2.0 Site Characteristics

Chapter 2 describes the characteristics and site-related design parameters of the Vogtle Electric Generating Plant (VEGP), Units 3 and 4. The site location, characteristics and parameters, as described in the following five sections are provided in sufficient detail to support a safety assessment:

- Geography and Demography (Section 2.1)
- Nearby industrial, Transportation, and Military Facilities (Section 2.2)
- Meteorology (Section 2.3)
- Hydrologic Engineering (Section 2.4)
- Geology, Seismology, and Geotechnical Engineering (Section 2.5)

Table 2.0-201 provides a comparison of site-related design parameters for which the AP1000 plant is designed and site characteristics specific to VEGP in support of this safety assessment. The first two columns of Table 2.0-201 are a compilation of the site parameters. The third column of Table 2.0-201 is the corresponding site characteristic for the VEGP. The fourth column denotes the place where this data is presented. The last column indicates whether or not the site characteristic falls within the AP1000 site parameters. “Yes” indicates the site characteristic falls within the parameter. Control room atmospheric dispersion factors (χ/Q) for accident dose analysis are presented in Table 2.0-202. All of the control room χ/Q values fall within the AP1000 parameters.

Table 2.0-203 provides a summary list of the limiting site characteristic values that have been established by analyses presented throughout this document. This list also provides a summary of important site characteristics necessary to establish the findings required by 10 CFR Parts 52 and 100 on the suitability of the site.

Table 2-1
Not Used

Table 2.0-201 (Sheet 1 of 9)
Comparison of AP1000 DCD Site Parameters and Vogtle Electric Generating Plant Units 3 & 4 Site Characteristics

	AP1000 DCD Site Parameter[a]	VEGP Site Characteristic	VEGP Reference	VEGP Within Site Parameter
Air Temperature				
Maximum Safety[b]	115°F dry bulb/86.1°F coincident wet bulb[h]	115°F dry bulb/77.7°F coincident wet bulb	Table 2.0-203	Yes
	86.1°F wet bulb (noncoincident)	83.9°F wet bulb (noncoincident)	Table 2.0-203	Yes
Minimum Safety[b]	-40°F	-8°F	Table 2.0-203	Yes
Maximum Normal[c]	101°F dry bulb/80.1°F coincident wet bulb	97°F dry bulb/76°F coincident wet bulb	Subsection 2.3.1.5	Yes
	80.1°F wet bulb (noncoincident)[d]	79°F wet bulb (noncoincident)	Subsection 2.3.1.5	Yes
Minimum Normal[c]	-10°F	21°F dry bulb	Subsection 2.3.1.5	Yes
Wind Speed				
Operating Basis	145 mph (3 second gust); importance factor 1.15 (safety), 1.0 (nonsafety); exposure C; topographic factor 1.0	104 mph (3 second gust); exposure C; topographic factor 1.0. (Importance factor is not a property of the wind speed.)	Table 2.0-203 Figure 2.5-235	Yes
Tornado	300 mph	300 mph	Table 2.0-203	Yes
	Maximum pressure differential of 2.0 lb/in^2	2.0 lb/in^2	Table 2.0-203	Yes

Table 2.0-201 (Sheet 2 of 9)
Comparison of AP1000 DCD Site Parameters and Vogtle Electric Generating Plant Units 3 & 4 Site Characteristics

	AP1000 DCD Site Parameter[a]	VEGP Site Characteristic	VEGP Reference	VEGP Within Site Parameter
Seismic				
CSDRS	CSDRS free field peak ground acceleration of 0.30 g with modified Regulatory Guide 1.60 response spectra (See Figures 5.0-1 and 5.0-2.). The SSE is now referred to as CSDRS. Seismic input is defined at finished grade except for sites where the nuclear island is founded on hard rock. If the site-specific spectra exceed the response spectra in Figures 5.0-1 and 5.0-2 at any frequency, or if soil conditions are outside the range evaluated for AP1000 design certification, a site-specific evaluation can be performed. This evaluation will consist of a site-specific dynamic analysis and generation of in-structure response spectra at key locations to be compared with the floor response spectra of the certified design at 5-percent damping. The site is acceptable if the floor response spectra from the site-specific evaluation do not exceed the AP1000 spectra for each of the locations or the exceedances are justified.	Site-specific GMRS values specified and illustrated in Subsection 2.5.2. The seismic design of AP-1000 nuclear island is discussed in Subsection 3.7.1.1.1 Site-specific evaluation performed in Appendix 2.5E	Table 2.0-203 Subsection 3.7.1.1.1 Appendix 2.5E	Yes

Table 2.0-201 (Sheet 3 of 9)
Comparison of AP1000 DCD Site Parameters and Vogtle Electric Generating Plant Units 3 & 4 Site Characteristics

