

Chapter 3 Design of Structures, Components, Equipment, and Systems

3.5.1.6 Aircraft Hazards

Airports and airways in the VEGP site vicinity are discussed in Section 2.2.2.6. Aircraft hazards related to these airports and airways (shown in Figure 3.5-1) have been evaluated in accordance with Regulatory Standard 002, *Processing Applications for Early Site Permits*, May 2004 (RS-002), and NUREG-0800, *Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants*, Draft Revision 3, 1996 (NUREG-0800), Section 3.5.1.6.

3.5.1.6.1 Airports

RS-002 acceptance criteria provide a distance threshold for evaluating aircraft hazards due to nearby airports.

All airports in the VEGP site vicinity are greater than 10 mi from the site. The hazard probability for these airports is considered acceptable if the projected annual number of operations is less than $1,000 D^2$, where D is the site-to-airport distance.

Bush Field is the closest (17 mi) and largest commercial airport in the VEGP site vicinity. The Federal Aviation Administration (FAA) (**APO 2006**) has projected the number of aircraft that will be in operation at Bush Field for every year up to 2025 for each of the following four types of aircraft: general aviation, air taxi and commuter, commercial air carrier, and military. The projected flight data (which include landings and takeoffs) are provided in Table 3.5-1. As noted in the table, the total number of projected aircraft operations is substantially less than $1,000 D^2$ (289,000).

The other airports in the vicinity are much smaller than Bush Field. Since they are all at least 10 mi from the VEGP site, their aircraft hazard threshold is greater than 100,000 operations, which significantly exceeds their annual traffic.

As discussed in Section 2.2.2.6.1, a small unimproved grass airstrip is located immediately north of the VEGP site (north of Hancock Landing Road and west of the Savannah River). This privately owned and operated airstrip has a 1,650-foot turf runway oriented 80° East – 260° West. The airstrip is for personal use and the associated traffic consists only of small single-engine aircraft. In addition, there is a small helicopter landing pad on the VEGP site. This facility exists for corporate use and for use in case of emergency. The traffic associated with either of these facilities may be characterized as sporadic. Due to the small amount and the nature of the traffic, these facilities do not present a safety hazard to the VEGP site.

3.5.1.6.2 Airway V185

The VEGP site is approximately 1.5 mi east of the centerline of Federal Airway V185, which runs between Augusta and Savannah. A more detailed review of aircraft hazards was performed because the VEGP site is within the 2 statute mile limit. This review is summarized below.

Airways are typically used by commercial flights and by general aviation for inclement weather and nighttime operations. In general, military aircraft do not use the federal airways. To be allowed to fly in a federal airway, an aircraft needs to have the proper communication equipment and the pilot needs to have specific qualifications. In addition, most general aviation flights do not use a federal airway in favorable weather conditions. When these factors are considered, along with the fact that there are no regularly scheduled direct commercial flights between Augusta and Savannah, it is expected that the total number of aircraft using Airway V185 is relatively small.

Although the FAA does not maintain records of air traffic in Airway V185, informal communications with air traffic control personnel at the Augusta airport revealed that the southeast quadrant of the air space around the airport (of which Airway V185 is a part) has the least air traffic compared to the other quadrants and that the total traffic in Airway V185 is a fraction of the total operations into and out of the Augusta airport.

Because of the unavailability of traffic data for Airway V185, the following evaluation calculates the maximum number of airway flights per year above which the acceptance guideline probability of 10^{-7} per year contained in RS-002 and NUREG-0800 is exceeded. Regulation 14 CFR 71 provides the criteria for determining the width of the airway. It is 4 nautical miles on either side of the centerline, for a total width of 8 nautical miles (9.2 mi).

$$P_{FA} = C \times N \times A / W$$

where:

P_{FA} = probability per year of an aircraft crashing into a VEGP Units 3 and 4 safety-related structure, 1×10^{-7}

C = in-flight crash rate per mile for aircraft using airway = 4×10^{-10} (RS-002)

N = number of flights per year along the airway

A = effective area of plant or site area in square miles, see below

W = airway width, 9.2 mi

By rearranging this equation, the maximum number of flights corresponding to the acceptance guideline probability of 10^{-7} may be calculated.

NUREG-0800 and RS-002 also provide alternate guidance on the acceptable method for calculating area A . RS-002 specifies the use of the site area because, for ESP Applications

where the type of power plant has not been selected, the plant cross-sectional area cannot be defined. However, because the Westinghouse AP1000 design has been selected, the effective area of the plant was used in this analysis.

The effective plant area (A) depends on the length, width, and height of the facility, as well as the aircraft's wingspan, skid distance, and impact angle (**DOE 1996**).

The safety-related structures of the AP1000 design include only the containment and the auxiliary building; the remainder of the structures is not safety related. The AP1000 containment height is about 234 ft above grade, and the diameter is about 146 ft (**Westinghouse 2001**).

For traffic in Airway V185, the fractions of the types of aircraft using the airway were assumed to be the same as the fractions of the types of aircraft using Bush Field. Representative values for wingspan, skid distance, and impact angle for each aircraft type follow those suggested in DOE (1996). For military aviation, large aircraft are conservatively used in the estimates. The effective areas for general aviation, air taxi and commuter, commercial air carrier, and military aircraft are 0.025, 0.061, 0.073, and 0.086 sq mi, respectively. Using these effective areas and the fractions of aircraft types (52.9, 29.3, 12.8, and 5 percent for general aviation, air taxi and commuter, commercial air carrier, and military aircraft, respectively), the average of the weighted effective plant area, 0.045 mi², is determined for the calculation.

Among the representative wingspans, the large military aircraft has the longest wingspan of 223 ft (**DOE 1996**). The physical separation of the new reactor buildings is about 650 ft. Since this distance is longer than the largest representative wingspan (223 ft), the estimate of the effective area involves only one unit. In addition, Section 3.5.1.6 of NUREG-0800 also suggests the use of an effective area of one unit of the plant.

To reach the permissible crash probability of 1×10^{-7} , the total number of flights traveling along Airway V185 would need to be about 51,100 per year. This value is higher than the total of all projected itinerant flights for 2025 at Bush Field (see Table 3.5-1).

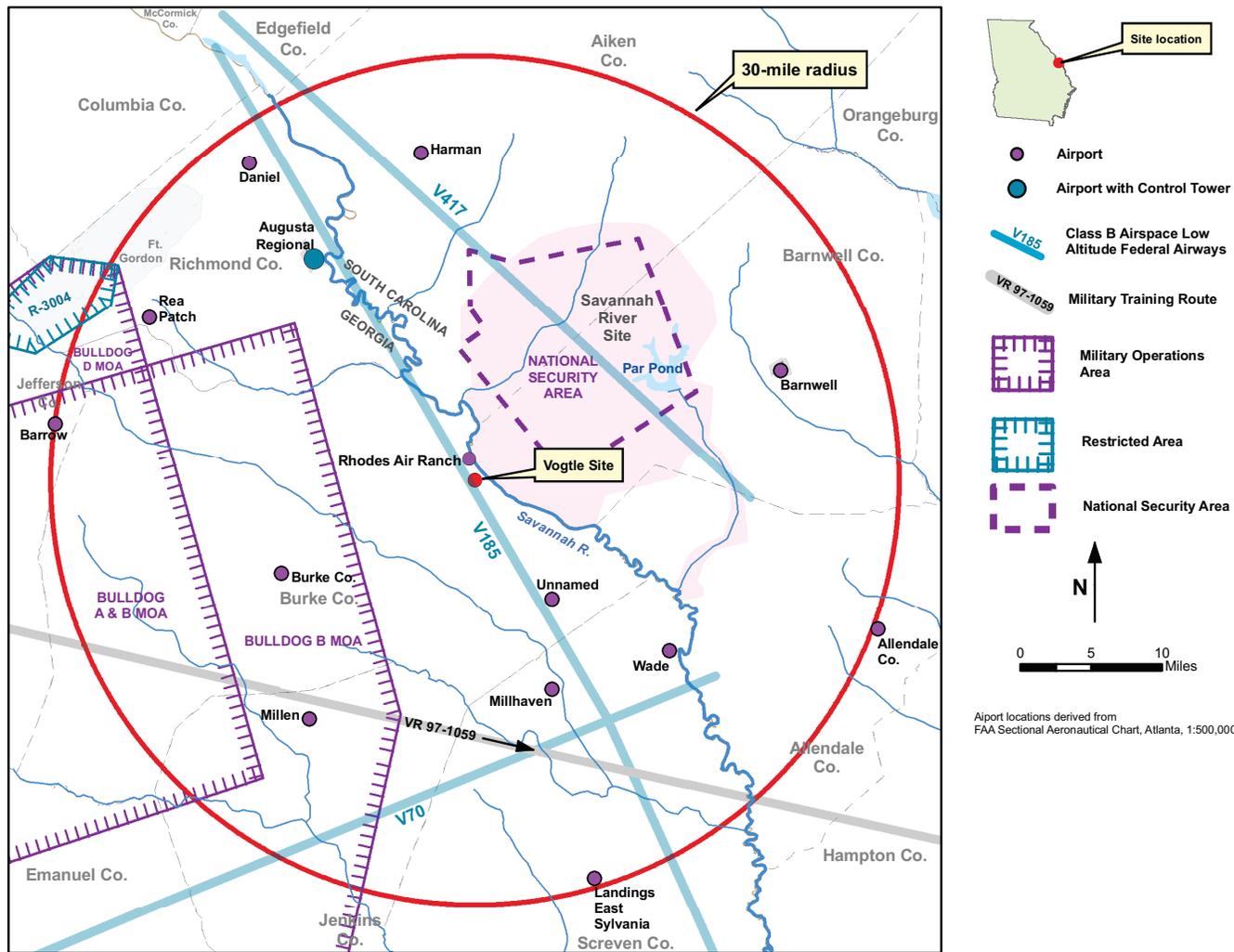
Although the flight data associated with Airway V185 are not available from the FAA, the number of flights in this airway is expected to be only a fraction of the total Bush Field flights. Therefore, the presence of Airway V185 is not a safety concern for the VEGP site.

Table 3.5-1 Augusta APO Terminal Area Forecast Summary Report – Itinerant Operations

Year	General Aviation	Air Taxi & Commuter	Commercial Air Carrier	Military	Total
1990	22,023	14,941	6,495	4,522	47,981
1991	19,175	9,462	6,576	3,242	38,455
1992	17,872	9,393	7,196	3,221	37,682
1993	16,902	8,821	6,455	4,068	36,246
1994	16,896	5,961	6,473	3,727	33,057
1995	16,597	8,876	5,024	3,511	34,008
1996	17,016	9,325	4,225	2,780	33,346
1997	18,995	8,304	4,599	2,561	34,459
1998	19,611	7,518	5,028	2,271	34,428
1999	22,653	6,954	5,183	2,841	37,631
2000	21,975	6,663	4,969	3,354	36,961
2001	19,961	7,378	4,929	2,954	35,222
2002	20,085	7,164	4,286	3,082	34,617
2003	17,622	9,058	4,393	2,843	33,916
2004	18,658	9,441	4,934	2,528	35,561
2005	13,307	8,226	4,585	1,799	27,917
2006	13,618	8,328	4,585	1,799	28,330
2007	13,937	8,432	4,585	1,799	28,753
2008	14,263	8,537	4,585	1,799	29,184
2009	14,597	8,644	4,585	1,799	29,625
2010	14,939	8,751	4,585	1,799	30,074
2011	15,288	8,860	4,585	1,799	30,532
2012	15,646	8,971	4,585	1,799	31,001
2013	16,012	9,083	4,585	1,799	31,479
2014	16,387	9,196	4,585	1,799	31,967
2015	16,611	9,310	4,585	1,799	32,305
2016	16,837	9,426	4,585	1,799	32,647
2017	17,067	9,544	4,585	1,799	32,995
2018	17,300	9,663	4,585	1,799	33,347
2019	17,536	9,783	4,585	1,799	33,703
2020	17,776	9,905	4,585	1,799	34,065
2021	18,018	10,028	4,585	1,799	34,430
2022	18,264	10,153	4,585	1,799	34,801
2023	18,514	10,280	4,585	1,799	35,178
2024	18,766	10,408	4,585	1,799	35,558
2025	19,023	10,538	4,585	1,799	35,945

Source: APO 2006

Table 3.5-2 Deleted in Revision 2



Source: Atlanta 2005

Figure 3.5-1 Airports Within 30 Miles of Vogtle Facility

Section 3.5 References

(APO 2006) *APO Terminal Area Forecast Summary Report*, Federal Aviation Administration, <http://www.apo.data.faa.gov/wtaf/>, issued February 2006, accessed 5/2/2006.

(Atlanta 2005) *Atlanta Sectional Aeronautical Chart*, 74th Edition, U.S. Department of Transportation, Federal Aviation Administration, March 17, 2005.

(DOE 1996) *Accident Analysis for Aircraft Crash into Hazardous Facilities*, DOE Standard, DOE-STD-3014-96, US Department of Transportation, October 1996.

(Westinghouse 2001) *Nuclear Island General Arrangement, AP1000 Advanced Passive Light Water Reactor*, Rev. 0, Section B-B, DCD Number APP 1000 P2 902, Westinghouse Electric Company, 08/06/2001.

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3.8 Design of Category I Structures

3.8.5 Foundations

This section of the DCD Revision 15, along with references to other DCD Revision 15 sections necessary to support the scope of the LWA request, is incorporated by reference. This section is modified as identified by the below documents:

Westinghouse document APP-GW-GL-700, AP1000 Design Control Document (DCD), Revision 15 as modified by the following Technical Reports:

- APP-GW-GLN-105, "Building and Structure Configuration, Layout, and General Arrangement Design Updates," (Technical Report 105)
 - APP-GW-GLR-005, "Containment Vessel Design Adjacent to Large Penetrations," (Technical Report 9)
 - APP-GW-GLR-021, "AP1000 As-Built COL Information Items," (Technical Report 6)
 - APP-GW-GLR-044, "Nuclear Island Basemat and Foundation," (Technical Report 85)
 - APP-GW-GLR-045, "Nuclear Island: Evaluation of Critical Sections," (Technical Report 57)
 - APP-GW-GLR-130, "Editorial Format Changes Related to "Combined License applicant" and "Combined License Information Items," (Technical Report 130)
 - APP-GW-S2R-010, "Extension of Nuclear Island Seismic Analysis to Soil Sites," (Technical Report 03)

The scope of the LWA foundation work includes: placing the mud mats, water proofing membrane, concrete forms, reinforcing bars, embedments, drains and other items necessary to prepare the Nuclear Island base slab for the first concrete pour.

After backfill beneath the NI (Nuclear Island) has been placed and compacted to roughly the required elevation for the first mud mat, the construction of the retaining wall will begin. The retaining wall will be a vertical mechanically-stabilized earth (MSE) wall with smooth-faced concrete panels. This wall will function as both a retaining wall as the backfill outside the NI volume is brought up to plant grade and as the exterior concrete form for the outer walls of the NI. Section 2.5.4.5, Excavation and Backfill, provides additional information on the backfill and MSE wall.

The construction of the MSE wall begins with installation of a concrete footer. The top surface of the MSE wall footer will be installed below the bottom elevation of the first mud mat. The size and reinforcement for the concrete footer will be as required by the designer of the MSE wall. The MSE wall footer is a relatively thin concrete structure that provides a stable, level surface for construction of the MSE wall. It provides no structural support for the mud mats or the NI itself.

The first course of the MSE wall will be placed on top of the footer at the surveyed locations required to outline the NI footprint. Inspections will be performed as required to assure that the outer dimensions of the NI are properly set.

Backfill around the outer sides of the MSE wall will commence as required by the designer of the MSE wall, with the standard large compaction equipment being used away from the wall, and smaller equipment providing the required compaction at the edges of the wall. During backfill placement and compaction, the backfill surface will be sloped away from the NI to drain surface water away from the NI excavation volume. Additional courses of the MSE wall will be added until final plant grade is reached.

In parallel with the construction of the MSE wall, work within the NI footprint will continue. Temporary features to provide removal of surface water within the confined area of the NI will be installed as required. These features may include plastic sheeting, temporary sumps and pumps. In addition, the surface may be sloped to provide adequate drainage.

After the first few courses of the MSE wall have been placed, the backfill within the NI volume will be reworked and completed as required to provide the proper surface for placement of the mud mat. Temporary drainage features will be removed, and material will be removed or added as required to establish the final elevation for the mud mat. Areas disturbed by construction of the MSE wall and other activities will be recompacted and tested to confirm that the required compaction has been achieved.

The first mud mat will consist of a 6-inch layer of non-reinforced concrete placed uniformly within the confines of the MSE wall. No additional formwork will be required. When this lower mud mat slab has reached the specified strength, a layer of waterproof membrane will be applied to the entire top of the slab, and extended vertically up the face of the MSE wall surface.

The top portion of the mud mat slab (also a 6-inch layer of non-reinforced concrete) will then be placed, sandwiching the waterproof membrane. Rebar and foundation embedments are not incorporated in either of these mud mats; therefore installation of such elements will not puncture the waterproofing membrane.

An engineered rebar support system will be installed on top of the mud mat to support the weight of the NI base slab rebar structure. When the support is in place, the rebar will be installed in accordance with approved construction drawings and established procedures. There will be a second engineered rebar support system installed to support the upper rebar framework. Subsequent rebar layers and shear reinforcement will then be installed in accordance with approved construction drawings and established procedures. These construction drawings will correspond to the AP1000 Design Control Document Figure 3.8.5-3, Sheets 5, 6, and 7. Embedments in the NI base slab will be installed in accordance with the approved construction drawings. Inspection attributes will be in accordance with the established Quality Assurance Program and procedures for reinforcing steel installation and concrete pour preparation activities.

Chapter 11 Radioactive Waste Management

11.2.3 Liquid Radioactive Releases

This section describes the radiological impacts of liquid radwaste effluents from normal plant operation on members of the public. Section 11.2.3.1 describes the exposure pathways by which radiation and radioactive effluents can be transmitted from the new units to individuals living near the plant. Section 11.2.3.2 estimates the maximum doses to the public and evaluates the impacts of these doses by comparing them to regulatory limits.

11.2.3.1 Exposure Pathways

Small quantities of radioactive liquids would be discharged to the Savannah River during normal operation of the new units. VEGP Units 3 and 4 discharge structure and associated piping provide a pathway for liquid effluents, including radioactive liquids, discharged to the Savannah River. The impact of these releases on individuals and the population in the vicinity of the new units is evaluated by considering the most important pathways from the release to the receptors of interest. The major pathways are those that could yield the highest radiological doses for a given receptor. The relative importance of a pathway is based on the type and amount of radioactivity released, the environmental transport mechanism, and the consumption or usage factors at the receptor.

The exposure pathways considered and the analytical methods used to estimate doses to the maximally exposed individual (MEI) and to the population surrounding the new units are based on NRC Regulatory Guide 1.109, *Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR 50, Appendix I, Revision 1, October 1977* (RG 1.109). An MEI is a member of the public located to receive the maximum possible calculated dose. The MEI allows dose comparisons with established criteria for the public.

Liquid effluent releases would be to Savannah River. The discharge is assumed to be fully mixed with the river flow. The NRC-endorsed LADTAP II computer program (**NRC 1986**) is used to calculate liquid effluent doses, with parameters specific to the river and downstream locations. This program implements the radiological exposure models described in RG 1.109 for radioactivity releases in liquid effluent. The following exposure pathways are considered in LADTAP II in calculating MEI and population doses:

- Ingestion of aquatic foods
- Ingestion of drinking water
- External exposure to shoreline sediments
- External exposure to water through boating and swimming

The input parameters for the liquid pathway are presented in Tables 11.2-1, 11.2-2, and 11.2-3.

11.2.3.2 Liquid Pathway Doses

Based on the parameters shown in Tables 11.2-1, 11.2-2, and 11.2-3, the LADTAP II computer program is used to calculate doses to the MEI and the population via the following activities:

- Eating fish caught in Savannah River
- Drinking water from Savannah River
- Boating, swimming, and using the shoreline for recreational purposes

The liquid activity releases (source terms) for the two proposed AP1000 units are obtained from AP1000 DCD Table 11.2-7 (**Westinghouse 2005**) and are shown in Table 11.2-3. These are conservative, projected values that were calculated using the PWR-GALE computer code (**NRC 1985**). Table 11.2-3 also shows the maximum measured activity releases for Units 1 and 2, based on information presented in the annual effluent reports (**SNC 2002, SNC 2003, SNC 2004**). Projected activity concentrations in Savannah River are based on the calculated activity releases for Units 3 and 4 as well as the measured activity releases from Units 1 and 2. The concentrations are within the limits of 10 CFR 20, Appendix B, Table 2, Column 2. The calculated annual doses to the MEI are presented in Table 11.2-4. The maximum annual organ dose of 0.021 mrem per unit would be received by the liver of the maximally exposed child.

