

5.0 SITE PARAMETERS

Assuming the certified design will be referenced for a wide range of sites, it is necessary to specify a set of site parameters enveloping the conditions that could be present at most potential power plant sites in the United States. These parameters are provided in Table 5.0-1. It is intended that any facility that references the certified design will utilize a site where the actual site-specific conditions are within the defined envelope.

In the case of seismic design parameters, deviations from the defined conditions may be justified by site-specific soil-structure interaction analyses. The results may be used to confirm the seismic design adequacy of the certified design using approved methods and acceptance criteria.

**Table 5.0-1—Site Parameters for the U.S. EPR Design
(3 Sheets)**

Precipitation	
Parameter	Value(s)
Rainfall rate	≤19.4 in/hr
Sum of normal winter precipitation event and extreme frozen winter precipitation event ground load.	≤143 psf ⁽¹⁾
Seismology	
Parameter	Value(s)
Horizontal SSE Acceleration	0.3g PGA for EUR and 0.21g PGA for HF (CSDRS shapes – See Figure 5.0-1) 0.3g PGA for EUR and 0.18g PGAfor HF (CSDRS shapes – See Figure 5.0-1) No fault displacement is considered for safety-related SSC in U.S. EPR design certification.
Vertical SSE Acceleration	
Fault Displacement Potential	
Flood Level	
Parameter	Value(s)
Maximum flood or tsunami	Maximum flood or tsunami level is no more than 1 ft below grade.
Temperature	
Parameter	Value(s)
Design ambient temperature	The 0% exceedance maximum ambient temperature is 115°F Dry Bulb and 80°F Wet Bulb (mean coincident). ⁽²⁾ The 0% exceedance minimum ambient temperature is -40°F. ⁽²⁾ The 1% exceedance (seasonal basis) ⁽³⁾ maximum ambient temperature is 100°F Dry Bulb and 77°F Wet Bulb (mean coincident). The 1% exceedance (seasonal basis) ⁽³⁾ minimum ambient temperature is -10°F.

**Table 5.0-1—Site Parameters for the U.S. EPR Design
(3 Sheets)**

Wind	
Parameter	Value(s)
Maximum Speed (Other than Tornado)	The normal maximum wind speed is 145 mph.
Tornado	
Parameter	Value(s)
Tornado (maximum speed, pressure drop, radius of maximum rotational speed, rate of pressure drop, missile spectra)	Maximum tornado wind speed of 230 mph. Maximum rotational speed of 184 mph. Maximum tornado pressure drop of 1.2 pounds per square inch at 0.5 psi per second. Radius of maximum rotational speed is 150 ft.
Soil	
Parameter	Value(s)
Soil properties:	
Minimum angle of internal friction (in situ and backfill)	26.6 degrees ⁽⁴⁾
Minimum shear wave velocity	Minimum shear wave velocity (low strain best estimate average value at bottom of basemat) of 1000 feet per second.
Minimum static bearing capacity	Maximum static bearing demand is 24,000 lbs/ft ² at the bottom of the Seismic Category I structure basemats. The ultimate static bearing capacity divided by 3.0 is greater than or equal to the maximum static bearing demand.
Minimum dynamic bearing capacity	Maximum dynamic bearing demand is 35,000 lbs/ft ² at the toe of the Seismic Category I structure basemats. The ultimate dynamic bearing capacity divided by 2.0 is greater than or equal to the maximum dynamic bearing demand.
Liquefaction potential	No potential for liquefaction under footprint of Seismic Category I structures from site-specific SSE.
Maximum ground water level	Maximum ground water level is 3.3 ft below grade.
Maximum Settlement (across the basemat)	
Tilt Settlement	1/2 inch in 50 ft in any direction.
Slope Failure Potential	No slope failure potential is considered in the design of safety-related SSC for U.S. EPR design certification.

**Table 5.0-1—Site Parameters for the U.S. EPR Design
(3 Sheets)**

Atmospheric Dispersion Factors (χ/Q)	
Parameter	Value(s)
Meteorological Dispersion (values at Exclusion Area Boundary, and Low Population Zone at appropriate time intervals for short and long term)	Atmospheric dispersion factors – χ/Q (sec/m ³) – Exclusion Area Boundary 0 - 2 hours $\leq 1.00\text{E-}03$ – Low Population Zone 0 - 2 hours $\leq 1.75\text{E-}04$ 2 - 8 hours $\leq 1.35\text{E-}04$ 8 - 24 hours $\leq 1.00\text{E-}04$ 1 - 4 days $\leq 5.40\text{E-}05$ 4 - 30 days $\leq 2.20\text{E-}05$

1. The effect of the extreme liquid winter precipitation event on roof loads is negligible due to the lack of parapets.
2. By definition, 0% percent exceedance temperature values exclude peaks of temperatures that last less than two hours. The 0% percent exceedance values are based on conservative estimates of 100 year return period values and historic extreme values, whichever is bounding.
3. For maximum values, data from the summer months of June, July, and August are used. For minimum values, data from the winter months of December, January, and February are used.
4. Minimum angle of internal friction is associated with the soil's ability to develop the minimum coefficient of static friction.