	AP1000 DCD Site Parameter[a]	VEGP Site Characteristic	VEGP Reference	VEGP Within Site Parameter
	The hard rock high frequency (HRHF) envelope response spectra are shown in Figure 5.0-3 and Figure 5.0-4 defined at the foundation level for 5% damping. The HRHF envelope response spectra provide an alternative set of spectra for evaluation of site specific GMRS. A site is acceptable if its site specific GMRS fall within the AP1000 HRHF envelope response spectra. Evaluation of a site for application of the HRHF envelope response spectra includes consideration of the limitation on shear wave velocity identified for use of the HRHF envelope response spectra. This limitation is defined by a shear wave velocity at the bottom of the basemat equal to or higher than 7,500 fps, while maintaining a shear wave velocity equal to or above 8,000 fps at the lower depths.			
Fault Displacement Potential	No potential fault displacement considered beneath the seismic Category I and seismic Category II structures and immediate surrounding area. The immediate surrounding area includes the effective soil supporting media associated with the seismic Category I and seismic Category II structures.	No fault displacement potential within the investigative area.	Table 2.0-203	Yes

Table 2.0-201 (Sheet 4 of 9)
Comparison of AP1000 DCD Site Parameters and Vogtle Electric Generating Plant Units 3 & 4 Site Characteristics

	AP1000 DCD Site Parameter[(a)]	VEGP Site Characteristic	VEGP Reference	VEGP Within Site Parameter
Soil				
Average Allowable Static Bearing Capacity	The allowable bearing capacity, including a factor of safety appropriate for the design load combination, shall be greater than or equal to the average bearing demand of 8,900 lb/ft² over the footprint of the nuclear island at its excavation depth	34,000 lb/ft^2	Table 2.0-203	Yes
Dynamic Bearing Capacity for Normal Plus Safe Shutdown Earthquake (SSE)	The allowable bearing capacity, including a factor of safety appropriate for the design load combination, shall be greater than or equal to the maximum bearing demand of 35,000 lb/ft² at the edge of the nuclear island at its excavation depth, or Site-specific analyses demonstrate factor of safety appropriate for normal plus safe shutdown earthquake loads.	42,000 lb/ft^2	Table 2.0-203	Yes
Shear Wave Velocity	Greater than or equal to 1,000 ft/sec based on minimum low-strain soil properties over the footprint of the nuclear island at its excavation depth	Greater than 1000 ft/sec	Table 2.0-203	Yes
Lateral Variability	Soils supporting the nuclear island should not have extreme variations in subgrade stiffness. This may demonstrated by one of the following:			

Table 2.0-201 (Sheet 5 of 9)
Comparison of AP1000 DCD Site Parameters and Vogtle Electric Generating Plant Units 3 & 4 Site Characteristics

	AP1000 DCD Site Parameter[a]		VEGP Site Characteristic	VEGP Reference	VEGP Within Site Parameter
Lateral Variability (Continued)	1	Soils supporting the nuclear island are uniform in accordance with Regulatory Guide 1.132 if the geologic and stratigraphic features at depths less than 120 feet below grade can be correlated from one boring or sounding location to the next with relatively smooth variations in thickness or properties of the geologic units, or	Site is uniform based on boring data and placement of engineered backfill	Subsection 2.5.4.4 and Subsection 2.5.4.5	Yes
	2	Site specific assessment of subsurface conditions demonstrates that the bearing pressures below the footprint of the nuclear island do not exceed 120% of those from the generic analyses of the nuclear island at a uniform site, or	N/A		
	3	Site specific analysis of the nuclear island basemat demonstrates that the site specific demand is within the capacity of the basemat.	N/A		
	As an example of sites that are considered uniform, the variation of shear wave velocity in the material below the foundation to a depth of 120 feet below finished grade within the nuclear island footprint and 40 feet beyond the boundaries of the nuclear island footprint meets the criteria in the case outlined below:				

Table 2.0-201 (Sheet 6 of 9)
Comparison of AP1000 DCD Site Parameters and Vogtle Electric Generating Plant Units 3 & 4 Site Characteristics

	AP1000 DCD Site Parameter[a]		VEGP Site Characteristic	VEGP Reference	VEGP Within Site Parameter
Lateral Variability (Continued)	Case 1: For a layer with a low strain shear wave velocity greater than or equal to 2500 feet per second, the layer should have approximately uniform thickness, should have a dip not greater than 20 degrees, and should have less than 20 percent variation in the shear wave velocity from the average velocity than any layer.		N/A		
Limits of Acceptable Settlement Without Additional Evaluation[i]	Differential Across Nuclear Island Foundation Mat	1/2 inch in 50 ft	~1/4 inch in 50 ft (projected)	Subsection 2.5.4.10.2	Yes (projected)
	Total for Nuclear Island Foundation Mat	6 inches	2–3 inches (projected)		
	Differential Between Nuclear Island and Turbine Building[j]	3 inches	<1 inch (projected)		
	Differential Between Nuclear Island and Other Buildings[j]	3 inches	<1 inch (projected)		