Table 11.2-5 shows that the doses to the MEI from the liquid effluents of a new unit meet the design objectives of 10 CFR 50, Appendix I. The total site doses due to liquid and gaseous effluents from the two existing units and the two new units would be well within the regulatory limits of 40 CFR 190, as shown in Table 11.2-6. Since 40 CFR 190 is more restrictive than 10 CFR 20.1301, compliance with the limits of 40 CFR 190 also demonstrates compliance with the 0.1 rem limit of 10 CFR 20.1301. Table 11.2-7 shows the doses from the new and existing units to the population within 50 miles of the ESP site. The doses from the proposed units are much higher than from the existing units because doses from the existing units are more realistic, based on measurements, whereas the doses from the proposed units are based on conservative calculations.

Table 11.2-1 Liquid Pathway Parameters

Parameter	Value
Release source terms	Table 11.2-3
Effluent discharge rate	9,229 ft ³ /sec ^a
Dilution factor for discharge	1 ^a
Transit time to receptor	0.1 hr for MEI, 16 hr average for population ^b
Impoundment reconcentration model	None ^c
Population within 50 miles	6.74E+05 ^d
Population sport fishing harvest	3.5E+04 kg/yr ^e
Population shoreline usage	9.6E+05 hr/yr ^e
Population swimming	1.6E+05 hr/yr ^e
Population boating	1.1E+06 hr/yr ^e

^a Liquid discharge assumed fully mixed with annual average flow rate of Savannah River at Vogtle.

^b 16 hr is the average transit time to a point halfway along 50-mile stretch of Savannah River.

^c Completely mixed model used for Savannah River.

^d See Section 2.1.3.2

^e Savannah River Site Environmental Report for 2005 (**WSRC 2006**).

Table 11.2-2 Liquid Pathway Consumption Factors for Maximally Exposed Individual

Consumption Factor	Annual Rate			
	Adult	Teen	Child	Infant
Fish consumption (kg/yr)	21	16	6.9	0
Drinking water consumption (l/yr)	730	510	510	330
Shoreline usage (hr/yr)	12	67	14	0

Note: These are obtained from Regulatory Guide 1.109.

Table 11.2-3 Release of Activities in Liquid Effluent

Isotope	Release (Ci/yr)			Concentration (μCi/ml)		Fraction of ECL
	Units 3 & 4	Units 1 & 2	Total	Site	ECL	
H-3	2.0E+03	1.9E+03	4.0E+03	4.8E-07	1.0E-03	4.8E-04
Be-7	-	8.3E-06	8.3E-06	1.0E-15	6.0E-04	1.7E-12
Na-24	3.3E-03	2.7E-05	3.3E-03	4.0E-13	5.0E-05	8.0E-09
Cr-51	3.7E-03	2.2E-03	5.9E-03	7.1E-13	5.0E-04	1.4E-09
Mn-54	2.6E-03	3.7E-03	6.3E-03	7.6E-13	3.0E-05	2.5E-08
Fe-55	2.0E-03	7.7E-02	7.9E-02	9.6E-12	1.0E-04	9.6E-08
Fe-59	4.0E-04	1.9E-04	5.9E-04	7.1E-14	1.0E-05	7.1E-09
Co-57	-	1.1E-04	1.1E-04	1.3E-14	6.0E-05	2.2E-10
Co-58	6.7E-03	2.5E-02	3.2E-02	3.9E-12	2.0E-05	1.9E-07
Co-60	8.8E-04	5.7E-02	5.7E-02	7.0E-12	3.0E-06	2.3E-06
Zn-65	8.2E-04	5.5E-06	8.3E-04	1.0E-13	5.0E-06	2.0E-08
Br-84	4.0E-05	-	4.0E-05	4.9E-15	4.0E-04	1.2E-11
Rb-86	-	9.3E-06	9.3E-06	1.1E-15	7.0E-06	1.6E-10
Rb-88	5.4E-04	-	5.4E-04	6.6E-14	4.0E-04	1.6E-10
Sr-89	2.0E-04	2.7E-04	4.7E-04	5.7E-14	8.0E-06	7.2E-09
Sr-90	2.0E-05	1.5E-04	1.7E-04	2.0E-14	5.0E-07	4.0E-08
Sr-91	4.0E-05	-	4.0E-05	4.9E-15	2.0E-05	2.4E-10
Sr-92	-	2.4E-05	2.4E-05	2.9E-15	4.0E-05	7.2E-11
Y-91m	2.0E-05	-	2.0E-05	2.4E-15	2.0E-03	1.2E-12
Y-91	-	2.3E-04	2.3E-04	2.8E-14	8.0E-06	3.5E-09
Y-92	-	9.3E-06	9.3E-06	1.1E-15	4.0E-05	2.8E-11
Y-93	1.8E-04	4.0E-05	2.2E-04	2.7E-14	2.0E-05	1.3E-09
Zr-95	4.6E-04	6.3E-04	1.1E-03	1.3E-13	2.0E-05	6.6E-09
Nb-95	4.2E-04	1.3E-03	1.7E-03	2.0E-13	3.0E-05	6.8E-09
Nb-97	-	1.6E-04	1.6E-04	1.9E-14	3.0E-04	6.4E-11
Mo-99	1.1E-03	-	1.1E-03	1.4E-13	2.0E-05	6.9E-09
Tc-99m	1.1E-03	-	1.1E-03	1.3E-13	1.0E-03	1.3E-10
Ru-103	9.9E-03	-	9.9E-03	1.2E-12	3.0E-05	4.0E-08

Table 11.2-3 (Cont.) Release of Activities in Liquid Effluent

Isotope	Release (Ci/yr)			Concentration (µCi/ml)		Fraction of ECL
	Units 3 & 4	Units 1 & 2	Total	Site	ECL	
Ru-106	1.5E-01	-	1.5E-01	1.8E-11	3.0E-06	5.9E-06
Rh-103m	9.9E-03	-	9.9E-03	1.2E-12	6.0E-03	2.0E-10
Rh-106	1.5E-01	-	1.5E-01	1.8E-11	-	-
Ag-110m	2.1E-03	5.6E-05	2.2E-03	2.6E-13	6.0E-06	4.4E-08
Ag-110	2.8E-04	-	2.8E-04	3.4E-14	-	-
Sn-113	-	3.6E-06	3.6E-06	4.4E-16	3.0E-05	1.5E-11
Sb-122	-	4.7E-06	4.7E-06	5.6E-16	1.0E-05	5.6E-11
Sb-124	-	1.7E-04	1.7E-04	2.0E-14	7.0E-06	2.9E-09
Sb-125	-	1.9E-02	1.9E-02	2.4E-12	3.0E-05	7.9E-08
Te-125m	-	4.9E-02	4.9E-02	5.9E-12	2.0E-05	3.0E-07
Te-129m	2.4E-04	-	2.4E-04	2.9E-14	7.0E-06	4.2E-09
Te-129	3.0E-04	-	3.0E-04	3.6E-14	4.0E-04	9.1E-11
Te-131m	1.8E-04	-	1.8E-04	2.2E-14	8.0E-06	2.7E-09
Te-131	6.0E-05	-	6.0E-05	7.3E-15	8.0E-05	9.1E-11
Te-132	4.8E-04	5.1E-05	5.3E-04	6.4E-14	9.0E-06	7.2E-09
I-131	2.8E-02	5.5E-05	2.8E-02	3.4E-12	1.0E-06	3.4E-06
I-132	3.3E-03	4.7E-05	3.3E-03	4.0E-13	1.0E-04	4.0E-09
I-133	1.3E-02	3.6E-05	1.3E-02	1.6E-12	7.0E-06	2.3E-07
I-134	1.6E-03	-	1.6E-03	2.0E-13	4.0E-04	4.9E-10
I-135	9.9E-03	-	9.9E-03	1.2E-12	3.0E-05	4.0E-08
Cs-134	2.0E-02	1.5E-03	2.1E-02	2.6E-12	9.0E-07	2.9E-06
Cs-136	1.3E-03	-	1.3E-03	1.5E-13	6.0E-06	2.5E-08
Cs-137	2.7E-02	2.6E-03	2.9E-02	3.6E-12	1.0E-06	3.6E-06
Ba-137m	2.5E-02	-	2.5E-02	3.0E-12	-	-
Ba-140	1.1E-02	-	1.1E-02	1.3E-12	8.0E-06	1.7E-07
La-140	1.5E-02	3.5E-06	1.5E-02	1.8E-12	9.0E-06	2.0E-07
Ce-141	1.8E-04	1.7E-06	1.8E-04	2.2E-14	3.0E-05	7.4E-10
Ce-143	3.8E-04	-	3.8E-04	4.6E-14	2.0E-05	2.3E-09
Ce-144	6.3E-03	-	6.3E-03	7.7E-13	3.0E-06	2.6E-07

Table 11.2-3 (Cont.) Release of Activities in Liquid Effluent

Isotope	Release (Ci/yr)			Concentration (µCi/ml)		Fraction of ECL
	Units 3 & 4	Units 1 & 2	Total	Site	ECL	
Pr-143	2.6E-04	-	2.6E-04	3.2E-14	2.0E-05	1.6E-09
Pr-144	6.3E-03	-	6.3E-03	7.7E-13	6.0E-04	1.3E-09
Hf-181	-	3.9E-07	3.9E-07	4.7E-17	2.0E-05	2.4E-12
W-187	2.6E-04	-	2.6E-04	3.2E-14	3.0E-05	1.1E-09
Np-239	4.8E-04	-	4.8E-04	5.8E-14	2.0E-05	2.9E-09
Total	2.0E+03	1.9E+03	4.0E+03	4.8E-07	-	5.0E-04

Note: The releases for Units 3 and 4 are based on the AP1000 DCD (**Westinghouse 2005**) and are for two units. The releases for Units 1 and 2 are based on annual effluent release reports (**SNC 2002, SNC 2003, SNC 2004**) and are for two units. The effluent concentration limits (ECLs) are from 10 CFR 20, Appendix B, Table 2, Column 2.

Table 11.2-4 Liquid Pathway Doses for Maximally Exposed Individuals

	Dose per Unit (mrem/yr)							
	Skin	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-LLI
Adult	1.3E-05	8.8E-03	2.1E-02	1.7E-02	9.0E-03	1.1E-02	7.2E-03	7.9E-03
Teen	7.2E-05	9.3E-03	2.0E-02	1.0E-02	7.0E-03	9.2E-03	5.9E-03	5.7E-03
Child	1.5E-05	1.2E-02	2.1E-02	9.9E-03	1.3E-02	1.2E-02	8.9E-03	8.6E-03
Infant	0.0E+00	5.8E-04	7.8E-03	7.2E-03	1.5E-02	7.4E-03	7.2E-03	7.7E-03
Maximum	7.2E-05	1.2E-02	2.1E-02	1.7E-02	1.5E-02	1.2E-02	8.9E-03	8.6E-03
	Teen	Child	Child	Adult	Infant	Child	Child	Child

Note: GI-LLI is gastrointestinal-lining of lower intestine.

Table 11.2-5 Comparison of Maximally Exposed Individual Doses with 10 CFR 50, Appendix I Criteria

	Location	Dose per Unit (mrem/yr)	
		Estimated	Limit
Total Body	Savannah River	0.017	3
Maximum Organ - Liver	Savannah River	0.021	10

Table 11.2-6 Comparison of Maximally Exposed Individual Doses with 40 CFR 190 Criteria

	Dose (mrem/yr)					
	Units 3 and 4			Units 1 and 2	Site Total	Regulatory Limit
	Liquid	Gaseous	Total			
Total Body	0.020	2.2	2.3	0.092	2.4	25
Thyroid	0.027	12	12	0.069	12	75
Other Organ - Bone	0.023	8.8	8.8	0.054	8.9	25

Note: Doses for Units 3 and 4 are for a child, the age group receiving the maximum total dose. Doses for Units 1 and 2 are the maximum reported in the annual effluent release reports for 2001, 2002, and 2003 (**SNC 2002, SNC 2003, SNC 2004**).

Table 11.2-7 Collective Total Body Doses Within 50 Miles

Dose (person-rem/yr)	
Units 3 & 4	0.037
Units 1 & 2	0.0079
Total	0.045

Note: Doses for Units 1 and 2 are based on the maximum activity releases in the annual effluent release reports for 2001, 2002, and 2003 (**SNC 2002, SNC 2003, SNC 2004**).

Section 11.2.3 References

(NRC 1985) NUREG-0017, *Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Pressurized Water Reactors (PWR-GALE Code)*, Revision 1, U. S. Nuclear Regulatory Commission, 1985.

(NRC 1986) NUREG/CR-4013, *LADTAP II Technical Reference and User Guide*, U. S. Nuclear Regulatory Commission, 1986.

(SNC 2002) *Annual Radioactive Effluent Release Report for January 1, 2001 to December 31, 2001*, Southern Nuclear Company, 2002.

(SNC 2003) *Annual Radioactive Effluent Release Report for January 1, 2002 to December 31, 2002*, Southern Nuclear Company, 2003.

(SNC 2004) *Annual Radioactive Effluent Release Report for January 1, 2003 to December 31, 2003*, Southern Nuclear Company, 2004.

(Westinghouse 2005) AP1000 Document APP-GW-GL-700, *AP1000 Design Control Document, Tier 2 Material*, Revision 15, Westinghouse Electric Company, 2005.

(WSRC 2006) WSRC-TR-2006-00007, *Savannah River Site Environmental Report for 2005*, Washington Savannah River Company, 2006. Accessed from http://www.srs.gov/general/pubs/ERsum/er06/liqdos_05.htm, April 18, 2007.

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11.3.3 Gaseous Radioactive Releases

This section describes the radiological impacts of gaseous radwaste effluents from normal plant operation on members of the public. Section 11.3.3.1 describes the exposure pathways by which radiation and radioactive effluents can be transmitted from the new units to individuals living near the plant. Section 11.3.3.2 estimates the maximum doses to the public and evaluates the impacts of these doses by comparing them to regulatory limits.

11.3.3.1 Exposure Pathways

Small quantities of radioactive gases would be discharged to the environment during normal operation of the new units. VEGP Units 3 and 4 airborne effluents are normally released through the plant vent or the turbine building vent. The plant vent is the release pathway for ventilation flows and discharges from the containment, the auxiliary building, the annex building, the radwaste building, and the gaseous radwaste system. The turbine building vents provide the release path for the condenser air removal system, gland seal condenser exhaust, and the turbine building ventilation releases (**Westinghouse, 2005**). The impact of these releases on individuals and the population in the vicinity of the new units is evaluated by considering the most important pathways from the release to the receptors of interest. The major pathways are those that could yield the highest radiological doses for a given receptor. The relative importance of a pathway is based on the type and amount of radioactivity released, the environmental transport mechanism, and the consumption or usage factors at the receptor.

The exposure pathways considered and the analytical methods used to estimate doses to the maximally exposed individual (MEI) and to the population surrounding the new units are based on NRC Regulatory Guide 1.109, *Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR 50, Appendix I*, Revision 1, October 1977 (RG 1.109) and NRC Regulatory Guide 1.111, *Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors*, Revision 1, July 1977. An MEI is a member of the public located to receive the maximum possible calculated dose. The MEI allows dose comparisons with established criteria for the public.

The NRC-endorsed GASPAR II computer program (**NRC 1987**) is used to calculate the doses to offsite receptors from the new units. This program implements the radiological exposure models described in RG 1.109 to estimate the doses resulting from radioactive releases in gaseous effluent. The atmospheric dispersion component of the analysis is calculated with the NRC-sponsored program XOQDOQ (**NRC 1982**). Dispersion and deposition factors are calculated from onsite meteorological parameters (wind speed, wind direction, stability class) for 1998-2002. Section 2.3.5 shows dispersion data for the locations shown in Table 11.3-4 as well as deposition and undecayed/undepleted dispersion factors within 50 miles of the plant. Decayed/

undepleted and decayed/depleted dispersion factors within 50 miles are calculated using the same methodology as presented in Section 2.3.5.

The following exposure pathways are considered in GASPAR II:

- External exposure to airborne plume
- External exposure to contaminated ground
- Inhalation of airborne activity
- Ingestion of contaminated vegetables
- Ingestion of contaminated meat

The input parameters for the gaseous pathway are presented in Tables 11.3-1, 11.3-2, and 11.3-3 and the receptor locations are shown in Table 11.3-4.

11.3.3.2 Gaseous Pathway Doses

Based on the parameters in Tables 11.3-1 to 11.3-3, the GASPAR II computer program is used to calculate doses to the maximally exposed adult, teenager, child, and infant at the following locations:

- Nearest site boundary
- Nearest residence
- Nearest vegetable garden
- Nearest meat animal

The gaseous activity releases (source terms) for the two proposed AP1000 units are obtained from AP1000 DCD Table 11.3-3 and are shown in Table 11.3-3. These are conservative, projected values that were calculated using the PWR-GALE computer code (**NRC 1985**). Table 11.3-3 also shows the maximum measured activity releases for Units 1 and 2, based on information presented in the annual effluent reports (**SNC 2002, SNC 2003, SNC 2004**). Projected activity concentrations at the site boundary are based on the calculated activity releases for Units 3 and 4 as well as the measured activity releases from Units 1 and 2. The concentrations are within the limits of 10 CFR 20, Appendix B, Table 2, Column 1. The calculated annual doses to the MEI are presented in Table 11.3-5.

Table 11.3-6 shows that the doses to the MEI from the liquid effluents of a new unit meet the design objectives of 10 CFR 50, Appendix I. The total site doses due to liquid and gaseous effluents from the two existing units and the two new units would be well within the regulatory limits of 40 CFR 190, as shown in Table 11.3-7. Since 40 CFR 190 is more restrictive than 10 CFR 20.1301, compliance with the limits of 40 CFR 190 also demonstrates compliance with the 0.1 rem limit of 10 CFR 20.1301. Table 11.3-8 shows the doses from the new and existing units to the population within 50 miles of the ESP site. The doses from the proposed units are much higher than from the existing units because doses from the existing units are more realistic,

based on measurements, whereas the doses from the proposed units are based on conservative calculations.

Table 11.3-1 Gaseous Pathway Parameters

Parameter	Value
Release source terms	Table 11.3-3
Population distribution	Figures 2.1-3 & 2.1-10
Milk production rate within 50 miles	6.37E+07 l/yr ^a
Meat production rate within 50 miles	1.03E+07 kg/yr ^a
Vegetable production rate within 50 miles	6.57E+07 kg/yr ^a
Atmospheric dispersion factors	Table 2.3-17
Ground deposition factors	Table 2.3-17

^a Animal and vegetable production from 2002 National Census of Agriculture. Production converted to food products using average conversion factors: 17,050 lb milk/cow; 377 lb beef/cow, calf; 81.2 lb meat/hog, pig; 95.8 lb meat/sheep, and 8,090 kg vegetables/acre.

Table 11.3-2 Gaseous Pathway Consumption Factors for Maximally Exposed Individual

Consumption Factor	Annual Rate			
	Adult	Teen	Child	Infant
Leafy vegetable consumption (kg/yr)	64	42	26	0
Meat consumption (kg/yr)	110	65	41	0
Vegetable/fruit consumption (kg/yr)	520	630	520	0

Note: These are obtained from Regulatory Guide 1.109. Leafy vegetables are assumed to be grown in the MEI's garden 58% of the year.

