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 (4 Sheets)

Precipitation	
Parameter	**Value(s)**
Rainfall rate	≤19.4 in/hr
Normal ground precipitation load	≤100 psf (100-year Mean Recurrence Interval)
Normal roof precipitation load	≤70 psf (100-year Mean Recurrence Interval)
48-hour PMWP liquid roof load	0 psf (1)
48-hour PMWP frozen ground load	≤43 psf (based on 55 inches)
48-hour PMWP frozen roof load	≤30 psf
Extreme roof winter precipitation load	≤100 psf (100-year Mean Recurrence Interval)
Seismology	
Parameter	**Value(s)**
Seismology (SSE response spectra)	Horizontal design ground motion shall be the certified seismic design response spectra shapes anchored to a peak ground acceleration of 0.3 g (see Figure 5.0-1). Vertical spectra shall be the same as the horizontal spectra (see Figure 5.0-1).
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 coincident. The 0% exceedance minimum ambient temperature is -40°F. The 1% exceedance maximum ambient temperature is 100°F Dry Bulb and 77°F Wet Bulb, coincident. The 1% exceedance minimum ambient temperature is -10°F.
Wind	
Parameter	**Value(s)**
Maximum Speed (Other than Tornado)	The normal maximum wind speed is 145 mph.

Table 5.0-1—Site Parameters for the U.S. EPR Design (4 Sheets)

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 shear wave velocity, Minimum static bearing capacity Minimum dynamic bearing capacity Liquefaction potential	Minimum shear wave velocity (low strain best estimate average value at bottom of basemat) of 1000 feet per second. Minimum static bearing capacity of 22,000 lb/ft^2 in localized areas at the bottom of the Nuclear Island basemat and 15,000 lb/ft^2 on average across the total area of the bottom of the Nuclear Island basemat. Minimum dynamic bearing capacity of 34,560 lb/ft^2 at the bottom of the Nuclear Island basemat. No potential for liquefaction.
Maximum ground water level	Maximum ground water level is 3.3 ft below grade.
Maximum Differential Settlement (across the basemat)	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
(4 Sheets)

Inventory of Radionuclides which Could Potentially Seep Into the Groundwater							
Nuclide	**Activity (µCi/g)**	**Nuclide**	**Activity (µCi/g)**	**Nuclide**	**Activity (µCi/g)**	**Nuclide**	**Activity (µCi/g)**
Br-83	3.2E-02	**Mn-54**	1.0E-03	**Y-91m**	5.2E-04	**TE-129**	2.4E-03
Br-84	1.7E-02	**Fe-55**	7.6E-04	**Y-91**	8.1E-05	**TE-131m**	3.7E-03
Br-85	2.0E-03	**Fe-59**	1.9E-04	**Y-92**	1.4E-04	**TE-131**	2.6E-03
I-129	4.6E-08	**Co-58**	2.9E-03	**Y-93**	6.5E-05	**TE-132**	4.1E-02
I-130	5.0E-02	**Co-60**	3.4E-04	**ZR-95**	9.3E-05	**TE-134**	6.7E-03
I-131	7.4E-01	**Na-24**	3.7E-02	**NB-95**	9.3E-05	**BA-137m**	1.0E-01
I-132	3.7E-01	**Zn-65**	3.2E-04	**MO-99**	1.1E-01	**BA-140**	6.2E-04
I-133	1.3E+00	**W-187**	1.8E-03	**TC-99m**	4.6E-02	**LA-140**	1.6E-04
I-134	2.4E-01	**Rb-88**	1.0E+00	**RU-103**	7.7E-05	**CE-141**	8.9E-05
I-135	7.9E-01	**Rb-89**	4.7E-02	**RU-106**	2.7E-05	**CE-143**	7.6E-05
Cs-134	1.7E-01	**Sr-89**	6.3E-04	**RH-103m**	6.8E-05	**CE-144**	6.9E-05
Cs-136	5.3E-02	**Sr-90**	3.3E-05	**RH-106**	2.7E-05	**PR-143**	8.8E-05
Cs-137	1.1E-01	**Sr-91**	1.0E-03	**AG-110m**	2.0E-07	**PR-144**	6.9E-05
Cs-138	2.2E-01	**Sr-92**	1.7E-04	**TE-127m**	4.4E-04	**NP-239**	8.7E-04
Cr-51	2.0E-03	**Y-90**	7.7E-06	**TE-129m**	1.5E-03	**H-3**	1.0E+00

Table 5.0-1—Site Parameters for the U.S. EPR Design
(4 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 (0.5 mi) χ/Q 0 - 2 hours ≤ 1.00E-03 – Low Population Zone (1.5 mi) χ/Q 0 – 2 hours ≤ 1.75E-04 2 – 8 hours ≤ 1.35E-04 8 – 24 hours ≤ 1.00E-04 1 – 4 days ≤ 5.40E-05 4 – 30 days ≤ 2.20E-05

1) The maximum 48-hour PMWP liquid of 32 inches is based on data obtained from National Oceanic and Atmospheric Administration Hydrometeorological Report No. 53 "Seasonal Variation of 10-square-mile Probable Maximum Precipitation Estimates, United States East of the 105th Meridian" for the three winter months – December through February. However, the effect of rainfall events on roof loads is negligible, due to the lack of parapets.

Next File