Table 2.0-201 (Sheet 7 of 9)
Comparison of AP1000 DCD Site Parameters and Vogtle Electric Generating Plant Units 3 & 4 Site Characteristics

	AP1000 DCD Site Parameter[a]	VEGP Site Characteristic	VEGP Reference	VEGP Within Site Parameter
Liquefaction Potential	No liquefaction considered beneath the seismic Category I and seismic Category II structures and immediate surrounding area. The immediate surrounding area includes the effective soil supporting media associated with the seismic Category I and seismic Category II structures.	None at the site-specific SSE.	Table 2.0-203	Yes
Minimum Soil Angle of Internal Friction	Minimum soil angle of internal friction is greater than or equal to 35 degrees below the footprint of nuclear island at its excavation depth. If the minimum soil angle of internal friction is below 35 degrees, a site specific analysis shall be performed using the site specific soil properties to demonstrate stability.	36 degrees	Table 2.0-203	**Yes**
Missiles				
Tornado	4000-lb automobile at 105 mph horizontal, 74 mph vertical 275-lb, 8-in. shell at 105 mph horizontal, 74 mph vertical 1-inch-diameter steel ball at 105 mph in the most damaging direction	4000-lb automobile at 105 mph horizontal, 74 mph vertical 275-lb, 8-in. shell at 105 mph horizontal, 74 mph vertical 1-inch-diameter steel ball at 105 mph in the most damaging direction	Subsection 3.5.1.5 Subsection 3.5.1.4 APP-GW-GLR-020, "Wind and Tornado Site Interface Criteria," Westinghouse Electric Company LLC.[e]	Yes
Flood Level	Less than plant elevation 100 feet	The design basis river flood level is El. 178.10 ft MSL, which is 41.9 feet below plant elevation (220 ft MSL). Maximum local PMP flood elevation is 219.47 ft MSL, which is 0.53 feet below plant elevation (220 ft MSL).	Table 2.0-203 Subsection 2.4.2	Yes

Table 2.0-201 (Sheet 8 of 9)
Comparison of AP1000 DCD Site Parameters and Vogtle Electric Generating Plant Units 3 & 4 Site Characteristics

	AP1000 DCD Site Parameter[a]	VEGP Site Characteristic	VEGP Reference	VEGP Within Site Parameter
Ground Water Level	Less than plant elevation 98 feet	The maximum groundwater level is 165 ft MSL which is 55 feet below plant elevation (220 ft MSL).	Table 2.0-203	Yes
Plant Grade Elevation	Less than plant elevation 100 feet, except for portion at a higher elevation adjacent to the annex building	The standard plant-floor elevation of the safety-related facilities is established at plant elevation 220 ft MSL; the finished plant grade elevation slopes away from plant structures	Figure 2.4-201	Yes
Precipitation				
Rain	20.7 in/hr [1-hr 1-mi^2 PMP]	19.2 in/hr	Table 2.0-203	Yes
Snow/Ice	75 pounds per square foot on ground with exposure factor of 1.0 and importance factors of 1.2 (safety) and 1.0 (non-safety)	10.0 pounds per square foot	Table 2.0-203	Yes
Atmospheric Dispersion Values - χ/Q[f]				
Site Boundary (annual average)	$\leq 2.0 \times 10^{-5}$ sec/m^3	0.55×10^{-5} sec/m^3	Table 2.0-203	Yes
Site Boundary (0-2 hr)	$\leq 5.1 \times 10^{-4}$ sec/m^3 [g]	3.49×10^{-4} sec/m^3	Table 2.0-203	Yes
Low population zone boundary[g]				
0–8 hr	$\leq 2.2 \times 10^{-4}$ sec/m^3	7.04×10^{-5} sec/m^3	Table 2.0-203	Yes
8–24 hr	$\leq 1.6 \times 10^{-4}$ sec/m^3	5.25×10^{-5}sec/m^3	Table 2.0-203	Yes
24–96 hr	$\leq 1.0 \times 10^{-4}$ sec/m^3	2.77×10^{-5} sec/m^3	Table 2.0-203	Yes
96–720 hr	$\leq 8.0 \times 10^{-5}$ sec/m^3	1.11×10^{-5} sec/m^3	Table 2.0-203	Yes
Control Room	Table 2.0-202	Table 2.0-202	Table 2.0-202	Yes