Table 11.3-3 Release of Activities in Gaseous Effluent

Isotope	Release (Ci/yr)			Concentration (µCi/ml)		Fraction of ECL
	Units 3 & 4	Units 1 & 2	Total	Site	ECL	
H-3	7.0E+02	2.0E+02	9.0E+02	1.6E-10	1.0E-07	1.6E-03
Be-7	-	7.0E-06	7.0E-06	1.2E-18	3.0E-08	4.1E-11
C-14	1.5E+01	-	1.5E+01	2.5E-12	3.0E-09	8.5E-04
Ar-41	6.8E+01	1.6E+00	7.0E+01	1.2E-11	1.0E-08	1.2E-03
Cr-51	1.2E-03	3.2E-06	1.2E-03	2.1E-16	3.0E-08	7.1E-09
Mn-54	8.6E-04	-	8.6E-04	1.5E-16	1.0E-09	1.5E-07
Fe-59	1.6E-04	-	1.6E-04	2.8E-17	5.0E-10	5.5E-08
Co-57	1.6E-05	-	1.6E-05	2.9E-18	9.0E-10	3.2E-09
Co-58	4.6E-02	5.9E-06	4.6E-02	8.0E-15	1.0E-09	8.0E-06
Co-60	1.7E-02	9.6E-06	1.7E-02	3.0E-15	5.0E-11	6.1E-05
Kr-85m	7.2E+01	3.8E-05	7.2E+01	1.3E-11	1.0E-07	1.3E-04
Kr-85	8.2E+03	3.4E+00	8.2E+03	1.4E-09	7.0E-07	2.0E-03
Kr-87	3.0E+01	-	3.0E+01	5.2E-12	2.0E-08	2.6E-04
Kr-88	9.2E+01	-	9.2E+01	1.6E-11	9.0E-09	1.8E-03
Sr-89	6.0E-03	1.1E-06	6.0E-03	1.0E-15	2.0E-10	5.2E-06
Sr-90	2.4E-03	4.5E-08	2.4E-03	4.2E-16	6.0E-12	7.0E-05
Zr-95	2.0E-03	-	2.0E-03	3.5E-16	4.0E-10	8.7E-07
Nb-95	5.0E-03	6.2E+00	6.2E+00	1.1E-12	2.0E-09	5.4E-04
I-131	2.4E-01	2.1E-02	2.6E-01	4.5E-14	2.0E-10	2.3E-04
I-132	-	3.6E-06	3.6E-06	6.2E-19	2.0E-08	3.1E-11
I-133	8.0E-01	4.9E-04	8.0E-01	1.4E-13	1.0E-09	1.4E-04
Xe-131m	3.6E+03	1.1E-01	3.6E+03	6.3E-10	2.0E-06	3.1E-04
Xe-133m	1.7E+02	3.3E-02	1.7E+02	3.0E-11	6.0E-07	5.1E-05
Xe-133	9.2E+03	2.2E+01	9.2E+03	1.6E-09	5.0E-07	3.2E-03
Xe-135m	1.4E+01	-	1.4E+01	2.4E-12	4.0E-08	6.1E-05
Xe-135	6.6E+02	4.0E-01	6.6E+02	1.2E-10	7.0E-08	1.6E-03
Xe-138	1.2E+01	-	1.2E+01	2.1E-12	2.0E-08	1.0E-04
Ru-103	1.6E-04	-	1.6E-04	2.8E-17	9.0E-10	3.1E-08

Table 11.3-3 (Cont.)Release of Activities in Gaseous Effluent

Isotope	Release (Ci/yr)			Concentration (µCi/ml)		Fraction of ECL
	Units 3 & 4	Units 1 & 2	Total	Site	ECL	
Ru-106	1.6E-04	-	1.6E-04	2.7E-17	2.0E-11	1.4E-06
Sb-125	1.2E-04	-	1.2E-04	2.1E-17	7.0E-10	3.0E-08
Cs-134	4.6E-03	-	4.6E-03	8.0E-16	2.0E-10	4.0E-06
Cs-136	1.7E-04	-	1.7E-04	3.0E-17	9.0E-10	3.3E-08
Cs-137	7.2E-03	2.2E-07	7.2E-03	1.3E-15	2.0E-10	6.3E-06
Ba-140	8.4E-04	-	8.4E-04	1.5E-16	2.0E-09	7.3E-08
Ce-141	8.4E-05	-	8.4E-05	1.5E-17	8.0E-10	1.8E-08
Total	2.3E+04	2.3E+02	2.3E+04	4.0E-09	-	1.4E-02

Note: The releases for Units 3 and 4 are based on the AP1000 DCD (**Westinghouse 2005**) and are for two units. The releases for Units 1 and 2 are based on annual effluent release reports (**SNC 2002, SNC 2003, SNC 2004**) and are for two units. The effluent concentration limits (ECLs) are from 10 CFR 20, Appendix B, Table 2, Column 1.

Table 11.3-4 Gaseous Pathway Receptor Locations

Receptor	Direction	Distance (miles)
Nearest site boundary	NE	0.50
Nearest residence	NE	0.67
Nearest vegetable garden	NE	0.67
Nearest meat animal	NE	0.67

Note: This data is taken from Table 2.3-17. There are no milk cows or goats within 5 miles of the plant.

Table 11.3-5 Gaseous Pathway Doses for Maximally Exposed Individuals

Location	Pathway	Dose per Unit (mrem/yr)				
		Total Body	Thyroid	Bone	Skin	
Nearest Site Boundary (0.50 mi NE)	Plume	4.1E-01	4.1E-01	4.1E-01	2.1E+00	
	Ground	1.5E-01	1.5E-01	1.5E-01	1.8E-01	
	Inhalation	Adult	4.5E-02	4.3E-01	7.1E-03	4.4E-02
		Teen	4.6E-02	5.3E-01	8.6E-03	4.4E-02
		Child	4.1E-02	6.2E-01	1.1E-02	3.9E-02
Infant		2.3E-02	5.6E-01	5.3E-03	2.3E-02	
Nearest Residence (0.67 mi NE)	Plume	2.6E-01	2.6E-01	2.6E-01	1.3E+00	
	Ground	8.7E-02	8.7E-02	8.7E-02	1.0E-01	
	Inhalation	Adult	2.8E-02	2.6E-01	4.3E-03	2.7E-02
		Teen	2.8E-02	3.2E-01	5.2E-03	2.7E-02
		Child	2.5E-02	3.8E-01	6.3E-03	2.4E-02
Infant		1.4E-02	3.4E-01	3.2E-03	1.4E-02	
Nearest Garden (0.67 mi NE)	Vegetable	Adult	2.0E-01	2.0E+00	9.9E-01	1.8E-01
		Teen	3.0E-01	2.7E+00	1.6E+00	2.8E-01
		Child	6.7E-01	5.2E+00	3.6E+00	6.3E-01
Nearest Meat Animal (0.67 mi NE)	Meat	Adult	6.2E-02	1.5E-01	2.7E-01	6.0E-02
		Teen	5.0E-02	1.2E-01	2.3E-01	4.9E-02
		Child	9.1E-02	1.9E-01	4.3E-01	8.9E-02
Maximally Exposed Individual (0.67 mi NE)	Internal Only	Adult	2.9E-01	2.4E+00	1.3E+00	2.7E-01
		Teen	3.8E-01	3.1E+00	1.8E+00	3.5E-01
		Child	7.8E-01	5.8E+00	4.1E+00	7.4E-01
		Infant	1.4E-02	3.4E-01	3.2E-03	1.4E-02
	Total	Adult	6.4E-01	2.8E+00	1.6E+00	1.7E+00
		Teen	7.2E-01	3.5E+00	2.1E+00	1.7E+00
		Child	1.1E+00	6.1E+00	4.4E+00	2.1E+00
		Infant	3.6E-01	6.8E-01	3.5E-01	1.4E+00

Note: The internal doses for the maximally exposed individual are obtained by adding the doses from the inhalation, vegetable, and meat pathways. The total doses add the plume and ground doses to the internal doses.

Table 11.3-6 Comparison of Maximally Exposed Individual Doses with 10 CFR 50, Appendix I Criteria

Dose Type	Location	Dose per Unit	
		Estimated	Limit
Gamma Air (mrad)	Site Boundary	0.67	10
Beta Air (mrad)	Site Boundary	2.8	20
Total Body (mrem)	Site Boundary	0.56	5
Skin (mrem)	Site Boundary	2.2	15
Iodines and Particulates Maximum Organ - Thyroid (mrem)	Maximally Exposed Individual	5.9	15

Note: Total body and skin doses are the sums of plume and ground doses from Table 11.3-5. The dose due to iodines and particulates is for a child, the age group receiving the maximum total dose.

Table 11.3-7 Comparison of Maximally Exposed Individual Doses with 40 CFR 190 Criteria

	Dose (mrem/yr)					
	Units 3 and 4			Units 1 and 2	Site Total	Regulatory Limit
	Liquid	Gaseous	Total			
Total Body	0.020	2.2	2.3	0.092	2.4	25
Thyroid	0.027	12	12	0.069	12	75
Other Organ - Bone	0.023	8.8	8.8	0.054	8.9	25

Note: Doses for Units 3 and 4 are for a child, the age group receiving the maximum total dose. Doses for Units 1 and 2 are the maximum reported in the annual effluent release reports for 2001, 2002, and 2003 (SNC 2002, SNC 2003, SNC 2004).

Table 11.3-8 Collective Total Body Doses Within 50 Miles

	Dose (person-rem/yr)		
	Units 3 and 4	Units 1 and 2	Total
Noble Gases	0.57	0.0011	0.57
Iodines & Particulates	0.14	0.16	0.30
H-3 & C-14	1.1	0.09	1.2
Total	1.8	0.26	2.1

Note: Doses for Units 1 and 2 are based on the maximum activity releases in the annual effluent release reports for 2001, 2002, and 2003 (**SNC 2002, SNC 2003, SNC 2004**).

Section 11.3.3 References

(NRC 1982) NUREG/CR-2919, *XOQDOQ: Computer Program for the Meteorological Evaluation of Routine Effluent Releases at Nuclear Power Stations Final Report*, U. S. Nuclear Regulatory Commission, 1982.

(NRC 1985) NUREG-0017, *Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Pressurized Water Reactors (PWR-GALE Code)*, Revision 1, U. S. Nuclear Regulatory Commission, 1985.

(NRC 1987) NUREG/CR-4653, *GASPAR II Technical Reference and User Guide*, U. S. Nuclear Regulatory Commission, 1987.

(SNC 2002) *Annual Radioactive Effluent Release Report for January 1, 2001 to December 31, 2001*, Southern Nuclear Company, 2002.

(SNC 2003) *Annual Radioactive Effluent Release Report for January 1, 2002 to December 31, 2002*, Southern Nuclear Company, 2003.

(SNC 2004) *Annual Radioactive Effluent Release Report for January 1, 2003 to December 31, 2003*, Southern Nuclear Company, 2004.

(Westinghouse 2005) AP1000 Document APP-GW-GL-700, *AP1000 Design Control Document, Tier 2 Material*, Revision 15, Westinghouse Electric Company, 2005.

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Chapter 13 Conduct of Operations

13.3 Emergency Planning

This section, in conjunction with Part 5 (*Emergency Plan*) of the Early Site Permit (ESP) Application, describes emergency planning for the proposed addition of two Westinghouse Electric Company, LLC (Westinghouse) AP1000 reactor units at the Vogtle Electric Generating Plant (VEGP) site. This section contains the information required by 10 CFR 52.17, *Contents of Applications*, involving review of the VEGP site physical characteristics for significant impediment to development of revised VEGP emergency plans. In addition, Southern Nuclear Operating Company, Inc. (SNC) has chosen to submit a proposed complete and integrated emergency plan (Part 5) for approval by the U.S. Nuclear Regulatory Commission (NRC) in accordance with 10 CFR 52.17(b)(2)(ii).

The proposed emergency plan is designed to comply with 10 CFR 50.47(b) and 10 CFR 50 Appendix E. The emergency plan was developed using VEGP Emergency Plan, Revisions 43 and 42 (**SNC 2006**), and the guidance contained in:

- NUREG 0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants*, Revision 1, U. S. Nuclear Regulatory Commission, November 1980 (NUREG-0654)
- NEI 99-01, *Methodology for Development of Emergency Action Levels* (**NEI 2003**)
- NEI 07-01, *Methodology for Development of Emergency Action Levels Advanced Passive Light Water Reactors* (**NEI 2007**)
- NUREG 0654/FEMA-REP-1, Revision 1, Supplement 2, *Criteria for Emergency Planning in an Early Site Permit Application*, Draft Report Comment, U.S. Nuclear Regulatory Commission, April 1, 1996.

Because details of some elements of the emergency plan cannot be completed during the ESP application phase, Inspection Test Analysis and Acceptance Criteria (ITAAC) were developed and are included as appendices to the proposed VEGP Emergency Plan (i.e., ESP Application Part 5, Annex V2, Appendices 3 and 4).

The proposed emergency plan is intended to be used as the VEGP site emergency plan (all units licensed for the site) after a license is issued for Unit 3. It is expected that the site plan will be implemented before the first full participation exercise for Unit 3. It is expected that the first full participation exercise will occur approximately 1 year before the scheduled fuel load for Unit 3.

In the interim period before the first full participation exercise for Unit 3, the latest revision of the VEGP emergency plan will remain in effect for VEGP Units 1 and 2. SNC will submit a revision to the latest revision of the VEGP emergency plan in accordance with the provisions of 10 CFR 50.54(q) for VEGP Units 1 and 2 approximately 1 year before the scheduled full participation exercise for Unit 3. In the interim period between the approval of the ESP emergency plan

submitted in Part 5 of the ESP Application and the implementation of the approved ESP plan, the Plan will be revised as necessary in accordance with 10 CFR 50.54(q).

SNC intends to implement the Plan in accordance with draft NEI Guideline 06-01, *Industry Guidance for Implementation of Part 52 during Construction and Initial Power Ascension (NEI 2006)*.

13.3.1 Physical Characteristics

13.3.1.1 Site Description

SNC proposes to add two Westinghouse AP1000 pressurized water reactor units (new Units 3 and 4) to the existing VEGP site. The VEGP currently consists of two Westinghouse 1,200 megawatts electrical (MWe) pressurized water reactor units. The plant is on a 3,169-acre site located in the eastern portion of Burke County, Georgia, approximately 30 river miles upstream from the intersection of the Savannah River with U.S. Highway 301, as shown on Figure 13.3-1. With the exception of existing VEGP Units 1 and 2, and the Georgia Power Company (GPC) combustion turbine plant, Plant Wilson, there are no commercial, industrial, institutional, recreational, or residential structures within the proposed four unit site area. The nearest point to the exclusion area boundary (EAB) is the property line located approximately 3,500 ft southwest of the Unit 4 power block area. Figure 13.3-2 shows the site and the locations of the existing buildings on the site. The locations of the VEGP emergency facilities are also shown on Figure 13.3-2.

The site is located in a sparsely populated section of eastern Georgia near the Savannah River approximately 15 miles east-northeast of the City of Waynesboro. The area near the site is lowlands and is not used for commercial or industrial purposes. The site is adjacent to the Savannah River which is a major river in the southeastern United States, forming most of the border between South Carolina and Georgia. The river flows southeasterly and is approximately 350 miles long. The Savannah River is used primarily to support industry, recreation, and natural habitat development.

Adjacent to the site on the South Carolina side of the Savannah River is the United States Department of Energy's (DOE's) Savannah River Site (SRS). As described in an agreement (**DOE 1999**) between the DOE and SNC, DOE's SRS is responsible for all emergency planning for the area included in the VEGP emergency planning zones (EPZs) that lie within the boundaries of the SRS.

Land within about 10 miles of the site is primarily forested with limited agricultural and some rural housing. State highways that transverse the area within about ten miles of the site include Georgia Highways 23, 56, and 80 and South Carolina Highway 125. Several paved county roads also traverse the area within about 10 miles of the site. One railroad spur of the Norfolk Southern

railroad line transverses the area within about 10 miles of the site and terminates at the VEGP site.

13.3.1.2 Area Population

The small population center of Girard, Georgia (population 227 from 2000 census) is located approximately seven miles south of VEGP site. Also, the town of Sardis, Georgia (population 1,171 from 2000 census) is located approximately 12 miles south of the VEGP site.

The permanent population within about 10 miles of the VEGP site is estimated to be 3,017. Transient populations consist of daytime populations, recreation populations, and employment data. Most of the transient population will consist of areas used by hunters and fishermen along the Savannah River. These will be congregated near three public boat landings – Two in Burke County, Georgia (the Vogtle boat landing and Brigham's Landing); and one in Aiken County, South Carolina (Gray's Landing). The total peak transient population is estimated to be 750 (**IEM 2006**). Two special facility populations are located within about 10 miles of the site. One is the VEGP site itself. Approximately 850 people work at the site. In addition, a private school (Lord's House of Praise Christian School) is located approximately 10 miles west of the Site. The school population consists of approximately 50 students and 20 teachers and staff.

Workforce populations for the SRS are described in the SRS emergency plan (**DOE 2005**).

SNC concludes that there are no physical characteristics, unique to the VEGP site, which poses a significant impediment to development of the revised emergency plans for the VEGP.

13.3.2 Emergency Plan

Part 5 of the ESP Application contains the complete and integrated VEGP Emergency Plan.

13.3.3 Emergency Planning Zones

The emergency planning zones (EPZs) for the VEGP are based on the requirements contained in 10 CFR 50 Appendix E which require the plume exposure pathway to be an area about 10 miles in radius and the ingestion pathway EPZ to be an area about 50 miles in radius. The VEGP EPZs meet this requirement and are defined as the area about 10 miles and 50 miles in radius respectively, from a point midway between VEGP Units 1 and 2. The defined EPZs for the proposed AP1000 units will use the same EPZs as are currently defined for VEGP Units 1 and 2. The plume exposure EPZ is shown on Figure 13.3-3 and the ingestion pathway EPZ is shown on Figure 13.3-4.

13.3.A.1 Plume Exposure Pathway

Using the guidance contained in NUREG-0654, SNC has further defined the plume exposure into a set of geopolitical zones as described in Table 13.3-2, and shown in Figure 13.3-3.

13.3.A.2 Ingestion Pathway

The EPZ for ingestion exposure includes an area within a 50 mile radius of the VEGP. Table 13.3-1 below shows the respective counties in each State that are located within the ingestion pathway.

Table 13.3-1 VEGP Ingestion Pathway Counties

Georgia Counties		South Carolina Counties	
Bulloch	Burke	Aiken	Allendale
Candler	Columbia	Bamberg	Barnwell
Effingham	Emanuel	Colleton	Edgefield
Glasscock	Jefferson	Hampton	Lexington
Jenkins	Johnson	McCormick	Orangeburg
Lincoln	McDuffie	Saluda	Jasper
Richmond	Screven		
Warren	Washington		

Planning for the ingestion exposure pathway is a responsibility of the States of Georgia and South Carolina. Detailed information about the ingestion exposure pathway EPZ can be obtained from the States' Radiological Emergency Plans (**Georgia 2005a, 2005b; South Carolina 2004**). The ingestion exposure pathway EPZ is shown in Figure 13.3-4.

13.3.4 Evacuation Time Estimates

To support the Vogtle ESP application for the proposed new AP1000 units at the VEGP, SNC contracted with Innovative Emergency Management, Inc. (IEM) to produce new evacuation time estimates (ETE) for the VEGP plume exposure pathway. IEM conducted the analysis using estimated 2006 population data and projected 2010 population data. The methods used to obtain population data and to estimate the ETEs are documented in an IEM report (**IEM 2006**).

The total permanent resident populations within the 10-mile EPZ for the VEGP are estimated to be 3,017 for 2006 and 3,162 for 2010. This population is broken down by protective action zone (PAZ) and by sector and ring within the report. There is not a major change in the permanent population figures because the power station is located in a densely wooded rural area, and no significant changes in the land use pattern is expected around the plant in the next four years. Transient population consists of workers employed within the area and recreational sportsmen on the Savannah River. Special facilities populations are composed of students, teachers, and other employees at the Lord's House of Praise Christian School, and employees of the VEGP.

Based on experiences following the construction of Units 1 and 2, the permanent population within the 10 mile EPZ is not expected to increase significantly during the construction and subsequent operation of Units 3 and 4.

IEM used PTV Vision VISUM, a computer simulation model, to perform the ETEs. In order to represent the most realistic emergencies, ETEs have been prepared for several temporal, seasonal, and weather conditions. Evacuations for the nine geographical evacuation areas were modeled individually in each of three seasonal scenarios: Winter Weekday, Winter Weeknight, and Fall Weekend. The winter weekday and weeknight scenarios represent summer weekday and weeknight scenarios because the populations are the same. The fall weekend scenarios are the same as the other weekends except for the areas on and around the Savannah River, which includes an increased population due to recreational sportsmen. These scenarios were considered under both fair and adverse weather conditions. ETEs for 2006 fair weather ranged from 1 hour and 25 minutes to 1 hour and 45 minutes. ETEs for 2006 adverse weather conditions ranged from 1 hour 40 minutes to 1 hour 55 minutes. ETEs for 2010 fair weather conditions ranged from 1 hour 45 minutes to 1 hour 55 minutes. ETEs for 2010 adverse weather conditions ranged from 2 hours 5 minutes to 2 hours 45 minutes. No significant traffic congestion was observed for simulations for either 2006 or 2010.

13.3.5 Contacts and Agreements

SNC currently maintains letters of agreement or contracts with State and local government agencies, the DOE SRS, medical support facilities, local radio and television companies, and independent industry support organizations (all referred to as simply 'agencies'), in support of emergency planning at the VEGP for existing Units 1 and 2. Table 13.3-3 identifies the agencies in which SNC maintains current letters of agreements or contracts with, including the point of contact for each agency, with the exception of local radio and television companies. Agreements with local radio and television companies will be transferred to the respective State and/or local emergency plans. Copies of the existing letters of agreement and contracts will be submitted under separate correspondence.

In support of this ESP Application, SNC contacted each of the agencies listed in Table 13.3-3 by letter (i.e., supplemental letters of agreement) notifying them of the proposed addition of two new AP1000 reactor plants at the VEGP site and the revised emergency plans for VEGP. Each agency received one of two types of supplemental letters of agreement, depending on the type of agency. One type of supplemental letter of agreement requested the agency to commit to continued participation in any further development of the VEGP emergency plans. The second type of supplemental letter of agreement requested the agency to concur that the proposed VEGP emergency plans are practicable and to commit to participating in any further development of the VEGP emergency plans, including required field demonstrations under the plans. Each agency committed to their requested responsibilities specified in the supplemental letters of agreement by signing the letter. Therefore, the executed supplemental letters of agreement, along with the existing letters of agreement, certify that (1) the proposed VEGP Emergency Plan is practicable; (2) the agencies are committed to participating in any further development of the proposed VEGP Emergency Plan, including any required field demonstrations; and (3) the

agencies are committed to executing their responsibilities under the VEGP Emergency Plan in the event of an emergency. Item (3) is addressed in the existing letters of agreement and contracts with State and local government agencies, the DOE SRS, medical support facilities, and independent industry support organizations. Copies of the supplemental letters of agreement are provided in Appendix 13.3A.

