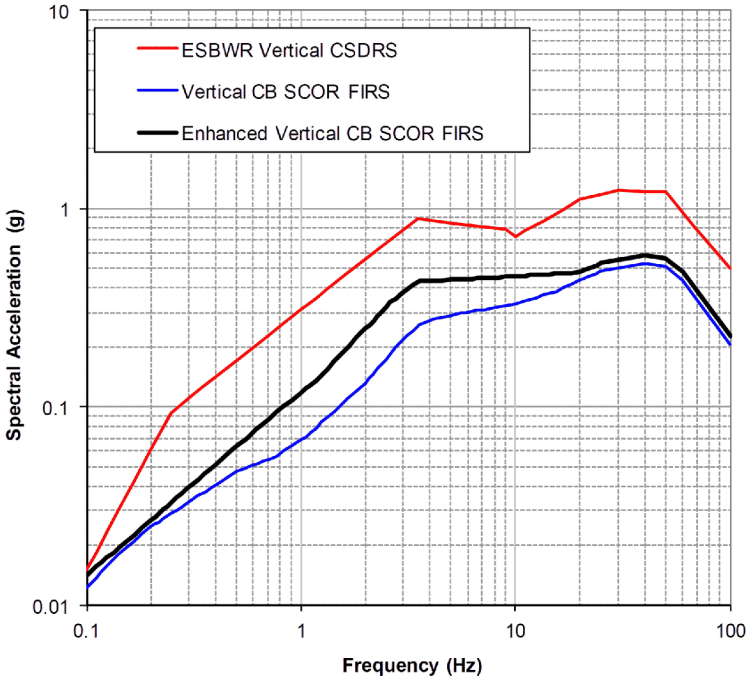


Figure 2.0-203 Horizontal and Vertical FWSC FIRS and 1.35 Times the CSDRS [5 Percent Damping] (FIRS are developed in Subsection 3.7.1)