Table 2.0-201 (Sheet 9 of 9)
Comparison of AP1000 DCD Site Parameters and Vogtle Electric Generating Plant Units 3 & 4 Site Characteristics

	AP1000 DCD Site Parameter[a]	VEGP Site Characteristic	VEGP Reference	VEGP Within Site Parameter
Population Distribution[g]				
Exclusion area (site)	0.5 mi.	The minimum distance from the effluent release boundary to the exclusion area boundary is 0.50 mile.[f]	Table 2.0-203	Yes

(a) AP1000 DCD Site Parameters are a compilation of DCD Tier 1 Table 5.0-1 and DCD Tier 2 Table 2-1.
(b) Maximum and minimum safety values are based on historical data and exclude peaks of less than 2 hours duration.
(c) The maximum normal value is the 1-percent seasonal exceedance temperature. The minimum normal value is the 99-percent seasonal exceedance temperature. The minimum temperature is for the months of December, January, and February in the northern hemisphere. The maximum temperature is for the months of June through September in the northern hemisphere. The 1-percent seasonal exceedance is approximately equivalent to the annual 0.4-percent exceedance. The 99-percent seasonal exceedance is approximately equivalent to the annual 99.6-percent exceedance. See Subsection 2.3.1.5 for further discussion on this relationship.
(d) The noncoincident wet bulb temperature is applicable to the cooling tower only.
(e) Per APP-GW-GLR-020, the kinetic energies of the missiles discussed in Section 3.5 are greater than the kinetic energies of the missiles discussed in Regulatory Guide 1.76 and result in a more conservative design.
(f) For AP1000, the term “site boundary” and “exclusion area boundary” are used interchangeably. Thus, the χ/Q specified for the site boundary applies whenever a discussion refers to the exclusion area boundary. At VEGP the “site boundary” and ”exclusion area boundary” are not interchangeable. See Figure 1.1-202.
(g) Site Interface Values for Post-Accident Dose Consequences and Minimum Distance to Site Boundary are reported per Table 2.0-203. Cooling Tower Make-up Flow Rate, which is not an AP1000 DCD Site Parameter, is 61,145 gpm (2 units) per Table 2.0-203.
(h) The containment pressure response analysis is based on a conservative set of dry-bulb and wet-bulb temperatures. These results envelope any conditions where the dry-bulb temperature is 115°F or less and wet-bulb temperature is less than or equal to 86.1°F.
(i) Additional evaluation may include evaluation of the impact of the elevated estimated settlement values on the critical components of the AP1000, determining a construction sequence to control the predicted settlement behavior, or developing an active settlement monitoring system throughout the entire construction sequence as well as a long-term (plant operation) plan.
(j) Differential settlement is measured at center of Nuclear Island and center of adjacent structures.

Table 2.0-202 (Sheet 1 of 2)
Comparison of Control Room Atmospheric Dispersion Factors for Accident Analysis for AP1000 DCD and VEGP Units 3 & 4

X/Q (sec/m^3) at HVAC Intake for the Identified Release Points[a]

	Plant Vent or PCS Air Diffuser(b)	Plant Vent	PCS Air Diffuser	**Ground Level Containment Release Points(c)**	Ground Level Containment Release Points	**PORV and Safety Valve Releases(d)**	PORV and Safety Valve Releases	**Condenser Air Removal Stack(g)**	Condenser Air Removal Stack	**Steam Line Break Releases**	**Steam Line Break Releases**	**Fuel Handling Area(e)**	Fuel Handling Area Blowout Panel	Fuel Handling Area Truck Bay Door
Release Time	**DCD**	VEGP	VEGP	**DCD**	VEGP	**DCD**	VEGP	**DCD**	VEGP	**DCD**	VEGP	**DCD**	VEGP	VEGP
0 – 2 hours	**3.0E-3**	2.02E-03	1.68E-03	**6.0E-3**	3.20E-03	**2.0E-2**	1.31E-02	**6.0E-3**	1.54E-03	**2.4E-2**	1.48E-02	**6.0E-3**	1.54E-03	1.15E-03
2 – 8 hours	**2.5E-3**	1.58E-03	1.29E-03	**3.6E-3**	1.82E-03	**1.8E-2**	1.02E-02	**4.0E-3**	1.17E-03	**2.0E-2**	1.20E-02	**4.0E-3**	1.11E-03	8.29E-04
8 – 24 hours	**1.0E-3**	6.37E-04	5.47E-04	**1.4E-3**	8.27E-04	**7.0E-3**	4.62E-03	**2.0E-3**	5.36E-04	**7.5E-3**	5.41E-03	**2.0E-3**	4.42E-04	3.35E-04
1 – 4 days	**8.0E-4**	5.12E-04	4.55E-04	**1.8E-3**	7.22E-04	**5.0E-3**	3.29E-03	**1.5E-3**	3.94E-04	**5.5E-3**	3.93E-03	**1.5E-3**	3.57E-04	2.62E-04
4 – 30 days	**6.0E-4**	3.82E-04	3.34E-04	**1.5E-3**	5.70E-04	**4.5E-3**	2.77E-03	**1.0E-3**	2.78E-04	**5.0E-3**	3.26E-03	**1.0E-3**	2.59E-04	1.86E-04