Table 13.3-2 Geographical Boundaries of Evacuation Zones

Evacuation Zones	Geographical Boundaries
A	Northeast - Savannah River
	Southeast, South/Southwest and West Northwest - 2-mile area
B-5	North - 2-mile area
	West-Ebenezer Road
	Southwest - GA Highway 23
	South - Chance Road
	Southeast - Griffin's Landing Road
	Northeast - Savannah River
B-10	Northwest - Griffin's Landing Road
	West-Dixon Road and City of Girard eastern boundary
	Southwest – Stony Bluff Road
	Southwest – Royal Road and the 10-mile area
	Northeast – Savannah River
C-5	Northwest – Jack Delaigle Road
	Southwest – GA Highway 23
	East – Ebenezer Church Road
C-10	North – Chance Road
	West – Briar Creek Road, Buck Road, and GA Highway 23
	South – Johnson Road, Ellison Road, Murray Hill Road, and the 10-mile area
	Southeast – Stony Bluff Road
	East – City of Girard eastern boundary and Dixon Road
D-5	North – Hancock Landing Road
	West – Hancock Landing Road and Thomas Road
	Southwest – Hatchers Mill Road and Thompson Bridge Road
	South – Gordon Road and Tom Barger Road
	East – GA Highway 23, Brier Creek Road, and Buck Road
E-5	North – Ben Hatcher Road
	East – River Road
	South – Hancock Landing Road
	West – Nathaniel Howard road
E-10	Northeast – Nathaniel Howard Road
	North – GA Highway 80, GA Highway 23, and Ben Hatcher Road
	West – 10-mile area and Bates Road
	South – Thompson Bridge, Seven Oaks Road, and Botsford Church Road
	East – Hancock Landing Road
F-5	North – Savannah River
	East – Savannah River
	West – 5-mile radius and River Road
	South – 2-mile area
F-10	Northeast – Savannah River
	West – 10-mile radius and GA Highway 23
	South – Ben Hatcher Road
	East – River Road and the 5-mile area

Table 13.3-2 (cont.) Geographical Boundaries of Evacuation Zones

Evacuation Zones	Geographical Boundaries
G-10	North – Gray's Landing on the Savannah River to the CSX railroad track and Cowden Plantation road
	East – SRS boundary and the CSX boundary
	South – Savannah River and the SRS boundary
	West – Savannah River
H-10	North – SRS boundary and South Carolina Highway 125 extending into Allendale County's northern boundary
	East – Creek Plantation Road
	South – Savannah River
	West – SRS boundary

Table 13.3-3 Agency Agreements and Points of Contact

Agency	Contact/Title	Address
Aiken County Emergency Services	David Ruth/	828 Richland Ave. West
	EP Coordinator	Aiken, SC 29801
Allendale County EPA	Linda Sanders/	P.O. Box 129
	Director	Allendale, SC 29810
AREVA ANP, Inc.	Mr. Ed Petterson	155 Mill Ridge Road
	Manager, SG Business Development	Lynchburg, VA 24502
Barnwell County EMA	Roger Riley/	57 Wall St.
	Director	Barnwell, SC 29812
Bechtel Power Corporation	J. E. Love/ NOPS Project Manager	5275 Westview Drive
		Frederick, Maryland
Burke County EMA	Rusty Sanders/ Director	P.O. Box 51-B
		Waynesboro, GA 30830
Burke County Sheriff's Department	Mr. Gregory T. Coursey/Sheriff	25 Highway 24 South
		P.O. Box 702
		Waynesboro, GA 30830
Burke Medical Center	Jennifer A. Royal/ Administrator	351 Liberty Street
		Waynesboro, Georgia 30830
Doctors Hospital	Mr. C. Shayne George President/CEO	3651 Wheeler Road
		Augusta, GA 30909
Dr. B. Lamar Murray	Dr. B. Lamar Murray	311 4th Street
		Waynesboro, Georgia 30830
Georgia DNR	James Hardeman/	4244 International Parkway, Suite 114
	Manager, Radiological Programs	Atlanta, Georgia 30354
Georgia OHS	Charles English/	P.O. Box 18055
	Acting Director	Atlanta, GA 30316-0055
Joseph M. Still Burn Centers Inc.	Dr. Robert F. Mullins	P.O. Box 3725
		Augusta, Georgia 30914-3725
Medical Specialists, Inc.	Dr. Joseph L. Jackson Sr.	305 Jones Ave.
		Waynesboro, GA 30830

Table 13.3-3 Agency Agreements and Points of Contact

Agency	Contact/Title	Address
National Oceanic and Atmospheric Administration (NWS)	Dean P. Gulezian/ Director, NWS Eastern Region	630 Johnson Ave. Bohemia, NY 11716
Radiation Management Consultants, Inc.	Dr. Roger Linnemann/ President	3019 Darnell Road Philadelphia, PA
South Carolina DHEC	Sandra Threatt/ Manager, Nuclear Response & Environmental Surveillance	2600 Bull Street Columbia, SC 29201
South Carolina EMD	Ron Osborne/ Director	1100 Fish Hatchery Road West Columbia, SC 29172
US DOE	Cindy Brizes	P.O. Box A Aiken, South Carolina
Westinghouse Electric Co. Nuclear Services	E. C. Arnold/ Manager, Southern Nuclear Projects	P. O. Box 355 Pittsburgh PA 15230-0355
WSRC Emergency Management	Debra Foutch	Building 703-43A, Room 34-6 Aiken, SC 29808

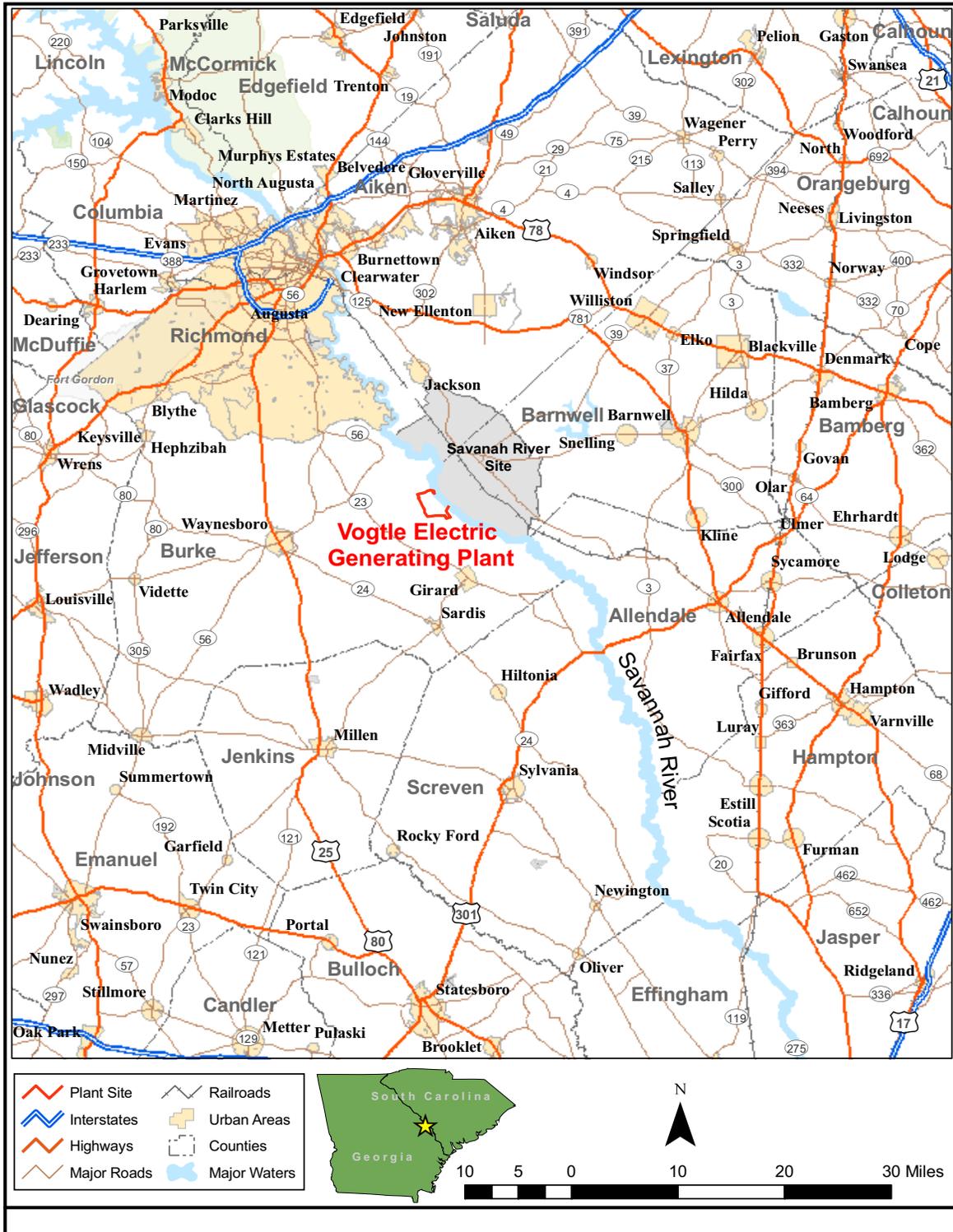


Figure 13.3-1 VEGP Site Vicinity Map



Figure 13.3-2 VEGP Site Map

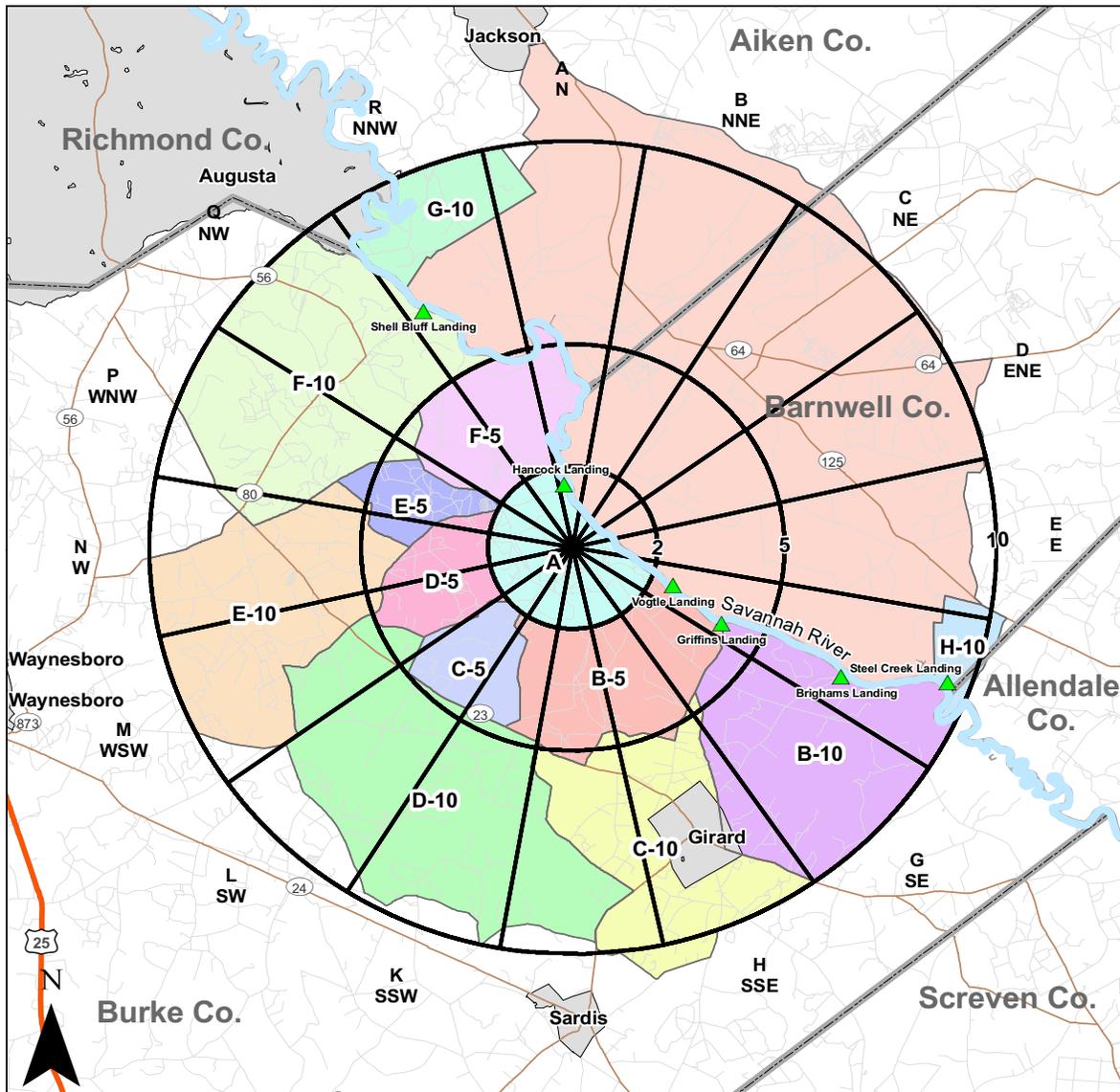


Figure 13.3-3 VEGP Plume Exposure Geopolitical Zones

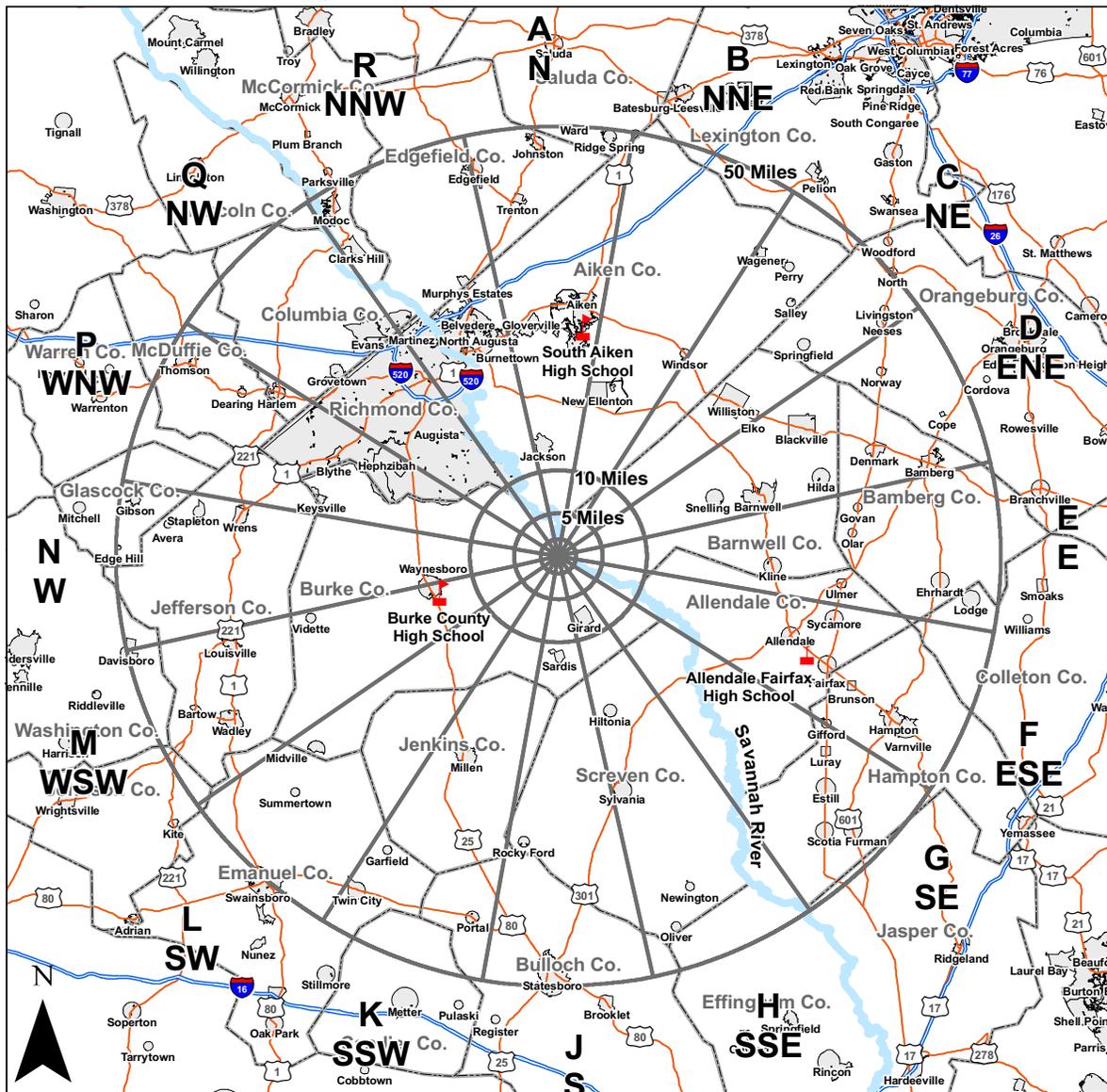


Figure 13.3-4 VEGP Ingestion Pathway

Section 13.3 References

- (DOE 1999)** Savannah River Operations Office Memorandum of Agreement with the Vogtle Electric Generating Plant, April 1999.
- (DOE 2005)** Savannah River Site Emergency Plan (U), September 2005.
- (Georgia 2005a)** State of Georgia Radiological Emergency Plan – Base Plan, Office of Homeland Security, April 2005.
- (Georgia 2005b)** State of Georgia Radiological Emergency Plan – Annex D, Plant Vogtle, Office of Homeland Security, May 2005.
- (IEM 2006)** Report, *Evacuation Time Estimates for the Vogtle Electric Generating Plant*, Innovative Emergency Management, Inc., May 2006.
- (NEI 2003)** Technical Report NEI 99-01, *Methodology for Development of Emergency Action Levels*, Revision 4, Nuclear Energy Institute, January 2003.
- (NEI 2006)** NEI Guideline 06-01, *Industry Guidance for Implementation of Part 52 during Construction and Initial Power Ascension* (Draft).
- (NEI 2007)** NEI 07-01, *Methodology for Development of Emergency Action Levels Advanced Passive Light Water Reactors*, February 2007.
- (SNC 2006)** Vogtle Electric Generating Plant Emergency Plan, Revision 42, Southern Nuclear Operating Company, January 2006.
- (SNC 2006)** Vogtle Electric Generating Plant Emergency Plan, Revision 43, Southern Nuclear Operating Company, May 2006.
- (South Carolina 2004)** State of South Carolina Radiological Emergency Response Plan, Office of Adjutant General, June 2004.

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Appendix

13.3A Supplemental Letters of Agreement

Copies of the supplemental letters of agreement follow in order from the below listed agencies:

Aiken County Emergency Services
Allendale County EPA
AREVA ANP
Barnwell county EMA
Bechtel Power Corporation
Burke County EMA
Burke County Sheriff's Department
Burke Medical Center
Doctors Hospital
Dr. B. Lamar Murray
Georgia DNR
Georgia OHS
Joseph M. Still Burn Centers Inc.
Medical Specialists, Inc.
National Oceanic and Atmospheric Administration (NWS)
Radiation Management Consultants, Inc.
South Carolina DHEC
South Carolina EMD
US DOE
Westinghouse Electric Co. Nuclear Services
WSRC Emergency Management

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Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0775

Mr. David Ruth
EP Coordinator, Aiken County Emergency Services
828 Richland Avenue West
Aiken, SC 29801

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. Ruth:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit (ESP) Application's proposed four-unit Emergency Plan (EP).

SNC intends to submit an ESP application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The ESP Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. Included in the ESP Application will be a Complete and Integrated Emergency Plan, as defined in 10 CFR 52 and under guidance contained in NUREG-0654 FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." 10 CFR Part 52 requires, in part, that the submitted EP include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revised EP for VEGP. The revised plan will consist of a base plan (applicable to all four nuclear units) and two annexes, one for each of the two plant designs (existing and AP1000). The base plan and each annex contain appendices that are applicable to the respective annex.

SNC is also in the process of conducting a new evacuation time estimate (ETE) study for the VEGP site. Preliminary results suggest that no major changes in evacuation plans and procedures will be required to support the addition of two new nuclear units at the VEGP site.

The revised EP is similar to the existing plan, but has been modified to incorporate the addition of two advanced Westinghouse AP1000 units. In support of the addition of new nuclear units at the VEGP site, SNC intends to add a separate facility that will contain the technical support center (TSC) for the site. Communication equipment and operational procedures will be very similar to those currently used at VEGP. Using a single TSC should help minimize the impact of the revised plan on State and county emergency planning. Changes to the plan include:

- Revision of staffing tables for the new nuclear units
- Addition of site specific Emergency Action Levels (EALs) for the new nuclear units
- Addition of two operational support centers, one each for the new nuclear units
- Addition of a new TSC to be used for all four units
- Revisions to reflect the new ETE study

In completing the ESP Application's EP, SNC has concluded that this process provides no additional requirements to the established EPs for evacuation or the implementation of other protective actions.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site, your concurrence that the proposed EP is practicable, and your continuing commitment to participation in any further development of emergency plans, including any required field demonstrations.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the ESP Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Aiken County Emergency Services are aware of the SNC ESP proposed revision to the existing VEGP EP to include provisions for the addition of two new reactors at the VEGP site. Aiken County Emergency Services concur that the proposed EP is practicable, and commits to continuing participation in any further development of the plans, including any required field demonstrations.



David Ruth, EP Coordinator
Aiken County Emergency Services

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



AR-06-0776

April 17, 2006

Ms. Linda Sanders
Director, Allendale County EPA
P. O. Box 129
Allendale, SC 29810

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Ms. Sanders:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit (ESP) Application's proposed four-unit Emergency Plan (EP)

SNC intends to submit an ESP application, pursuant to 10 CFR 52, "Early Site Permits, Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The ESP Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP Property. Included in the ESP Application will be a Complete and Integrated Emergency Plan, as defined in 10 CFR 52 and under guidance contained in NUREG-0654 FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." 10 CFR Part 52 requires, in part, that the submitted EP include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revised EP for VEGP. The revised plan will consist of a base plan (applicable to all four nuclear units) and two annexes, one for each of the two plant designs (existing and AP1000). The base plan and each annex contain appendices that are applicable to the respective annex.

SNC is also in the process of conducting a new evacuation time estimate (ETE) study for the VEGP site. Preliminary results suggest that no major changes in evacuation plans and procedures will be required to support the addition of two new nuclear units at the VEGP site.

The revised EP is similar to the existing plan, but has been modified to incorporate the addition of two advanced Westinghouse AP1000 units. In support of the addition of new nuclear units at the VEGP site, SNC intends to add a separate facility that will contain the technical support center (TSC) for the site. Communication equipment and operational procedures will be very similar to those currently used at VEGP. Using a single TSC should help minimize the impact of the revised plan on State and county emergency planning. Changes to the plan include:

- Revision of staffing tables for the new nuclear units
- Addition of site specific Emergency Action Levels (EALs) for the new nuclear units
- Addition of two operational support centers, one each for the new nuclear units
- Addition of a new TSC to be used for all four units
- Revisions to reflect the new ETE study

In completing the ESP Application's EP, SNC has concluded that this process provides no additional requirements to the established EPs for evacuation or the implementation of other protective actions.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site, your concurrence that the proposed EP is practicable, and your continuing commitment to participation in any further development of emergency plans, including any required field demonstrations.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the ESP Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

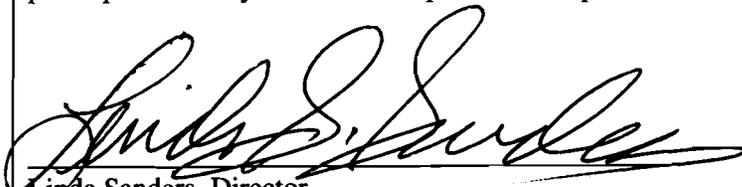
Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Allendale County EPA is aware of the SNC ESP proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Allendale County EPA concurs that the proposed emergency plan is practicable, and commits to continuing participation in any further development of the plans, including any required field demonstrations.



Linda Sanders, Director
Allendale County EPA

•
• AR-06-0776

Page 3 of 3

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

**Southern Nuclear
Operating Company, Inc.**
P. O. Box 1295
Birmingham, Alabama 35201-1295
Tel 205.992.5000



JUL 17 2006

AR-06-1555

Mr. Ed Petterson
Manager, SG Business Development
AREVA NP Inc.
155 Mill Ridge Road
Lynchburg, VA 24502

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. Mayer:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan. Southern Nuclear understands that commitment to support is bounded by existing Purchase Order SN040082 with Framatome (now Areva) and that Areva would support expanding the scope of this PO to cover the additional VEGP units described.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by July 21, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

AREVA NP Inc. (formerly Framatome ANP, Inc.) is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. AREVA NP, Inc. commits to continuing support in further development of emergency plans. Commitment to support is bounded by existing Purchase Order SN040082 with Framatome (now Areva). Areva supports expanding the scope of this PO to cover the additional VEGP units



Charlie Mayer, Product Manager JD Gale, VA Sh Services
Framatome ANP, Inc.

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

**Southern Nuclear
Operating Company, Inc.**
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0777

Mr. Roger Riley
Director, Barnwell County EMA
57 Wall Street
Barnwell, SC 29812

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. Riley:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit (ESP) Application's proposed four-unit Emergency Plan (EP).

SNC intends to submit an ESP application, pursuant to 10 CFR 52, "Early Site Permits, Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The ESP Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. Included in the application will be a Complete and Integrated Emergency Plan, as defined in 10 CFR 52 and under guidance contained in NUREG-0654 FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." 10 CFR 52 requires, in part, that the submitted EP include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revised EP for VEGP. The revised plan will consist of a base plan (applicable to all four nuclear units) and two annexes, one for each of the two plant designs (existing and AP1000). The base plan and each annex contain appendices that are applicable to the respective annex.

SNC is also in the process of conducting a new evacuation time estimate (ETE) study for the VEGP site. Preliminary results suggest that no major changes in evacuation plans and procedures will be required to support the addition of two new nuclear units at the VEGP site.

The revised EP is similar to the existing plan, but has been modified to incorporate the addition of two advanced Westinghouse AP1000 units. In support of the addition of new nuclear units at the VEGP site, SNC intends to add a separate facility that will contain the technical support center (TSC) for the site. Communication equipment and operational procedures will be very similar to those currently used at VEGP. Using a single TSC should help minimize the impact of the revised plan on State and county emergency planning. Changes to the plan include:

- Revision of staffing tables for the new nuclear units
- Addition of site specific Emergency Action Levels (EALs) for the new nuclear units
- Addition of two operational support centers, one each for the new nuclear units
- Addition of a new TSC to be used for all four units
- Revisions to reflect the new ETE study

In completing the ESP Application's EP, SNC has concluded that this process provides no additional requirements to the established EPs for evacuation or the implementation of other protective actions.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site, your concurrence that the proposed EP is practicable, and your continuing commitment to participation in any further development of emergency plans, including any required field demonstrations.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the ESP Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Barnwell County EMA is aware of the SNC ESP proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Barnwell County EMA concurs that the proposed emergency plan is practicable, and commits to continuing participation in any further development of the plans, including any required field demonstrations.



Roger Riley, Director
Barnwell County EMA

AR-06-0777

Page 3 of 3

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

**Southern Nuclear
Operating Company, Inc.**
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0778

Mr. J. E. Love
NOPS Project Manager
Bechtel Power Corporation
5275 Westview Drive
Frederick, MD 21703-8306

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. Love:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Bechtel Power Corporation is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Bechtel Power Corporation commits to continuing participation in any further development of emergency plans.



J. E. Love, NOPS Project Manager
Bechtel Power Corporation

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0779

Mr. Rusty Sanders
Director, Burke County EMA
P. O. Box 51-B
Waynesboro, GA 30830

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. Sanders:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit (ESP) Application's proposed four-unit Emergency Plan (EP).

SNC intends to submit an ESP Application, pursuant to 10 CFR 52, "Early Site Permits, Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The ESP Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. Included in the application will be a Complete and Integrated Emergency Plan, as defined in 10 CFR 52 and under guidance contained in NUREG-0654 FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." 10 CFR 52 requires, in part, that the submitted EP include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revised EP for VEGP. The revised plan will consist of a base plan (applicable to all four nuclear units) and two annexes, one for each of the two plant designs (existing and AP1000). The base plan and each annex contain appendices that are applicable to the respective annex.

SNC is also in the process of conducting a new evacuation time estimate (ETE) study for the VEGP site. Preliminary results suggest that no major changes in evacuation plans and procedures will be required to support the addition of two new nuclear units at the VEGP site.

The revised EP is similar to the existing plan, but has been modified to incorporate the addition of two advanced Westinghouse AP1000 units. In support of the addition of new nuclear units at the VEGP site, SNC intends to add a separate facility that will contain the technical support center (TSC) for the site. Communication equipment and operational procedures will be very similar to those currently used at VEGP. Using a single TSC should help minimize the impact of the revised plan on State and county emergency planning. Changes to the plan include:

- Revision of staffing tables for the new nuclear units
- Addition of site specific Emergency Action Levels (EALs) for the new nuclear units
- Addition of two operational support centers, one each for the new nuclear units
- Addition of a new TSC to be used for all four units
- Revisions to reflect the new ETE study

In completing the ESP Application's EP, SNC has concluded that this process provides no additional requirements to the established EPs for evacuation or the implementation of other protective actions.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP EP to include provisions for the addition of two new reactors at the VEGP site, your concurrence that the proposed EP is practicable, and your continuing commitment to participation in any further development of emergency plans, including any required field demonstrations.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the ESP Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Burke County EMA is aware of the SNC ESP proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Burke County EMA concurs that the proposed emergency plan is practicable, and commits to continuing participation in any further development of the plans, including any required field demonstrations.



Rusty Sanders, Director
Burke County EMA

AR-06-0779

Page 3 of 3

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

**Southern Nuclear
Operating Company, Inc.**
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



JUN 12 2006

AR-06-1263

Mr. Gregory T. Coursey
Sheriff
Burke County, Georgia
25 Highway 24 South
P.O. Box 702
Waynesboro, GA 30830

Re: **Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP**

Dear Sheriff Coursey:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by July 11, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,

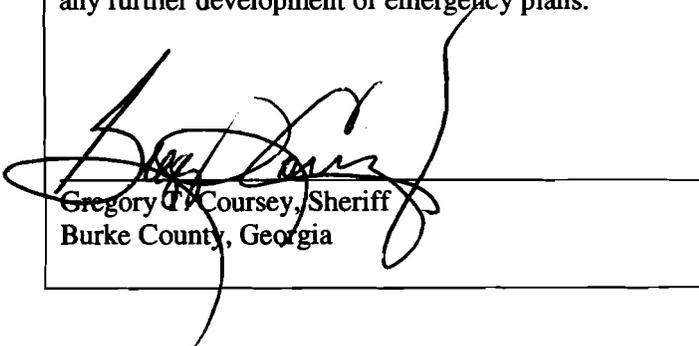


Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

office

The Burke County Sheriff's ~~Department~~ is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. The Burke County Sheriff's Department commits to continuing participation in any further development of emergency plans.



Gregory T. Coursey, Sheriff
Burke County, Georgia

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

AR-06-0788
Page 3 of 3

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



Energy to Serve Your WorldSM

April 17, 2006

AR-06-0780

Ms. Jennifer A Royal
Administrator, Burke Medical Center
351 Liberty Street
Waynesboro, GA 30830

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Ms. Royal:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of

emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

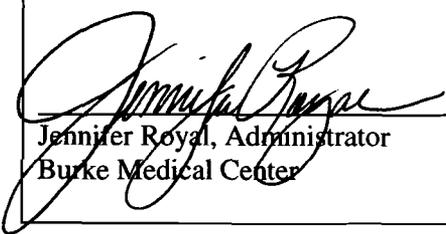
Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Burke Medical Center is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Burke Medical Center commits to continuing participation in any further development of emergency plans.



Jennifer Royal, Administrator
Burke Medical Center

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

**Southern Nuclear
Operating Company, Inc.**
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



AR-06-1264

Mr. Terry J. Guinn
President, CEO
Doctors Hospital
3651 Wheeler Road
Augusta, GA 30909

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. Guinn:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

RECEIVED JUN 13 2006

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by July 11, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Doctors Hospital is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Doctors Hospital commits to continuing participation in any further development of emergency plans.



~~Terry J. Guinn, President/CEO~~ Shayne George, CEO
Doctors Hospital

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0782

Dr. B. Lamar Murray
311 4th Street
Waynesboro, GA 30830

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Dr. Murray:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of

emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Dr. B. Lamar Murray is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Dr. Murray commits to continuing participation in any further development of emergency plans.



Dr. B. Lamar Murray

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0785

Mr. James Hardeman
Manager, Radiological Programs
Georgia Department of Natural Resources
4244 International Parkway, Suite 114
Atlanta, GA 30354

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. Hardeman:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit (ESP) Application's proposed four-unit Emergency Plan (EP).

SNC intends to submit an ESP application, pursuant to 10 CFR 52, "Early Site Permits, Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The ESP Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. Included in the application will be a Complete and Integrated Emergency Plan, as defined in 10 CFR 52 and under guidance contained in NUREG-0654 FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." 10 CFR Part 52 requires, in part, that the submitted EP include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revised EP for VEGP. The revised plan will consist of a base plan (applicable to all four nuclear units) and two annexes, one for each of the two plant designs (existing and AP1000). The base plan and each annex contain appendices that are applicable to the respective annex.

SNC is also in the process of conducting a new evacuation time estimate (ETE) study for the VEGP site. Preliminary results suggest that no major changes in evacuation plans and procedures will be required to support the addition of two new nuclear units at the VEGP site.

The revised EP is similar to the existing plan, but has been modified to incorporate the addition of two advanced Westinghouse AP1000 units. In support of the addition of new nuclear units at the VEGP site, SNC intends to add a separate facility that will contain the technical support center (TSC) for the site. Communication equipment and operational procedures will be very similar to

those currently used at VEGP. Using a single TSC should help minimize the impact of the revised plan on State and county emergency planning. Changes to the plan include:

- Revision of staffing tables for the new nuclear units
- Addition of site specific Emergency Action Levels (EALs) for the new nuclear units
- Addition of two operational support centers, one each for the new nuclear units
- Addition of a new TSC to be used for all four units
- Revisions to reflect the new ETE study

In completing the ESP Application's EP, SNC has concluded that this process provides no additional requirements to the established EPs for evacuation or the implementation of other protective actions.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site, your concurrence that the proposed EP is practicable, and your continuing commitment to participation in any further development of emergency plans, including any required field demonstrations.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the ESP Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Georgia Department of Natural Resources is aware of the SNC ESP proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Georgia Department of Natural Resources concurs that the proposed emergency plan is practicable, and commits to continuing participation in any further development of the plans, including any required field demonstrations.



James Hardeman, Manager, Radiological Programs
Georgia Department of Natural Resources

Environmental Radiation Program
Environmental Protection Division

AR-06-0785
Page 3 of 3

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

Georgia Department of Natural Resources

4220 International Parkway, Suite 100, Atlanta, Georgia 30354

Noel Holcomb, Commissioner
Carol A. Couch, Ph.D., Director
Environmental Protection Division

April 27, 2006

Mr. Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Dear Mr. Pierce :

This letter is in response to your letter to me of April 17, 2006, in which you requested concurrence on Southern Nuclear's efforts to revise the Vogtle Electric Generating Plant (VEGP) Emergency Plan to reflect the addition of two (2) new Westinghouse AP1000 reactors on the Vogtle site. In particular, you requested that I return a signed copy of the letter to you, with my signature indicating that this agency a) is aware of the proposed revision to the VEGP Emergency Plan to incorporate provisions for two (2) new AP1000 reactors at the Vogtle site, b) concurs that the revised VEGP Emergency Plan is practicable, and c) commits to continuing participation in the development of the VEGP emergency plan, including participation in field demonstrations.

We have been working for some time with Southern Nuclear emergency preparedness staff in this effort, primarily with Mr. Walt Lee, and (prior to his illness) Mr. Chris Boone. We are indeed familiar with Southern Nuclear's plans to submit an Early Site Permit (ESP) application to NRC in the near future, and we have been and remain supportive of Southern Nuclear's efforts to revise the VEGP Emergency Plan to reflect the additional two (2) planned units.

I am pleased to return the signed "Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP" in accordance with your request.

If I can be of additional assistance, please contact me by letter, by telephone at (404) 362-2675 or by electronic mail at Jim_Hardeman@dnr.state.ga.us

Sincerely,



James C. Hardeman, Jr., Manager
Environmental Radiation Program

cc: Walt Lee (electronic)

Attachment as stated

Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201

RECEIVED

APR 25 2006

GEMA



Energy to Serve Your WorldSM

April 17, 2006

AR-06-0788

Mr. Charles English
Acting Director, OHS GEMA
P. O. Box 18055
Atlanta, GA 30316-0055

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. English:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit (ESP) Application's proposed four-unit Emergency Plan (EP).

SNC intends to submit an ESP application, pursuant to 10 CFR 52, "Early Site Permits, Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The ESP Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. Included in the application will be a Complete and Integrated Emergency Plan, as defined in 10 CFR 52 and under guidance contained in NUREG-0654 FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." 10 CFR Part 52 requires, in part, that the submitted EP include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revised EP for VEGP. The revised plan will consist of a base plan (applicable to all four nuclear units) and two annexes, one for each of the two plant designs (existing and AP1000). The base plan and each annex contain appendices that are applicable to the respective annex.

SNC is also in the process of conducting a new evacuation time estimate (ETE) study for the VEGP site. Preliminary results suggest that no major changes in evacuation plans and procedures will be required to support the addition of two new nuclear units at the VEGP site.

The revised EP is similar to the existing plan, but has been modified to incorporate the addition of two advanced Westinghouse AP1000 units. In support of the addition of new nuclear units at the VEGP site, SNC intends to add a separate facility that will contain the technical support center (TSC) for the site. Communication equipment and operational procedures will be very similar to those currently used at VEGP. Using a single TSC should help minimize the impact of the revised plan on State and county emergency planning. Changes to the plan include:

- Revision of staffing tables for the new nuclear units
- Addition of site specific Emergency Action Levels (EALs) for the new nuclear units
- Addition of two operational support centers, one each for the new nuclear units
- Addition of a new TSC to be used for all four units
- Revisions to reflect the new ETE study

In completing the ESP Application's EP, SNC has concluded that this process provides no additional requirements to the established EPs for evacuation or the implementation of other protective actions.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site, your concurrence that the proposed EP is practicable, and your continuing commitment to participation in any further development of emergency plans, including any required field demonstrations.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the ESP Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

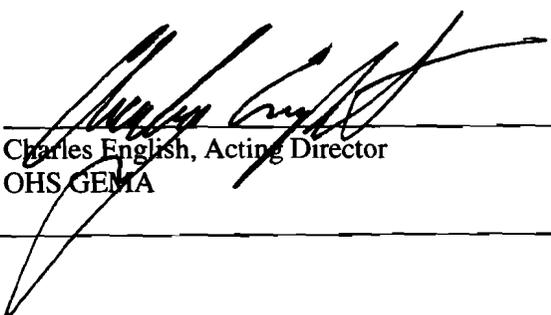
Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

OHS GEMA is aware of the SNC ESP proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. OHS GEMA concurs that the proposed emergency plan is practicable, and commits to continuing participation in any further development of emergency plans, including any required field demonstrations.



Charles English, Acting Director
OHS GEMA

AR-06-0788

Page 3 of 3

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



Energy to Serve Your WorldSM

May 02, 2006

AR-06-0781

Dr. Robert F. Mullins
Joseph M. Still Burn Centers Inc.
P. O. Box 3725
Augusta, GA 30914-3725

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Dr. Mullins:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of

emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Joseph M. Still Burn Centers Inc. is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Joseph M. Still Burn Centers Inc. commits to continuing participation in any further development of emergency plans.



Dr. Robert F. Mullins
Joseph M. Still Burn Centers Inc.

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

**Southern Nuclear
Operating Company, Inc.**
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0786

Dr. Joseph L. Jackson Sr.
Medical Specialists, Inc.
305 Jones Avenue
Waynesboro, GA 30830

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Dr. Jackson:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of

emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Medical Specialists, Inc. is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Medical Specialists, Inc. commits to continuing participation in any further development of emergency plans.



Dr. Joseph L. Jackson Sr.
Medical Specialists, Inc.

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201

AUGUSTA, GA



April 17, 2006

AR-06-0787

Mr. Dean P. Gulezian
Director, NWS Eastern Region
U. S. Department of Commerce
National Oceanic and Atmospheric Administration
630 Johnson Avenue
Bohemia, NY 11716

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. Gulezian:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



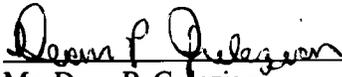
Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

National Oceanic and Atmospheric Administration is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. National Oceanic and Atmospheric Administration commits to continuing participation in any further development of emergency plans.

NATIONAL WEATHER SERVICE

NATIONAL
WEATHER
SERVICE



Mr. Dean P. Gulezian
Director, NWS Eastern Region
National Oceanic and Atmospheric Administration

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service – Eastern Region
Airport Corporate Center
630 Johnson Avenue
Bohemia, New York 11716

May 5, 2006

Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Dear Mr. Pierce:

Please find enclosed the concurrence you requested I sign regarding the National Oceanic and Atmospheric Administration/National Weather Service commitment to work with your company in further development of emergency plans for the Vogtle Plant. Please work directly with our Columbia, SC Weather Forecast Office on future emergency planning for the plant. Kimberly Campbell, Meteorologist-in-Charge, will be your point of contact. Ms. Campbell can be reached at 803-765-5501 or Kimberly.campbell@noaa.gov.

We look forward to assisting you with this project.

Sincerely,

A handwritten signature in black ink that reads "Dean P. Gulezian".

Dean P. Gulezian
Director, Eastern Region
National Weather Service

Enclosure

cc: Kimberly Campbell



Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0789

Dr. Roger E. Linnemann
President
Radiation Management Consultants, Inc.
3019 Darnell Road
Philadelphia, PA 19154-3201

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Dr. Linnemann:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Radiation Management Consultants, Inc. is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Radiation Management Consultants, Inc. commits to continuing participation in any further development of emergency plans.



Dr. Roger H. Linnemann, President
Radiation Management Consultants, Inc.