X/Q (sec/m^3) at Annex Building Door for the Identified Release Points[f]

	Plant Vent or PCS Air Diffuser(b)	Plant Vent	PCS Air Diffuser	**Ground Level Containment Release Points(c)**	Ground Level Containment Release Points	**PORV and Safety Valve Releases(d)**	PORV and Safety Valve Releases	**Condenser Air Removal Stack(g)**	Condenser Air Removal Stack	**Steam Line Break Releases**	**Steam Line Break Releases**	**Fuel Handling Area(e)**	Fuel Handling Area Blowout Panel	Fuel Handling Area Truck Bay Door
Release Time	**DCD**	VEGP	VEGP	**DCD**	VEGP	**DCD**	VEGP	**DCD**	VEGP	**DCD**	VEGP	**DCD**	VEGP	VEGP
0 – 2 hours	**1.0E-3**	4.32E-04	4.48E-04	**1.0E-3**	3.93E-04	**4.0E-3**	9.81E-04	**2.0E-2**	4.00E-03	**4.0E-3**	9.23E-04	**6.0E-3**	3.77E-04	3.48E-04
2 – 8 hours	**7.5E-4**	3.52E-04	3.38E-04	**7.5E-4**	3.16E-04	**3.2E-3**	7.69E-04	**1.8E-2**	3.15E-03	**3.2E-3**	7.31E-04	**4.0E-3**	2.84E-04	2.60E-04
8 – 24 hours	**3.5E-4**	1.44E-04	1.44E-04	**3.5E-4**	1.32E-04	**1.2E-3**	3.12E-04	**7.0E-3**	1.35E-03	**1.2E-3**	2.98E-04	**2.0E-3**	1.18E-04	1.09E-04
1 – 4 days	**2.8E-4**	1.15E-04	1.17E-04	**2.8E-4**	1.07E-04	**1.0E-3**	2.49E-04	**5.0E-3**	1.04E-03	**1.0E-3**	2.37E-04	**1.5E-3**	9.50E-05	8.75E-05
4 – 30 days	**2.5E-4**	8.47E-05	8.77E-05	**2.5E-4**	8.14E-05	**8.0E-4**	1.87E-04	**4.5E-3**	8.05E-04	**8.0E-4**	1.75E-04	**1.0E-3**	6.83E-05	6.16E-05

Table 2.0-202 (Sheet 2 of 2)
Comparison of Control Room Atmospheric Dispersion Factors for Accident Analysis for AP1000 DCD and VEGP Units 3 & 4

a. These dispersion factors are to be used 1) for the time period preceding the isolation of the main control room and actuation of the emergency habitability system, 2) for the time after 72 hours when the compressed air supply in the emergency habitability system would be exhausted and outside air would be drawn into the main control room, and 3) for the determination of control room doses when the non-safety ventilation system is assumed to remain operable such that the emergency habitability system is not actuated.

b. These dispersion factors are used for analysis of the doses due to a postulated small line break outside of containment. The plant vent and PCS air diffuser are potential release paths for other postulated events (loss of-coolant accident, rod ejection accident, and fuel handling accident inside the containment); however, the values are bounded by the dispersion factors for ground level releases.

c. The listed values represent modeling the containment shell as a diffuse area source, and are used for evaluating the doses in the main control room for a loss-of-coolant accident, for the containment leakage of activity following a rod ejection accident, and for a fuel handling accident occurring inside the containment.

d. The listed values bound the dispersion factors for releases from the steam line safety & power-operated relief valves. These dispersion factors would be used for evaluating the doses in the main control room for a steam generator tube rupture, a main steam line break, a locked reactor coolant pump rotor, and for the secondary side release from a rod ejection accident.

e. The listed values bound the dispersion factors for releases from the fuel storage and handling area. The listed values also bound the dispersion factors for releases from the fuel storage area in the event that spent fuel boiling occurs and the fuel handling area relief panel opens on high temperature. These dispersion factors are used for the fuel handling accident occurring outside containment and for evaluating the impact of releases associated with spent fuel pool boiling.

f. These dispersion factors are to be used when the emergency habitability system is in operation and the only path for outside air to enter the main control room is that due to ingress/egress.

g. This release point is included for information only as a potential activity release point. None of the design basis accident radiological consequences analyses model release from this point.