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0790

Ms. Sandra Threatt
South Carolina DHEC
2600 Bull Street
Columbia, SC 29201

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Ms. Threatt:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit (ESP) Application's proposed four-unit Emergency Plan (EP).

SNC intends to submit an ESP application, pursuant to 10 CFR 52, "Early Site Permits, Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The ESP Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. Included in the application will be a Complete and Integrated Emergency Plan, as defined in 10 CFR 52 and under guidance contained in NUREG-0654 FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." 10 CFR 52 requires, in part, that the submitted EP include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revised EP for VEGP. The revised plan will consist of a base plan (applicable to all four nuclear units) and two annexes, one for each of the two plant designs (existing and AP1000). The base plan and each annex contain appendices that are applicable to the respective annex.

SNC is also in the process of conducting a new evacuation time estimate (ETE) study for the VEGP site. Preliminary results suggest that no major changes in evacuation plans and procedures will be required to support the addition of two new nuclear units at the VEGP site.

The revised EP is similar to the existing plan, but has been modified to incorporate the addition of two advanced Westinghouse AP1000 units. In support of the addition of new nuclear units at the VEGP site, SNC intends to add a separate facility that will contain the technical support center (TSC) for the site. Communication equipment and operational procedures will be very similar to those currently used at VEGP. Using a single TSC should help minimize the impact of the revised plan on State and county emergency planning. Changes to the plan include:

RECEIVED

APR 26 2006

SC DHEC BUREAU OF
LAND & WASTE MANAGEMENT

- Revision of staffing tables for the new nuclear units
- Addition of site specific Emergency Action Levels (EALs) for the new nuclear units
- Addition of two operational support centers, one each for the new nuclear units
- Addition of a new TSC to be used for all four units
- Revisions to reflect the new ETE study

In completing the ESP Application's EP, SNC has concluded that this process provides no additional requirements to the established EPs for evacuation or the implementation of other protective actions.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site, your concurrence that the proposed EP is practicable, and your continuing commitment to participation in any further development of emergency plans, including any required field demonstrations.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the ESP Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

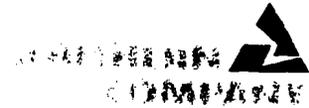
South Carolina DHEC is aware of the SNC ESP proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. South Carolina DHEC concurs that the proposed emergency plan is practicable, and commits to continuing participation in any further development of the plans, including any required field demonstrations.



~~Sandra Threatt~~
South Carolina DHEC

Chris Staton, Director
Division of Waste Assessment & Emergency Response

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05



April 17, 2006

AR-06-0791

Mr. Ron Osborne
Director, South Carolina EMD
1100 Fish Hatchery Road
West Columbia, SC 29172

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. Osborne:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit (ESP) Application's proposed four-unit Emergency Plan (EP).

SNC intends to submit an ESP application, pursuant to 10 CFR 52, "Early Site Permits, Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The ESP Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. Included in the application will be a Complete and Integrated Emergency Plan, as defined in 10 CFR 52 and under guidance contained in NUREG-0654 FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." 10 CFR 52 requires, in part, that the submitted EP include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revised EP for VEGP. The revised plan will consist of a base plan (applicable to all four nuclear units) and two annexes, one for each of the two plant designs (existing and AP1000). The base plan and each annex contain appendices that are applicable to the respective annex.

SNC is also in the process of conducting a new evacuation time estimate (ETE) study for the VEGP site. Preliminary results suggest that no major changes in evacuation plans and procedures will be required to support the addition of two new nuclear units at the VEGP site.

The revised EP is similar to the existing plan, but has been modified to incorporate the addition of two advanced Westinghouse AP1000 units. In support of the addition of new nuclear units at the VEGP site, SNC intends to add a separate facility that will contain the technical support center (TSC) for the site. Communication equipment and operational procedures will be very similar to those currently used at VEGP. Using a single TSC should help minimize the impact of the revised plan on State and county emergency planning. Changes to the plan include:

- Revision of staffing tables for the new nuclear units
- Addition of site specific Emergency Action Levels (EALs) for the new nuclear units
- Addition of two operational support centers, one each for the new nuclear units
- Addition of a new TSC to be used for all four units
- Revisions to reflect the new ETE study

In completing the ESP Application's EP, SNC has concluded that this process provides no additional requirements to the established EPs for evacuation or the implementation of other protective actions.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site, your concurrence that the proposed EP is practicable, and your continuing commitment to participation in any further development of emergency plans, including any required field demonstrations.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the ESP Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

South Carolina EMD is aware of the SNC ESP proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. South Carolina EMD concurs that the proposed emergency plan is practicable, and commits to continuing participation in any further development of the plans, including any required field demonstrations.



Ron Osborne, Director
South Carolina EMD

AR-06-0791
Page 3 of 3

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

**Southern Nuclear
Operating Company, Inc.**
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0792

Ms. Cindy Brizes
U. S. Department of Energy
P. O. Box A
Aiken, SC 29802

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Ms. Brizes:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit (ESP) Application's proposed four-unit Emergency Plan (EP).

SNC intends to submit an ESP application, pursuant to 10 CFR 52, "Early Site Permits, Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The ESP Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. Included in the application will be a Complete and Integrated Emergency Plan, as defined in 10 CFR 52 and under guidance contained in NUREG-0654 FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." 10 CFR 52 requires, in part, that the submitted EP include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revised EP for VEGP. The revised plan will consist of a base plan (applicable to all four nuclear units) and two annexes, one for each of the two plant designs (existing and AP1000). The base plan and each annex contain appendices that are applicable to the respective annex.

SNC is also in the process of conducting a new evacuation time estimate (ETE) study for the VEGP site. Preliminary results suggest that no major changes in evacuation plans and procedures will be required to support the addition of two new nuclear units at the VEGP site.

The revised EP is similar to the existing plan, but has been modified to incorporate the addition of two advanced Westinghouse AP1000 units. In support of the addition of new nuclear units at the VEGP site, SNC intends to add a separate facility that will contain the technical support center (TSC) for the site. Communication equipment and operational procedures will be very similar to those currently used at VEGP. Using a single TSC should help minimize the impact of the revised plan on State and county emergency planning. Changes to the plan include:

- Revision of staffing tables for the new nuclear units
- Addition of site specific Emergency Action Levels (EALs) for the new nuclear units
- Addition of two operational support centers, one each for the new nuclear units
- Addition of a new TSC to be used for all four units
- Revisions to reflect the new ETE study

In completing the ESP Application's EP, SNC has concluded that this process provides no additional requirements to the established EPs for evacuation or the implementation of other protective actions.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site, your concurrence that the proposed EP is practicable, and your continuing commitment to participation in any further development of emergency plans, including any required field demonstrations.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the ESP Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

U. S. Department of Energy (DOE) is aware of the SNC ESP proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. DOE concurs that the proposed emergency plan is practicable, and commits to continuing participation in any further development of the plans, including any required field demonstrations.



Cindy Brizes
U. S. Department of Energy

AR-06-0792

Page 3 of 3

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

**Southern Nuclear
Operating Company, Inc.**
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0793

Mr. E. C. Arnold
Manager, Southern Nuclear Projects
Westinghouse Electric Company
Nuclear Services
P. O. Box 355
Pittsburgh, PA 15230-0355

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Mr. Arnold:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit Application's proposed four-unit Emergency Plan.

SNC intends to submit an Early Site Permit application, pursuant to 10 CFR 52, "Early Site Permits; Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The Early Site Permit Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. 10 CFR Part 52 requires, in part, that the Emergency Plan submitted with the Early Site Permit application include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revision to the Emergency Plan for VEGP. In completing the Emergency Plan revision, SNC has concluded that this process provides no additional requirements to the established emergency plans and commitments.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new nuclear reactors at the VEGP site and your continuing commitment to participation in any further development of emergency plans.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the Early Site Permit Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

Respectfully,



Charles R. Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

Westinghouse Electric Company is aware of the SNC Early Site Permit proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. Westinghouse Electric Company commits to continuing participation in any further development of emergency plans.



E. C. Arnold, Manager, Southern Nuclear Projects
Westinghouse Electric Company

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05



Westinghouse Electric Company
Nuclear Services
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

GP-17923
May 4, 2006

Mr. D. E. Grissette
Vice President, Nuclear Vogtle Project
Southern Nuclear Operating Company, Inc.
P. O. Box 1295
Birmingham, Alabama 35201

Ref: AR-06-0793

ATTN: Charles Pierce

SOUTHERN NUCLEAR OPERATING COMPANY
VOGTLE ELECTRIC GENERATING PLANT UNITS 1 AND 2
Transmittal of Signed Copy of Proposed Four-Unit Emergency Plan

Dear Mr. Grissette:

Enclosed is a signed copy of the reference letter, indicating Westinghouse concurrence to support the Vogtle proposed four unit Emergency Plan as requested by the reference. The original of this enclosure has been mailed to Walter Lee at Southern Nuclear.

Should you have any questions or comments on this please contact me at 412-374-3365.

Very truly yours,

A handwritten signature in cursive script that reads 'E C Arnold'.

E. C. Arnold, Manager
Southern Nuclear Projects

/jag

Encl.

Mr. Grissette

GP-17923
May 4, 2006

cc: R. H. Parker (SNC Document Mgmt.)
J. G. Aufdenkampe
R. S. Cowman
T. E. Tynan
S. C. Swanson
C. R. Pierce
W. H. Lee *
J. L. Tain
P. D. Rushton

* w/att.

Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201



April 17, 2006

AR-06-0794

Ms. Debra Foutch
WSRC Emergency Management
Building 703-43A, Room 34-6
Aiken, SC 29808

Re: Vogtle Electric Generating Plant Early Site Permit
Request for Commitment to Support a Future Four-Unit Emergency Plan for VEGP

Dear Ms. Foutch:

Southern Nuclear Operating Company (SNC) is requesting your commitment in support of the Vogtle Electric Generating Plant (VEGP) Early Site Permit (ESP) Application's proposed four-unit Emergency Plan (EP).

SNC intends to submit an ESP application, pursuant to 10 CFR 52, "Early Site Permits, Standard Design Certification, and Combined Licenses for Nuclear Power Plants," in August 2006. The ESP Application evaluates the addition of two Westinghouse AP1000 advanced reactor plants on the VEGP property. Included in the application will be a Complete and Integrated Emergency Plan, as defined in 10 CFR 52 and under guidance contained in NUREG-0654 FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." 10 CFR 52 requires, in part, that the submitted EP include a description of contacts and arrangements made with local and State agencies with emergency planning responsibilities. Contacts are being accomplished with this written correspondence; arrangements are the plans and commitments already in place to protect public health and safety in case of a nuclear accident.

SNC has prepared a revised EP for VEGP. The revised plan will consist of a base plan (applicable to all four nuclear units) and two annexes, one for each of the two plant designs (existing and AP1000). The base plan and each annex contain appendices that are applicable to the respective annex.

SNC is also in the process of conducting a new evacuation time estimate (ETE) study for the VEGP site. Preliminary results suggest that no major changes in evacuation plans and procedures will be required to support the addition of two new nuclear units at the VEGP site.

The revised EP is similar to the existing plan, but has been modified to incorporate the addition of two advanced Westinghouse AP1000 units. In support of the addition of new nuclear units at the VEGP site, SNC intends to add a separate facility that will contain the technical support center (TSC) for the site. Communication equipment and operational procedures will be very similar to those currently used at VEGP. Using a single TSC should help minimize the impact of the revised plan on State and county emergency planning. Changes to the plan include:

- Revision of staffing tables for the new nuclear units
- Addition of site specific Emergency Action Levels (EALs) for the new nuclear units
- Addition of two operational support centers, one each for the new nuclear units
- Addition of a new TSC to be used for all four units
- Revisions to reflect the new ETE study

In completing the ESP Application's EP, SNC has concluded that this process provides no additional requirements to the established EPs for evacuation or the implementation of other protective actions.

Enclosed are two original copies of this letter. Please sign both, retain one for your files and return one to me. Your signature will attest to your awareness of SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site, your concurrence that the proposed EP is practicable, and your continuing commitment to participation in any further development of emergency plans, including any required field demonstrations.

SNC will continue to support your emergency planning efforts. Please direct comments and questions to Walter H. Lee, SNC's Emergency Planning Supervisor, at (205) 992-5627.

To support our schedule for the ESP Application, SNC would appreciate receiving your written concurrence by May 15, 2006. We thank you again for your continued support of emergency planning at the VEGP site, and we look forward to working with you and your staff in the future.

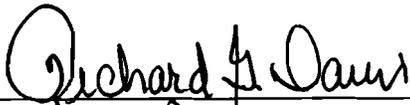
Respectfully,



Charles R Pierce
Early Site Permit Manager
Southern Nuclear Operating Company
40 Inverness Center Parkway
Birmingham, AL 35242

Agency Concurrence:

WSRC Emergency Management is aware of the SNC ESP proposed revision to the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site. WSRC Emergency Management concurs that the proposed EP is practicable, and commits to continuing participation in any further development of the plans, including any required field demonstrations.



~~Debra Fouch~~ RICHARD G. DAVIS
WSRC Emergency Management

cc: Document Services RTYPE: AR01
D. P. Burford
J. T. Davis
W. H. Lee
AR File No.: AR.01.01.05

Charles -

I had my
manager sign
since he is the
Manager for
Emergency Management
and has the
authority to make
this commitment.

Det Foutch

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13.6 Industrial Security

The footprint area for the two new Westinghouse AP1000 units is west of, and adjacent to, the existing units on the VEGP site. There will be a protected area encompassing the new units. Like the existing units, physical protection of the new units will be based on controlling access to the VEGP site and the new units (VEGP Units 3 and 4), screening operating personnel, monitoring security equipment, designing and arranging station features, and obtaining assistance from local law enforcement personnel. Once construction reaches conclusion on the first new unit, a Vehicle Barrier System will be implemented at the appropriate stand-off distance.

The characteristics of the VEGP Units 3 and 4 footprint are such that implementation of the applicable requirements of 10 CFR 73.55, *Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage*, and NRC Regulatory Guide 4.7, *General Site Suitability Criteria for Nuclear Power Stations*, as well as the post-9/11 NRC Orders, can be met. The VEGP site is sufficiently large to provide adequate distances between structures and the probable location of the security boundaries.

The VEGP site is bordered on the east by the Savannah River. For the existing units, SNC has an approved security program in place in compliance with the post-9/11 NRC Orders and in accordance with NEI 03-12, *Template for Security Plan and Training and Qualification Plan*. In the event that new units are added to the VEGP site, those requirements would continue to be met and would be extended to include the new units.

The final design of the VEGP Units 3 and 4 power block and supporting buildings would utilize design features as appropriate to assure that the existing security spatial distances outlined in the regulations above, as well as the Design Basis Threat requirements, are adequate. In accordance with 10 CFR 100.21(f), SNC will ensure that site characteristics are adequate to provide security plans and measures. The COL application would address the specific design features to assure site security as well as include the design of security monitoring equipment and methods to screen station operating personnel. A security assessment will be conducted as part of the COL application and will address all aspects of security for the new units.

There are no security hazards in the vicinity of the VEGP site. The VEGP site is located in Burke County in the State of Georgia. Written letters of agreement with the Burke County Sheriff and the Georgia State Patrol are currently in place to establish for law enforcement response in the event of a VEGP security (or radiological) emergency (**Burke County Sheriff 2004; Georgia State Patrol 2004**). Burke County has mutual aid agreements with surrounding counties in place, if necessary, to provide support during VEGP emergencies.

Section 13.6 References

(Burke County Sheriff 2004) Burke County Sheriff's Office letter of agreement for law enforcement support for VEGP security and radiological emergencies, dated April 15, 2004.

(Georgia State Patrol 2004) Georgia State Patrol letter of agreement for law enforcement support for VEGP security and radiological emergencies, dated April 22, 2004.

13.7 Fitness for Duty

A Fitness for Duty (FFD) program is implemented and maintained to meet the requirements contained in 10 CFR Part 26. The FFD program complies with the FFD requirements contained in 10 CFR Part 26 at the new plant construction site during both the construction and operating phases of the nuclear unit. This program will be implemented at the new plant construction site prior to construction of safety- or security-related structures, systems, and components. A description of the FFD program that will be followed during construction of VEGP Units 3 & 4 is contained in Appendix 13.7A.

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Appendix 13.7A
Vogtle Electric Generating Plant Units 3 and 4
Fitness for Duty Program
During
Plant Construction

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Vogtle Electric Generating Plant Units 3 and 4

Fitness For Duty Program

During Plant Construction

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1 INTRODUCTION

This document provides Vogtle Electric Generating Plant (VEGP) Units 3 and 4 construction site entities a process to authorize and maintain a worker's status in the construction site entity Fitness for Duty (FFD) Program in order to allow an individual to work on a construction site. It is acknowledged that entities implementing this guidance may be Southern Nuclear Operating Company (SNC), contractor/vendors (C/V), or other entities authorized by the NRC and shall hereafter be referred to as construction site entities.

2 PURPOSE AND SCOPE

This document is applicable to the VEGP Units 3 and 4 construction site entity and applies only to persons who will construct, at the location where the nuclear plant will be constructed and operated, safety and security related structures, systems, and components (SSCs) that are required to be described in the construction entities site safety analysis report or physical security plans. This document ensures consistent application of regulations and is intended to serve as the FFD Program description for VEGP Units 3 and 4 construction site as required in 10 CFR 52.

The FFD program described herein applies only to construction activities that are performed at the location within the footprint of the new power reactor as well as the nearby areas where safety- and security-related SSCs will be installed and operate when the plant begins operation. Construction activities include any fabrication, erection, integration, or testing of safety- or security-related SSCs. Construction activities conducted at facilities outside this prescribed area such as another location, city, state, or outside of the U.S. would not be subject to the program described herein.

Management and oversight personnel, as listed below, shall be subject to the full VEGP operating plant FFD program that meets the requirements of 10 CFR 26.

- security personnel required by the NRC
- those who perform quality assurance/quality control/quality verification activities related to safety- or security-related construction activities
- individuals directly involved in witnessing or determining inspections, tests, and analyses (ITAAC) certification
- designated individuals to monitor the fitness of individuals
- individuals responsible for oversight and implementation of the licensee fitness-for-duty and access authorization programs
- second-level and higher supervisors and managers

3 RESPONSIBILITY

Each construction site entity is responsible to ensure that the applicable elements of 10 CFR 26 are implemented at their construction sites. In ensuring this is completed, a construction

VEGP Units 3 and 4 FFD Program During Plant Construction

site entity may rely on program elements completed by another construction site entity program. Once it has been determined that an individual has provided a negative drug and alcohol test, the individual may be eligible to gain access to the construction facility. A construction site entity can maintain an individual in this status as long as the person remains in the construction site entity random fitness for duty testing program for new plant construction.

Each construction site entity approving a C/V program shall ensure the latest revision of this document has been provided to each of its C/Vs for use and require that the criteria herein be met. Audits are used to assure that licensee and licensee-approved C/V programs supporting the fitness for duty program for the construction site meet regulatory requirements. Construction site entities are responsible for ensuring that program deficiencies are corrected.

4 DEFINITIONS

NOTE: These definitions expand upon but do not replace those found in regulatory documents.

Construction Site – The defined physical location within the owner-controlled area (OCA) where the nuclear plant's security and safety related systems, structures, and components (SSCs) will be constructed and operated

Contractor/Vendors – Any company or individual not employed by the construction site entity that is providing work or services either by contract, purchase order, oral agreement, or other arrangement.

Conviction - A finding of guilt (including a plea of nolo contendere), or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the federal or state criminal drug and/or alcohol statutes.

Criminal Drug Statute - A federal or non-federal, criminal statute involving the manufacture, distribution, dispensing, possession, or use of any controlled substance.

First Level Supervisors – The first level supervisory position that does not perform manual work.

HHS-certified laboratory - A laboratory that is certified to perform urine drug testing under the Department of Health and Human Services Mandatory Guidelines for Federal Workplace Drug Testing Programs (the HHS Guidelines), which were published in the Federal Register on April 11, 1988 (53 FR 11970), and as amended, June 9, 1994 (59 FR 29908), November 13, 1998 (63 FR 63483), and April 13, 2004 (69 FR 19643).

Illegal Drugs - Any drug that is included in Schedules I to V of Section 202 of the Controlled Substances Act [21 U.S.C 812], but not when used pursuant to a valid prescription or when otherwise authorized by law.

Legal Action - A formal action taken by a law enforcement authority or court of law, including an arrest, an indictment, the filing of charges, a conviction, or the mandated implementation of a plan for substance abuse treatment in order to avoid a permanent record of an arrest or conviction, in response to any of the following activities:

- The use, sale, or possession of illegal drugs;
- The abuse of legal drugs or alcohol; or
- The refusal to take a drug or alcohol test.

Under the Influence – A determination that an individual is affected by drugs or alcohol in any detectable manner. The symptoms of influence include but are not confined to those consistent with aberrant behavior or obvious impairment of physical or mental abilities such as slurred speech or difficulty in maintaining balance.

Management and Oversight - The following position classifications are defined as management and oversight personnel:

- security personnel required by the NRC
- those who perform quality assurance/quality control/quality verification activities related to safety- or security-related construction activities
- individuals directly involved in witnessing or determining inspections, tests, and analyses (ITAAC) certification
- designated individuals to monitor the fitness of individuals
- individuals responsible for oversight and implementation of the licensee fitness-for-duty and access authorization programs
- second-level and higher supervisors and managers

MRO (Medical Review Officer) – A licensed physician who is responsible for receiving laboratory results generated by a 10 CFR 26 drug testing program and who has the appropriate medical training to properly interpret and evaluate an individual's drug and validity test results together with his or her medical history and any other relevant biomedical information.

SSC (Systems, Structures or Components)

- *Safety-related SSCs* mean those structures, systems, and components that are relied on to remain functional during and following design basis events to ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, or the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in 10 CFR 50.34(a)(1).
- *Security-related SSCs* mean those structures, systems, and components that the licensee will rely on to implement the licensee's physical security and safeguards contingency plans that either are required under 10 CFR 73 if the licensee is a construction permit applicant or holder as described in 10 CFR 26.3(c), or are included

in the licensee's application if the licensee is a combined license applicant or holder as described in 10 CFR 26.3(c).

5 DRUG AND ALCOHOL POLICY & PROCEDURES

Drug and Alcohol Policy

Each construction site entity who implements this FFD program shall ensure that a clear, concise, written FFD policy statement is provided to individuals who are subject to the program. The policy statement must be written in sufficient detail to provide affected individuals with information on what is expected of them and what consequences may result from a lack of adherence to the policy. At a minimum, the written policy statement must:

- Describe the consequences of the following actions:
 - i. The use, sale, or possession of illegal drugs on or off site;
 - ii. The abuse of legal drugs and alcohol;
- Describe the requirement that individuals who are notified that they have been selected for random testing must report to the collection site within the time period specified by the licensee or other entity;
- Describe the actions that constitute a refusal to provide a specimen for testing, the consequences of a refusal to test, as well as the consequences of subverting or attempting to subvert the testing process;
- Prohibit the consumption of alcohol, at a minimum
 - i. Within an abstinence period of five (5) hours preceding the individual's arrival at the licensee's or other entity's facility, and
 - ii. During the period of any tour of duty;
- Convey that abstinence from alcohol for the five (5) hours preceding any scheduled tour of duty is considered to be a minimum that is necessary, but may not be sufficient, to ensure that the individual is fit for duty;
- Describe the consequences of violating the policy;
- Describe the individual's responsibility to report legal actions,
- Describe the responsibilities of managers and supervisors to report FFD concerns;
- Describe the individual's responsibility to report FFD concerns.

Procedures

Construction site entities shall develop, implement, and maintain written procedures that address the following topics:

The methods and techniques to be used in testing for drugs and alcohol, including procedures for protecting the privacy of an individual who provides a specimen, procedures for protecting the integrity of the specimen, and procedures used to ensure that the test results are valid and attributable to the correct individual;

- The immediate and follow-up actions that will be taken, and the procedures to be used, in those cases in which individuals who are subject to the FFD program are determined to have:
 - i. Been involved in the use, sale, or possession of illegal drugs;
 - ii. Consumed alcohol to excess before or while constructing safety- or security-related SSCs, as determined by a test that accurately measures breath alcohol content (BAC);
 - iii. Attempted to subvert the testing process by adulterating or diluting specimens (in vivo or in vitro), substituting specimens, or by any other means;
 - iv. Refused to provide a specimen for analysis; or
 - v. Had legal action taken relating to drug or alcohol use; and
- The process to be followed if an individual's behavior or condition raises a concern regarding the possible use, sale, or possession of illegal drugs on or off site; the possible use or possession of alcohol while constructing safety- or security-related SSCs; or impairment from any cause which in any way could adversely affect the individual's ability to safely and competently perform his or her duties.

Training

All individuals will receive FFD training as new employees and prior to initial granting of unescorted access to vital and protected areas of the plant. Refresher training will be conducted at nominal 12-month intervals. All individuals will be trained in behavioral observation techniques per NRC requirements to be able to recognize behavior adverse to the safe operation and security of the facility, and to detect and report aberrant behavior that might reflect negatively on an individual's trustworthiness or reliability. In addition, all badged individuals shall be trained as escorts per NRC requirements.

Managers and supervisors will be trained regarding their role and responsibility in implementing the program. Training will include the role of the medical and Employee Assistance Program staff, techniques for recognizing drugs and indication of the use, sale, or possession of drugs, behavioral observation techniques, and procedures for initiating corrective action including referrals for mandatory Fitness For Duty evaluations. Managers and Supervisors will be trained regarding their role in documentation of behavioral observation. New supervisors will be trained within 3

months after initial supervisory assignment. Refresher training will be conducted at nominal 12-month intervals.

Escorts will be trained in techniques for recognizing drugs and indications of the use, sale, or possession of drugs; techniques for recognizing aberrant behavior; and the procedure for reporting problems to supervisory personnel. Escorts will be trained prior to their assignment and refresher training will be conducted at nominal 12-month intervals.

5.1 USE, POSSESSION, OR SALE OF DRUGS OR ALCOHOL

5.1.1 Illegal Drugs

Using, selling, manufacturing, purchasing, transferring, dispensing, distributing, or possessing illegal drugs by any individual while on the construction site is strictly prohibited.

5.1.2 Alcohol

Using, selling, purchasing, transferring, dispensing, distributing, or possessing alcohol by an individual subject to this program while on a construction site is strictly prohibited.

Consumption of alcohol onsite or within five (5) hours of performing construction work to safety-related or security-related SSCs is strictly prohibited. Abstinence from alcohol for the five (5) hours preceding any scheduled work is considered to be the minimum that is necessary, but may not be sufficient, to ensure and individual is fit for duty.

5.1.3 Reporting of Legal Actions

An individual engaged in the performance of construction site entity work at the construction site is required to notify the construction site entity of any legal action involving drugs or alcohol as required by the construction site entity policies.

5.2 DISCIPLINARY ACTIONS

Individuals requiring access to the construction site shall sign a Consent Form (As an example, see Attachment A.), prior to gaining access, attesting to their understanding of the consequences for a violation of this policy.

The construction site entity shall establish sanctions for FFD policy violations that, at a minimum, prohibit the individuals from being assigned to construct safety- or security-related SSCs unless or until the licensee or other entity determines that the individual's condition or behavior does not pose a potential risk to public health and safety or the common defense and security.

5.3 DRUG AND ALCOHOL TESTING

The construction site entity shall employ urinalysis, breath tests or other methods approved by 10 CFR 26 to determine fitness for duty, including but not limited to pre-access, for-cause and random testing. An individual must consent to submit to such tests as a condition of access to the construction site entity and refusal to consent shall result in denial of access to the construction site.

Testing of urine specimens for drugs and validity, except validity screening and initial drug and validity tests that may be performed by a construction site entity testing facilities, must be performed in a laboratory that is certified by HHS for that purpose, consistent with its standards and procedures for certification. Any initial drug test performed by a construction site entity subject to this subpart must use an immunoassay that meets the requirements of the Food and Drug Administration for commercial distribution. Urine specimens that yield positive, adulterated, substituted, or invalid initial validity or drug test results must be subject to confirmatory testing by the HHS-certified laboratory, except for invalid specimens that cannot be tested. Other specimens that yield positive initial drug test results must be subject to confirmatory testing by a laboratory that meets stringent quality control requirements that are comparable to those required for certification by the HHS.

Testing for alcohol will be conducted through breath measurement. The initial test for alcohol performed at the collection site shall be conducted by a breath measurement device which meets the requirements of the National Highway Traffic Safety Administration (NHTSA) standards (49 FR 48855) and to any applicable State of Georgia statutes or by using oral fluids (e.g., saliva) using acceptable alcohol screening devices (ASDs) that are listed on the most recent version of NHTSA’s Conforming Products List (CPL) for ASDs.

The following initial cutoff levels shall be used when testing specimens to determine whether they are negative for the indicated substances:

Initial Test Cutoff Levels (ng/ml)

Substance ^(a)	Cutoff level (ng/ml)
Marijuana metabolites	>50
Cocaine metabolites	>300
Opiate metabolites	>2000 ^(c)
Phencyclidine	>25
Amphetamines	>1000
Alcohol ^(b)	>0.04% BAC

Notes:

- a. Construction site entities may specify more stringent cutoff levels as well other illegal drugs as determined. Results shall be reported for both levels in such cases.
- b. Applicable only for breath measurement devices
- c. 25 ng/ml is immunoassay specific for free morphine.

Confirmation testing for alcohol must be conducted using a breath measurement device.

Confirmation testing for drugs or drug metabolites must be conducted by a HHS-certified laboratory.

Confirmatory test cut-off levels

Drug	Cut-off level (ng/ml)
Marijuana metabolite	>15 ^(b)
Cocaine metabolite	>150 ^(c)
Opiates: Morphine	>2000
Opiates: Codeine	>2000
Opiates: 6-acetylmorphine	>10 ^(d)
Phencyclidine	>25
Amphetamines: Amphetamine	>500
Amphetamines: Methamphetamine	>500 ^(e)
Alcohol ^(a)	>0.04% BAC

Notes:

- a. Applicable only for breath measurement devices
- b. Delta-9-tetrahydrocannabinol-9-carboxylic acid.
- c. Benzoylcegonine
- d. Test for 6-AM when the confirmatory test shows a morphine concentration > 2,000ng/ml
- e. Specimen must also contain amphetamine at a concentration ≥ 200 ng/ml

Testing for additional substances may be ordered on individuals at the direction of the Medical Review Officer for follow-up and for-cause FFD tests. Appropriate cut-off limits shall be established by construction site entities per the protocols of the certified Department of Health and Human Services laboratory. Any individual subject to testing of additional substances at the direction of the MRO shall be informed of this requirement. In addition, construction site entities may specify more stringent cut-off levels. Results shall be reported for both levels in such cases.

On-site Testing Facilities

If used, any construction site entity testing facility shall have an individual to be responsible for day to-day operations and to supervise the testing technicians. The number of individuals required for the facility will be based on the needs of construction staffing and observation. This individual(s) shall have at least a bachelor's degree in the chemical or biological sciences or medical technology or equivalent. He or she shall have training and experience in the theory and practice of the procedures used in the licensee testing facility, resulting in his or her thorough understanding of quality control practices and

procedures; the review, interpretation, and reporting of test results; and proper remedial actions to be taken in response to detecting aberrant test or quality control results.

Collector qualifications and responsibilities:

The construction site entity shall ensure the following:

- Urine collector qualifications: Urine collectors shall be knowledgeable of the requirements of the construction site FFD policy and procedures and shall keep current on any changes to urine collection procedures. Collectors shall receive qualification training that meets the requirements of this paragraph and demonstrate proficiency in applying the requirements of this paragraph before serving as a collector. At a minimum, qualification training must provide instruction on the following subjects:
 - i. All steps necessary to complete a collection correctly and the proper completion and transmission of the custody-and-control form;
 - ii. Methods to address “problem” collections, including, but not limited to, collections involving “shy bladder” and attempts to tamper with a specimen;
 - iii. How to correct problems in collections; and
 - iv. The collector’s responsibility for maintaining the integrity of the specimen collection and transfer process, carefully ensuring the modesty and privacy of the donor, and avoiding any conduct or remarks that might be construed as accusatorial or otherwise offensive or inappropriate.

- Alcohol collector qualifications: Alcohol collectors shall be knowledgeable of the requirements of the construction site FFD policy and procedures and shall keep current on any changes to alcohol collection procedures. Collectors shall receive qualification training meeting the requirements of this paragraph and demonstrate proficiency in applying the requirements of this paragraph before serving as a collector. At a minimum, qualification training must provide instruction on the following subjects:
 - i. The alcohol testing requirements of this part;
 - ii. Operation of the particular alcohol testing device(s) [i.e., the the alcohol screening devices (ASDs) or Evidentiary Breath Tests (EBTs)] to be used, consistent with the most recent version of the manufacturers’ instructions;
 - iii. Methods to address “problem” collections, including, but not limited to, collections involving “shy lung” and attempts to tamper with a specimen;
 - iv. How to correct problems in collections; and
 - v. The collector’s responsibility for maintaining the integrity of the specimen collection process, carefully ensuring the privacy of the donor, and avoiding any conduct or remarks that might be construed as accusatorial or otherwise offensive or inappropriate.

Alternative Collection and Testing

Construction site entities who are subject to this procedure may rely on a local hospital or other organization that meets the requirements of 49 CFR 40, “Procedures for Department of Transportation Workplace Drug and Alcohol Testing Programs” (65-FR-41944; August 9, 2001) to collect and test specimens for the FFD program listed herein.

6 DRUG AND ALCOHOL TESTING PROCEDURE

6.1 CONSENT FORM

Individuals are required to sign the Consent Form (Attachment A) as a condition of access to the construction site. Included in the consent form is the agreement to submit to periodic unannounced (random) testing during the course of their access to the construction site. Refusal to cooperate with or submit to such testing shall result in immediate termination of access to the construction site.

6.2 TESTING PROCEDURES

6.2.1 Pre-Access

Each individual scheduled to work on SSCs shall have a drug and alcohol test, with negative results, within 30 days prior to gaining access to the construction site. Individuals who test positive will be denied access to the construction site.

6.2.2 For Cause

Post Accident

As soon as practical after an event involving a human error that was committed by an individual subject to this plan where the human error may have caused or contributed to the accident. The construction site entity shall test the individual(s) who committed the error(s), and need not test individuals who were affected by the event but whose actions likely did not cause or contribute to the event. Individuals involved in a work-related accident shall be required to submit to a drug and alcohol test at a designated testing facility.

In all cases treatment of an individual’s illness or injury takes precedence over drug and alcohol testing.

For purposes of this policy, an “accident” is defined as the following:

- Work-related injury/illness – An injury or illness, resulting in an OSHA Recordable Incident. –

VEGP Units 3 and 4 FFD Program During Plant Construction

- Work-related motor vehicle accident -- A significant on-site accident that occurs while an individual is in a vehicle performing construction site entity business, as defined the construction entity's procedures.
- Significant property damage -- Damage, during construction, to any safety- or security-related SSC in excess of \$100,000.

Occupational Injury and Illness Resulting in an OSHA Recordable Incident

A significant illness or personal injury to the individual to be tested or another individual, which within four (4) hours after the event is recordable under the Department of Labor standards contained in 29 CFR 1904.7, and subsequent amendments thereto, and results in death, days away from work, restricted work, transfer to another job, medical treatment beyond first aid, loss of consciousness, or other significant illness or injury as diagnosed by a physician or other licensed health care professional, even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness.

- The injured individual must notify their onsite supervisor of the injury or illness if able.
- The construction site entity management shall make arrangements for the individual to submit for a drug and alcohol test at a designated testing facility.
- The results of the drug and alcohol test shall be submitted to the construction site entity management.

Significant Property Damage

- The supervisor shall notify the respective construction site entity management that an incident has occurred that resulted in damage to safety- or security-related SSC in excess of \$100,000.
- Construction site entity management shall make arrangements for the individuals involved in the damage to submit for a drug and alcohol test at a designated testing facility.
- The results of the drug and alcohol test shall be submitted to the construction site entity management.

Observed Behavior

- If observed behavior or a physical condition creates a reasonable suspicion of possible substance abuse, the construction site entity shall perform drug and alcohol testing. The results must be negative before the individual returns to performing on SSCs.
- If credible information is received that an individual is engaging in substance abuse, the construction site entity shall perform drug and alcohol testing.

- If the physical condition is the smell of alcohol with no other behavioral or physical indications of impairment, then only an alcohol test is required.
- For other indications of possible impairment that do not create a reasonable suspicion of substance abuse, the construction site entity may permit the individual to return to work only after the impairing or questionable conditions are resolved and the MRO has determined that the individual is fit to safely and competently perform his or her duties.

6.2.3 Random Drug and Alcohol Testing

Random Selection and Frequency

Random testing shall be accomplished for the construction site at the rate of 50 % of the population that is subject to FFD testing for the calendar year. Testing will be conducted during all types of work periods, including weekends and holidays at various times of the day throughout the calendar year. If an individual is selected and is not at work, the individual is not required to report to work for the purposes of random testing. Test selection is statistically random and unannounced, so that all individuals in the population subject to testing have an equal probability of being selected and tested. Testing will be administered in a manner that provides reasonable assurance that individuals are unable to predict the time periods during which specimens will be collected.

Random testing for individuals concurrently authorized Unescorted Access to an operating power reactor shall be deemed adequate to maintain access to a construction site without being subject to additional random testing.

Random selection includes all individuals in the FFD testing pool, for the construction site, on the date the random list is generated. Individuals to be tested (hereinafter the "subject") shall be chosen by use of a method which randomly selects the number of subjects from among the individuals in the random pool for the construction site. The construction site entity will develop procedures to detail the implementation of the random testing selection process as required herein.

Notification Procedures

At the time of random drug and alcohol testing, the following steps shall be taken:

- A record of the individuals selected for random testing shall be documented.
- The construction site entity shall notify the subject individuals and request they report to the designated collection facility by a specific time.
- If an individual refuses to submit to the testing, the onsite supervisor shall attempt to inform the individual that access to the construction site shall be terminated unless he/she submits to testing.
- Individuals selected for testing from the random pool will be immediately available to be selected the next time the random list is generated.

- Individuals not onsite the day the random selection is determined will not be subject to testing unless they are selected randomly again.
- When the construction site entity receives the results of the tests appropriate action shall be taken in the event of positive results.
- The laboratory forwards a written report to the construction site entity for the drug testing file.

6.3 SPECIMEN COLLECTION AND LABORATORY

Any initial test performed by a construction site testing facility or a HHS-certified laboratory, and the confirmatory test performed by a HHS-certified laboratory, shall use a process which meets the requirements of the Food and Drug Administration (FDA). Testing for drugs and drug metabolites will be conducted through the analysis of urine specimens or other process which meets the requirements of the FDA. Testing for alcohol will be conducted through breath measurement or oral fluids (e.g., saliva). The initial test for alcohol performed at the collection site shall be conducted by a breath measurement device which meets the requirements of the NHTSA standards (49 FR 48855) and to any applicable State of Georgia statutes, or by using oral fluids (e.g., saliva) using acceptable ASDs that are listed on the most recent version of NHTSA's CPL for ASDs.

Analytic methods used for testing will be urinalysis, saliva analysis, or any other method approved in 10CFR26. Testing indicates the presence of specific drugs or drug metabolites, but is not an indication of impairment due to drug use.

Initial analysis and validity testing may be performed by construction site entity testing facility or by HHS-certified laboratories. Confirmatory analysis is performed by a laboratory that meets stringent quality control requirements that are comparable to those required for certification by the HHS. Breath analysis may be performed at the construction site entity collection facility.

Initial cut-off levels shall be detailed in the construction site entity procedures. Those specimens that test negative on the initial test are not subject to further testing unless they are suspected of having been adulterated or diluted.

Confirmatory testing must be performed after a presumptive positive test. Confirmatory drug testing is performed using gas chromatography (GC/MS) techniques. Breath analysis confirmation is performed by use of a breath measurement device. Specimens that are negative on the confirmatory test are reported as negative and are not subject to further testing unless they are suspected of having been adulterated or diluted. If the test is positive for morphine, a test for 6-monoacetylmorphine (6-MAM) shall be included in the confirmatory test for opiates to aid the MRO in determining whether the morphine is from legal drugs.

Specimens with a confirmed positive laboratory result for drugs, other than alcohol, will be evaluated by the MRO who will determine whether there is a legitimate medical reason for the presence of that drug in that specimen. This may involve review of medication history, physical examination and/or personal interview.

Vendor-operated testing facilities authorized by the construction site entity to conduct testing shall comply with the provisions of this program through the use of detailed procedures and shall be subject to assessment by the construction site entity or its representatives prior to implementation of the service and at a specified periodicity to assure continued effectiveness of service.

6.4 SPECIMEN PROCESSING

Construction site entity shall arrange for all testing to be performed either on the construction site or at a nearby qualified facility. The testing should be done as soon as is reasonable after appropriate medical care if required.

Collection site personnel shall arrange to transfer the collected specimens to the HHS-certified laboratory or SNC testing facility. The construction site entity shall take appropriate and prudent actions to minimize false negative results from specimen degradation. Specimens that have not been shipped to the HHS-certified laboratory or SNC testing facility within 24 hours of collection, and any specimen that is suspected of having been substituted, adulterated, or tampered with in any way, must be maintained cooled to not more than 6 °C (42.8 °F) until they are shipped to the HHS-certified laboratory. Specimens must be shipped from the collection site to the HHS-certified laboratory or SNC testing facility as soon as reasonably practical but, except under unusual circumstances, the time between specimen shipment and receipt of the specimen at the SNC testing facility or HHS-certified laboratory should not exceed two business days.

The specimen collection and alcohol testing process will be detailed in the construction site entity procedures and will meet or exceed the requirements of specimen collection as stated in 10 CFR 26. For alternative methods not described in 10 CFR 26, the construction site entity will develop detailed collection and specimen testing procedures.

6.5 POSITIVE RESULTS

A positive confirmatory breath alcohol test indicates a violation of the FFD program.