Table 2.0-203 (Sheet 1 of 10)
Site Characteristics, Design Parameters, and Site Interface Values

Part I Site Characteristics		
Item	**Value**	**Description and Reference**
Precipitation		
Maximum Rainfall Rate	19.2 inches in 1 hr 6.2 inches in 5 min	PMP for 1-hr and 5-min duration of precipitation at the site. Refer to Table 2.4-220 and Figure 2.4-210
100-Year Snow Pack 48-Hour Winter Probable Maximum Precipitation (PMP)	10 lb/sq ft 28.3 in.	Weight, per unit area, of the 100-year return period snowpack at the site Maximum probable winter rainfall in 48-hour period. Refer to Subsection 2.3.1.3.4
Seismic		
Design Response Spectra	Site-specific GMRS values specified and illustrated in Subsection 2.5.2	Site-specific response spectra. Refer to Subsection 2.5.2 and Figures 2.5-316, 2.5-317, and 2.5-318.
Capable Tectonic Structures or Sources	No fault displacement potential within the investigative area	Conclusion on the presence of capable faults or earthquake sources in the vicinity of the plant site. Refer to Subsections 2.5.1.1.4, 2.5.1.2.4, and 2.5.3; Table 2.5-235
Water		
Maximum Flood (or Tsunami)	178.10 ft msl	Water level at the site due to dam breach. Refer to Subsections 2.4.2.2, 2.4.3.4, 2.4.4.3, and 2.4.10
Maximum Groundwater	165 ft msl	Site basis for subsurface hydrostatic loading due to difference in elevation between the site grade elevation in the power block area and the maximum site groundwater level. Refer to Subsections 2.4.12.4 and 2.5.4.6.1

Table 2.0-203 (Sheet 2 of 10)
Site Characteristics, Design Parameters, and Site Interface Values

Part I Site Characteristics		
Item	**Value**	**Description and Reference**
Subsurface Material Properties		
Liquefaction	None at site-specific SSE. Compacted structural fill will provide an adequate safety factor against liquefaction (min >1.1).	Liquefaction potential for subsurface material at the site. Refer to Subsection 2.5.4.8.4
Minimum Bearing Capacity (Static and Dynamic)	34,000 lb/sq ft (Static) 42,000 lb/sq ft (Dynamic)	Allowable load-bearing capacity of the layer supporting plant structures. Refer to Subsection 2.5.4.10.1
Minimum Shear Wave Velocity	Values in Tables 2.5-251 and 2.5-253	Propagation velocity of shear waves through the foundation materials. Refer to Subsection 2.5.4.7.1; Tables 2.5-251 and 2.5-253; Figures 2.5-376, 2.5-378, 2.5-379, and 2.5-380
Tornado		
Maximum Pressure Drop	2.0 psi	Decrease in ambient pressure from normal atmospheric pressure at the site due to passage of a tornado having a probability of occurrence of 10^{-7} per year. Refer to Subsection 2.3.1.3.2
Maximum Rotational Speed	240 mph	Rotation component of maximum wind speed at the site due to passage of a tornado having a probability of occurrence of 10^{-7} per year. Refer to Subsection 2.3.1.3.2
Maximum Translational Speed	60 mph	Translation component of maximum wind speed at the site due to the movement across ground of a tornado having a probability of occurrence of 10^{-7} per year. Refer to Subsection 2.3.1.3.2

Table 2.0-203 (Sheet 3 of 10)
Site Characteristics, Design Parameters, and Site Interface Values

Part I Site Characteristics		
Item	**Value**	**Description and Reference**
Maximum Wind Speed	300 mph	Sum of the maximum rotational and maximum translational wind speed components at the site due to passage of a tornado having a probability of occurrence of 10^{-7} per year. Refer to Subsection 2.3.1.3.2
Radius of Maximum Rotational Speed	150 ft	Distance from the center of the tornado at which the maximum rotational wind speed occurs at the site due to passage of a tornado having a probability of occurrence of 10^{-7} per year. Refer to Subsection 2.3.1.3.2
Maximum Rate of Pressure Drop	1.2 psi/sec	Maximum rate of pressure drop at the site due to passage of a tornado having a probability of occurrence of 10^{-7} per year. Refer to Subsection 2.3.1.3.2
Wind		
Basic Wind Speed	104 mph	Three-second gust wind velocity, associated with a 100-year return period, at 33 ft (10 m) above ground level in the site area. Refer to Subsection 2.3.1.3.2
Selected Site Characteristic Ambient Air Temperatures		*(Site characteristic wet bulb and dry bulb temperatures associated with listed exceedance values and 100-year return period)*
Maximum Dry Bulb • 2% annual exceedance • 0.4% annual exceedance • 100-year return period	 92°F 97°F 115°F	Refer to Subsection 2.3.1.5

Table 2.0-203 (Sheet 4 of 10)
Site Characteristics, Design Parameters, and Site Interface Values

Part I Site Characteristics		
Item	**Value**	**Description and Reference**
Minimum Dry Bulb • 1% annual exceedance • 0.4% annual exceedance • 100-year return period	 25°F 21°F -8°	Refer to Subsection 2.3.1.5
Maximum Wet Bulb • 0.4% annual exceedance • 100-year return period	 79°F 88°F	Refer to Subsection 2.3.1.5
Site Temperature Basis for AP1000 • Maximum Safety Dry Bulb and Coincident Wet Bulb • Maximum Safety Wet Bulb (Non-coincident) • Maximum Normal Dry Bulb and Coincident Wet Bulb • Maximum Normal Wet Bulb (Non-coincident)	 115°F dry bulb/77.7°F wet bulb 83.9°F 97°F dry bulb/76°F wet bulb 79°F	Refer to Subsection 2.3.1.5
Airborne Effluent Release Point		
Atmospheric Dispersion (χ/Q) (Accident)		
0-2 hr @ Exclusion Area Boundary (EAB) 0-8 hr @ Low Population Zone (LPZ) 8-24 hr @ LPZ 1-4 day @ LPZ 4-30 day @ LPZ	3.49E-04 sec/m^3 7.04E-05 sec/m^3 5.25E-05 sec/m^3 2.77E-05 sec/m^3 1.11E-05 sec/m^3	The atmospheric dispersion coefficients used in the design safety analysis to estimate dose consequences of accident airborne releases. Refer to Subsection 2.3.4.2.

Table 2.0-203 (Sheet 5 of 10)
Site Characteristics, Design Parameters, and Site Interface Values

Part I Site Characteristics		
Item	**Value**	**Description and Reference**
Atmospheric Dispersion (χ/Q) (Routine Release)		
Annual Average Undepleted/No Decay χ/Q Value @ EAB	5.5E-06 sec/m^3	The maximum annual average EAB undepleted/no decay atmospheric dispersion factor (χ/Q) value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Subsection 2.3.5.2; Table 2.3-219
Annual Average Undepleted/ 2.26-Day Decay χ/Q Value @ EAB	5.5E-06 sec/m^3	The maximum annual average EAB undepleted/2.26-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average Depleted/ 8.00-Day Decay χ/Q Value @ EAB	5.0E-06 sec/m^3	The maximum annual average EAB depleted/8.00-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average D/Q Value @ EAB	1.7E-08 1/m^2	The maximum annual average EAB relative deposition factor (D/Q) value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average Undepleted/No Decay χ/Q Value @ Nearest Resident	3.4E-06 sec/m^3	The maximum annual average resident undepleted/no decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Subsection 2.3.5.2; Table 2.3-219

Table 2.0-203 (Sheet 6 of 10)
Site Characteristics, Design Parameters, and Site Interface Values

Part I Site Characteristics		
Item	**Value**	**Description and Reference**
Annual Average Undepleted/ 2.26-Day Decay χ/Q Value @ Nearest Resident	3.4E-06 sec/m^3	The maximum annual average resident undepleted/2.26-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average Depleted/ 8.00-Day Decay χ/Q Value @ Nearest Resident	3.0E-06 sec/m^3	The maximum annual average resident depleted/8.00-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average D/Q Value @ Nearest Resident	1.0E-08 $1/m^2$	The maximum annual average resident D/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average Undepleted/No Decay χ/Q Value @ Nearest Meat Animal	3.4E-06 sec/m^3	The maximum annual average meat animal undepleted/no decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Subsection 2.3.5.2; Table 2.3-219
Annual Average Undepleted/ 2.26-Day Decay χ/Q Value @ Nearest Meat Animal	3.4E-06 sec/m^3	The maximum annual average meat animal undepleted/2.26-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average Depleted/ 8.00-Day Decay χ/Q Value @ Nearest Meat Animal	3.0E-06 sec/m^3	The maximum annual average meat animal depleted/8.00-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219

Table 2.0-203 (Sheet 7 of 10)
Site Characteristics, Design Parameters, and Site Interface Values

Part I Site Characteristics		
Item	**Value**	**Description and Reference**
Annual Average D/Q Value @ Nearest Meat Animal	1.0E-08 $1/m^2$	The maximum annual average meat animal D/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average Undepleted/No Decay χ/Q Value @ Nearest Vegetable Garden	3.4E-06 sec/m^3	The maximum annual average vegetable garden undepleted/no decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average Undepleted/ 2.26-Day Decay χ/Q Value @ Nearest Vegetable Garden	3.4E-06 sec/m^3	The maximum annual average vegetable garden undepleted/2.26-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average Depleted/ 8.00-Day Decay χ/Q Value @ Nearest Vegetable Garden	3.0E-06 sec/m^3	The maximum annual average vegetable garden depleted/8.00-day decay χ/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219
Annual Average D/Q Value @ Nearest Vegetable Garden	1.0E-08 $1/m^2$	The maximum annual average vegetable garden D/Q value for use in determining gaseous pathway doses to the maximally exposed individual. Refer to Table 2.3-219

Table 2.0-203 (Sheet 8 of 10)
Site Characteristics, Design Parameters, and Site Interface Values

Part I Site Characteristics		
Item	**Value**	**Description and Reference**
Population Density		
Population Center Distance	Approximately 26 mi (Augusta, GA)	The minimum allowable distance from the reactor(s) to the nearest boundary of a densely populated center containing more than about 25,000 residents (not less than one and one-third times the distance from the reactor(s) to the outer boundary of the LPZ) (i.e., 2-2/3 mi for VEGP). Refer to Section 1.1, Subsections 1.2.1, 2.1.1, 2.1.3.2, and 2.1.3.5
Exclusion Area Boundary (EAB)	See Figure 1.1-202	The area surrounding the reactor(s), in which the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel and property from the area. Refer to Subsections 2.1.1, 2.1.2, and 2.3.4.1; Figure 1.1-202
Low Population Zone (LPZ)	A 2-mile-radius circle from the midpoint between the containment buildings of Units 1 and 2.	The area immediately surrounding the exclusion area that contains residents. Refer to Subsections 2.1.3.4, 2.3.4.1, 2.3.4.2, and 2.3.5.1; Table 2.3-217
Dose Calculation EAB	See Figure 1.1-202	A circle extending ½ mi beyond the power block area circle (775-ft radius circle encompassing Units 3 and 4). Total radius is 3,415 ft from the centroid of the power block circle. Dose Calculation EAB is completely within the actual plant EAB and is used to conservatively determine χ/Q values and subsequent accident radiation doses. Refer to Subsections 2.3.4.1, 2.3.4.2, and 2.3.5.1; Tables 2.3-216, 2.3-218, and 2.3-219; Figure 1.1-202

Table 2.0-203 (Sheet 9 of 10)
Site Characteristics, Design Parameters, and Site Interface Values

Part II Design Parameters		
Item	**Single Unit [Two Unit] Value**	**Description and Reference**
Structures		
Building Height	234 ft 0 in.	The height from finished grade to the top of the tallest power blocks structure, excluding cooling towers (i.e., Containment Building). Refer to Subsection 2.3.3.3
Building Foundation Embedment	39 ft 6 in. to bottom of basemat from plant grade	The depth from finished grade to the bottom of the basemat for the most deeply embedded power block structure (i.e., Containment/Auxiliary Building). Refer to Subsections 2.4.12 and 2.5.4.10.1
Cooling Tower Height	600 ft	The height is from the finished grade to the top of the cooling tower Refer to Subsection 2.3.3.3
Cooling Tower Base Diameter	550 ft	The bottom of the cooling tower where it connects to the basin Refer to Subsection 2.3.3.3
Cooling Tower Diameter at the Top	330 ft	The cooling tower diameter at its highest elevation Refer to Subsection 2.3.3.3
Airborne Effluent Release Point		
Release Point Elevation (Post-Accident)	Ground level	The elevation above finished grade of the release point for accident sequence releases. Refer to Subsections 2.3.4.1 and 2.3.5.1; Tables 2.3-216 and 2.3-217

Table 2.0-203 (Sheet 10 of 10)
Site Characteristics, Design Parameters, and Site Interface Values

Part II Design Parameters		
Item	**Single Unit [Two Unit] Value**	**Description and Reference**
Plant Characteristics		
Megawatts Thermal	3,400 MWt [6,800 MWt]	The thermal power generated by one unit. Refer to Section 1.1, Subsections 1.2.2 and 1.3.2

Part III Site Interface Values		
Item	**Single Unit [Two Unit] Value**	**Description and Reference**
Normal Plant Heat Sink		
Cooling Tower Make-up Flow Rate	30,572 gpm [61,145 gpm]	The maximum rate of removal of water from the Savannah River to replace water losses from the circulating watersystem. The bounding Makeup Flow Rate is a calculated value based on the sum of the expected evaporation rate at design ambient conditions plus the bounding blowdown flow rate and drift. Refer to Subsections 2.4.1.2.6, 2.4.8, and 2.4.11.5; Table 2.4-217
Airborne Effluent Release Point		
Minimum Distance to Site Boundary	3,420 ft	The minimum lateral distance from the release point (power block area circle) to the site boundary. Refer to Figure 1.1-202