A presumptive positive drug test result does not always indicate a violation of the FFD program. All presumptive positive drug test results confirmed by the HHS certified laboratory as positive shall be reviewed by the MRO. The MRO will determine whether a legitimate medical reason exists for the positive result and will be the final determination as to whether an individual is in violation of the FFD program. If the MRO determines that there is a legitimate medical explanation for the presumptive positive result, the MRO shall report the result as negative. Substituted, adulterated or diluted samples will also be subject to MRO review for final determination.

Only the MRO can authorize the reanalysis of the original specimen, or the analysis of an aliquot of a split sample. The donor may request the MRO to authorize reanalysis. Such reanalysis shall be conducted by an HHS-certified laboratory.

The MRO shall report all positive results to the construction site entity management person responsible for the FFD program. The construction site entity shall ensure that appropriate action is taken as detailed in the construction site entity procedures. These procedures shall clearly state the consequences of violating FFD program requirements.

6.6 REVIEW PROCESS

The construction site entity shall have an alternative review process that is independent and impartial. The construction site entity shall include a description of the process to be used in the procedures that implement this requirement. Construction site entity programs are not intended to modify, subjugate, or abrogate any review rights that currently exist for individuals with their respective employers. An individual who has been denied access to the construction site or whose access has been terminated due to a violation of the FFD program shall have the capability to:

- Be provided the basis for the denial of access;
- Have an opportunity to provide additional information, and;
- Be provided the opportunity to have the decision, together with any additional information, reviewed by another designated construction site entity manager who is equivalent or senior to and independent of the individual who made the decision to deny or terminate access to the construction site due to the program violation. The determination from this independent review is final.

6.7 BEHAVIORIAL OBSERVATION PROGRAM

The construction site entity's Behavioral Observation Program is the primary means to detect behavior that may indicate possible use, sale, or possession of illegal drugs; use or possession of alcohol onsite or while on duty; or any physical impairment or any cause that, if left unattended, may constitute a risk to public health and safety or the common defense and security. Supervision that are responsible for observing individuals subject to a Behavioral Observation Program shall report any FFD concerns about individuals to the personnel designation in the construction site entity's policy.

Supervision that is responsible to observe individuals subject to the Behavioral Observation Programs must be trained to have sufficient awareness and sensitivity to detect degradation in performance which may be the results of being under the influence of any substance, legal or illegal, physical or mental impairment which in any way may adversely affect their ability to safety and competently perform their duties. Training shall communicate the expectation of promptly reporting noticeable changes in behavior or FFD concerns about other individuals to the construction site entity designated personnel for appropriate evaluation and action in accordance with the FFD policy.

6.8 RECORDKEEPING AND CONFIDENTIALITY

Personal information, whether electronic or hardcopy, must not be disclosed to unauthorized persons. The construction site entity shall obtain a signed consent that

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authorizes the disclosure of the personal information collected and maintained before disclosing the personal information, except for disclosures to the following persons who are authorized:

- Operating plant licensees and other licensees or construction site entities seeking the information as required for determinations of access to construction sites;
- NRC representatives;
- Appropriate law enforcement officials under court order;
- The subject individual or his/her representative who has been designated in writing;
- Licensee or construction site entity representatives who have a need to have access to the information in performing assigned duties, including audits of licensee, contractor or vendor programs, except where specifically excluded by regulation;
- Persons deciding matters on review or appeal;
- Persons who have the authority to change personal data in electronic records, or
- Other persons pursuant to court order.

The construction site entity will establish and maintain a system of files and procedures that clearly indicate that test records and associated documentation shall be retained and used with the highest regard for individual privacy and confidentiality.

Records which must be retained and the retention period shall be identified in the construction site entity program procedures.

Electronic Format Records

For information stored or transmitted in electronic format, access to personal information will be controlled by password protection to control access to personal data and limiting data entry to each authorized individual's area of responsibility.

Hardcopy Records

Hard copy records shall be maintained in secured storage or lockable file cabinets when not in review. Access to the FFD area where files and file cabinets are contained is limited to those authorized above.

Reporting

Construction site entities shall make the following reports:

- Reports to the NRC Operations Center by telephone within 24 hours after the entity discovers any intentional act that casts doubt on the integrity of the FFD program and any programmatic failure, degradation, or discovered vulnerability of the FFD program that may permit undetected drug or alcohol use or abuse by individuals who are subject to the FFD program. These events must be reported under 10 CFR 26.73, rather than under the provisions of 10 CFR 73.71; and
- Annual program performance reports for the FFD program.

6.9 AUDITS

Construction site entities who implement an FFD program shall ensure that audits are performed to assure the continuing effectiveness of the FFD program, including FFD program elements that are provided by C/Vs, and the FFD programs of C/Vs that are accepted by the licensee or other entity.

Construction site entity shall ensure that these programs are audited at a frequency that assures their continuing effectiveness and that corrective actions are taken to resolve any problems identified. Construction site entities may conduct joint audits, or accept audits of C/Vs conducted by others, so long as the audit addresses the relevant C/Vs' services.

Construction site entities need not audit HHS-certified laboratories or the specimen collection and alcohol testing services that meet the requirements of 49 CFR 40 on which the construction site entity may rely to meet the drug and alcohol testing requirements of 10 CFR 26.

The construction site entity will develop procedures to address the implementation of the audit requirements herein.

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ATTACHMENT A**

CONSENT FORM

The individual applying for access is required to sign a Consent that authorizes a construction site entity and its authorized agents to test the individual for drug and alcohol use as determined by the construction site entity.

The individual's signature on the Consent confirms that the individual has read and understands the Consent, and has voluntarily agreed to authorize the construction site entity and its authorized agents performing drug and alcohol testing and the individuals and entities releasing information to take the actions set out in the Consent. The Consent includes the following:

- Blank lines to be filled in with the name of the construction site entity and its authorized agent obtaining the Consent.
- Authorization to performing drug and alcohol testing for use in access decisions and the transfer of information among construction site entities and their authorized agents, and their employees who have a need-to-know.
- Authorization to use the information collected solely for the purpose of determining eligibility for access and subsequent work within the boundary of the nuclear power plant construction site.
- Authorization of the retention of collected information in files that are secure for a period required by NRC.
- Language to convey to the applicant that participation in drug and alcohol testing is voluntary. If an individual will not sign the consent or withdraws consent, or does not cooperate with the test process, the process cannot continue. In any of these cases, access to the nuclear plant construction site shall be denied or withdrawn immediately.
- The Consent serves to release construction site entities and their authorized agents, and the officers, employees, representatives, agents, and records custodians of each as well as the officers, employees, representatives, agents, and records custodians of any entity or individual supplying drug and alcohol testing services from any and all liability based on their authorized receipt, disclosure, and use of the information obtained based on the individual's consent.
- The individual's rights and responsibilities relative to reviewing the records collected pursuant to this consent.
- Notice that nothing in the Consent is to be construed to waive any right or responsibility that the individual granting consent, the construction site entity or if different from the construction site entity, the individual's employer may have under Section 211 of the Energy Reorganization Act of 1974, as amended. Section 211 addresses "protected activity" by workers in the nuclear industry.

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ATTACHMENT A**

CONSENT FORM

_____ has my consent to drug and alcohol testing necessary to determine whether to grant me access to a nuclear power plant construction site and to allow me to maintain such access. The Nuclear Regulatory Commission (NRC) requires that this information be used in determining that an individual is fit-for-duty prior to granting and while maintaining access. The results of this determination may be available to other construction site entities.

I understand that the information may be transferred, electronically or otherwise, to other construction site entities and contractor/vendors or the agents of each. This information shall include, but is not limited to:

- Name and Social Security Number;
- Dates when any of the following are completed: drug testing, alcohol testing;
- Dates when access has been authorized or terminated; and
- Dates associated with drug and/or alcohol follow-up testing, if applicable.

I authorize any individual, organization, institution, or entity that now has, or obtains in the future, drug and/or alcohol testing information about me (examples of which are provided in the above paragraph), to release any such information in order to perform the evaluation required for access.

I understand that information obtained pursuant to this Consent shall be treated as confidential. The release of access-related information about me shall be limited to regulatory agencies and such personnel of construction site entities and their contractors/vendors who have been designated as having a “need to know” the information in order to do their jobs.

I understand that all information about me in the database shall be maintained as securely as reasonably practicable for a period determined by the NRC.

I understand that, upon my written request to _____, and at no cost to me, I shall be provided, within ten (10) working days, with a printed copy of the information about me which is in the construction site entity files. If, after my review of such information, I can show that any of the information is incorrect or incomplete, such information shall be corrected and/or completed as soon as is reasonably practical.

I hereby release _____, and the officers, employees, representatives, agents, and records custodians of each as well as the officers, employees, representatives, agents, and records custodians of any entity or individual supplying or using such information from any and all liability based on their authorized receipt, disclosure, or use of the information obtained pursuant to this Consent and to determine my eligibility for construction site access.

Chapter 15 Accident Analyses

This chapter presents the required 10 CFR 52.17(a)(1), “Contents of Applications,” early site permit (ESP) application analysis and evaluation of the major structures, systems, and components of the facility that bear significantly on the acceptability of the site with respect to the radiological consequence evaluation factors identified in 10 CFR 50.34(a)(1).

15.1 Selection of Accidents

The *AP1000 Design Control Document (DCD)* design bases accidents are considered in this chapter (**Westinghouse 2005**). Table 15-1 shows the NUREG-0800 Standard Review Plan (SRP) section numbers and accident descriptions, as well as the corresponding accidents as defined in the AP1000 DCD. Although only those accidents identified in Regulatory Guide 1.183, *Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors*, July 2000 (RG 1.183), are required to be evaluated, the radiological consequences of all the accidents listed in Table 15-1 are assessed to demonstrate that new units could be sited at the VEGP site without undue risk to the health and safety of the public.

15.2 Evaluation Methodology

The AP1000 DCD presents the radiological consequences for the accidents identified in Table 15-1. The DCD design basis analyses are updated with VEGP site data to demonstrate that the DCD analyses are bounding for the VEGP site. The basic scenario for each accident is that some quantity of activity is released at the accident location inside a building and this activity is eventually released to the environment. The transport of activity within the plant is independent of the site and specific to the AP1000 design. Details about the methodologies and assumptions pertaining to each of the accidents, such as activity release pathways and credited mitigation features, are provided in the DCD.

The dose to an individual located at the exclusion area boundary (EAB) or the low population zone (LPZ) is calculated based on the amount of activity released to the environment, the atmospheric dispersion of the activity during the transport from the release point to the offsite location, the breathing rate of the individual at the offsite location, and activity-to-dose conversion factors. The only site-specific parameter is atmospheric dispersion. Site-specific doses are obtained by adjusting the DCD doses to reflect site-specific atmospheric dispersion factors (χ/Q values). Since the site-specific χ/Q values are bounded by the DCD χ/Q values, this approach demonstrates that the site-specific doses are within those calculated in the DCD.

Short-term accident χ/Q values are calculated using the methodology of Regulatory Guide 1.145, *Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants*, Revision 1 (RG 1.145) with site-specific meteorological data. As indicated in Section 2.3.4, the RG 1.145 methodology is implemented in the NRC-sponsored PAVAN computer program. This program computes χ/Q values at the EAB and the LPZ for each

combination of wind speed and atmospheric stability for each of 16 downwind direction sectors and then calculates overall (non direction-specific) χ/Q values. For a given location, either the EAB or the LPZ, the 0 – 2 hour χ/Q value is the top 5th percentile overall value calculated by PAVAN, meaning that conditions would be more favorable for dispersion 95% of the time. For the LPZ, the χ/Q values for all subsequent times are calculated by logarithmic interpolation between the top 5th percentile χ/Q value and the annual average χ/Q value. Releases are assumed to be at ground level, and the shortest distances between the power block and the offsite locations are selected to conservatively maximize the χ/Q values.

The accident doses are expressed as total effective dose equivalent (TEDE), consistent with 10 CFR 50.34. The TEDE consists of the sum of the committed effective dose equivalent (CEDE) from inhalation and the effective dose equivalent (EDE) from external exposure. The CEDE is determined using the dose conversion factors in Federal Guidance Report 11 (EPA 1988), while the EDE is based on the dose conversion factors in Federal Guidance Report 12 (EPA 1993). Appendix 15A of the AP1000 DCD provides information on the methodologies used to calculate CEDE and EDE values. As indicated in RG 1.183, the dose conversion factors in Federal Guidance Reports 11 and 12 are acceptable to the NRC staff.

15.3 Source Terms

The design basis accident source terms in the AP1000 DCD are calculated in accordance with RG 1.183, based on 102 percent of rated core thermal power of 3400 MW. The time-dependent isotopic activities released to the environment from each of the evaluated accidents are presented in Tables 15-2 to 15-10.

15.4 Radiological Consequences

For each of the accidents identified in Table 15-1, the site-specific dose for a given time interval is calculated by multiplying the AP1000 DCD dose by the ratio of the site χ/Q value, developed in Section 2.3.4.2, to the DCD χ/Q value as indicated in *AP1000 Accident Releases and Doses as Function of Time (Westinghouse 2006b)*. The time-dependent DCD χ/Q values and the time-dependent site χ/Q values and their ratios are shown in Table 15-11. As all site χ/Q values are bounded by DCD χ/Q values, site-specific doses for all accidents are also bounded by DCD doses. The total doses are summarized in Table 15-12, based on the individual accident doses presented in Tables 15-13 to 15-22. For each accident, the EAB dose shown is for the two-hour period that yields the maximum dose, in accordance with RG 1.183.

The results of the VEGP site analysis contained in the referenced tables demonstrate that all accident doses meet the site acceptance criteria of 10 CFR 50.34. The acceptance criteria in 10 CFR 50.34 apply to accidents of exceedingly low probability of occurrence and low risk of public exposure to radiation. For events with a higher probability of occurrence, more restrictive dose limits are specified in RG 1.183. Where applied, the more restrictive dose limit is either 10 or 25 percent of the 10 CFR 50.34 limit of 25 rem TEDE.

The TEDE dose limits shown in Tables 15-12 to 15-22 are from RG 1.183, Table 6, for all accidents except Reactor Coolant Pump Shaft Break (SRP Section 15.3.4) and Failure of Small Lines Carrying Primary Coolant Outside Containment (SRP Section 15.6.2). Although RG 1.183 does not address these two accidents, NUREG-0800 indicates a dose limit of 2.5 rem for these accidents. All doses are within the acceptance criteria.

Table 15-1 Selection of Accidents

SRP/DCD			Identified in	
Section	SRP Description	DCD Description	RG 1.183	Comment
15.1.5	Steam System Piping Failures Inside and Outside of Containment (PWR)	Steam System Piping Failure	Yes	
15.2.8	Feedwater System Pipe Breaks Inside and Outside Containment	Feedwater System Pipe Break	No	In the DCD, this is bounded by Section 15.1.5 accident
15.3.3	Reactor Coolant Pump Rotor Seizure	Reactor Coolant Pump Shaft Seizure (Locked Rotor)	Yes	
15.3.4	Reactor Coolant Pump Shaft Break	Reactor Coolant Pump Shaft Break	No	In the DCD, this is bounded by Section 15.3.3 accident
15.4.8	Spectrum of Rod Ejection Accidents (PWR)	Spectrum of Rod Cluster Control Assembly Ejection Accidents	Yes	
15.6.2	Radiological Consequences of the Failure of Small Lines Carrying Primary Coolant Outside Containment	Failure of Small Lines Carrying Primary Coolant Outside Containment	No	
15.6.3	Radiological Consequences of Steam Generator Tube Failure	Steam Generator Tube Rupture	Yes	
15.6.5A	Radiological Consequences of a Design Basis Loss of Coolant Accident Including Containment Leakage Contribution	Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary	Yes	Addressed in DCD Section 15.6.5
15.6.5B	Radiological Consequences of a Design Basis Loss of Coolant Accident: Leakage From Engineered Safety Feature Components Outside Containment	Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary	Yes	Addressed in DCD Section 15.6.5
15.7.4	Radiological Consequences of Fuel Handling Accidents	Fuel Handling Accident	Yes	

Table 15-2 Activity Releases for Steam System Piping Failure with Pre-Existing Iodine Spike

Isotope	Activity Release (Ci)				
	0-2 hr	2-8 hr	8-24 hr	24-72 hr	Total
Kr-85m	6.86E-02	1.14E-01	6.80E-02	6.18E-03	2.57E-01
Kr-85	2.82E-01	8.46E-01	2.25E+00	6.69E+00	1.01E+01
Kr-87	2.76E-02	1.34E-02	5.29E-04	8.60E-08	4.15E-02
Kr-88	1.12E-01	1.37E-01	4.04E-02	8.27E-04	2.91E-01
Xe-131m	1.28E-01	3.79E-01	9.81E-01	2.70E+00	4.19E+00
Xe-133m	1.59E-01	4.51E-01	1.04E+00	2.05E+00	3.70E+00
Xe-133	1.18E+01	3.45E+01	8.64E+01	2.16E+02	3.49E+02
Xe-135m	3.04E-03	1.33E-05	0.00E+00	0.00E+00	3.06E-03
Xe-135	3.10E-01	6.90E-01	8.35E-01	3.38E-01	2.17E+00
Xe-138	3.99E-03	1.14E-05	0.00E+00	0.00E+00	4.00E-03
I-130	3.59E-01	1.42E-01	2.09E-01	1.33E-01	8.44E-01
I-131	2.40E+01	1.21E+01	3.10E+01	8.22E+01	1.49E+02
I-132	3.05E+01	4.14E+00	8.06E-01	6.55E-03	3.55E+01
I-133	4.34E+01	1.90E+01	3.53E+01	3.98E+01	1.37E+02
I-134	6.74E+00	1.63E-01	1.43E-03	4.54E-09	6.91E+00
I-135	2.60E+01	8.16E+00	7.54E+00	1.71E+00	4.34E+01
Cs-134	1.90E+01	1.95E-01	5.19E-01	1.54E+00	2.12E+01
Cs-136	2.82E+01	2.86E-01	7.43E-01	2.06E+00	3.13E+01
Cs-137	1.37E+01	1.41E-01	3.74E-01	1.11E+00	1.53E+01
Cs-138	1.01E+01	1.02E-03	4.42E-07	0.00E+00	1.01E+01
Total	2.15E+02	8.15E+01	1.68E+02	3.56E+02	8.21E+02

Table 15-3 Activity Releases for Steam System Piping Failure with Accident-Initiated Iodine Spike

Isotope	Activity Release (Ci)				
	0-2 hr	2-8 hr	8-24 hr	24-72 hr	Total
Kr-85m	6.86E-02	1.14E-01	6.80E-02	6.18E-03	2.57E-01
Kr-85	2.82E-01	8.46E-01	2.25E+00	6.69E+00	1.01E+01
Kr-87	2.76E-02	1.34E-02	5.29E-04	8.60E-08	4.15E-02
Kr-88	1.12E-01	1.37E-01	4.04E-02	8.27E-04	2.91E-01
Xe-131m	1.28E-01	3.79E-01	9.81E-01	2.70E+00	4.19E+00
Xe-133m	1.59E-01	4.51E-01	1.04E+00	2.05E+00	3.70E+00
Xe-133	1.18E+01	3.45E+01	8.64E+01	2.16E+02	3.49E+02
Xe-135m	3.04E-03	1.33E-05	0.00E+00	0.00E+00	3.06E-03
Xe-135	3.10E-01	6.90E-01	8.35E-01	3.38E-01	2.17E+00
Xe-138	3.99E-03	1.14E-05	0.00E+00	0.00E+00	4.00E-03
I-130	4.20E-01	9.95E-01	1.58E+00	1.01E+00	4.01E+00
I-131	2.60E+01	5.73E+01	1.56E+02	4.13E+02	6.53E+02
I-132	4.62E+01	9.74E+01	2.24E+01	1.82E-01	1.66E+02
I-133	4.91E+01	1.14E+02	2.27E+02	2.55E+02	6.45E+02
I-134	1.34E+01	1.86E+01	2.65E-01	8.42E-07	3.23E+01
I-135	3.24E+01	7.74E+01	7.83E+01	1.77E+01	2.06E+02
Cs-134	1.90E+01	1.95E-01	5.19E-01	1.54E+00	2.12E+01
Cs-136	2.82E+01	2.86E-01	7.43E-01	2.06E+00	3.13E+01
Cs-137	1.37E+01	1.41E-01	3.74E-01	1.11E+00	1.53E+01
Cs-138	1.01E+01	1.02E-03	4.42E-07	0.00E+00	1.01E+01
Total	2.51E+02	4.03E+02	5.78E+02	9.20E+02	2.15E+03

Table 15-4 Activity Releases for Reactor Coolant Pump Shaft Seizure

Isotope	Activity Release (Ci)				
	No Feedwater	Feedwater Available			
	0-1.5 hr	0-2 hr	2-8 hr	6-8 hr	Total
Kr-85m	8.16E+01	1.05E+02	1.74E+02	4.13E+01	2.79E+02
Kr-85	7.58E+00	1.01E+01	3.03E+01	1.01E+01	4.04E+01
Kr-87	1.20E+02	1.43E+02	6.97E+01	5.43E+00	2.13E+02
Kr-88	2.08E+02	2.62E+02	3.20E+02	6.05E+01	5.82E+02
Xe-131m	3.77E+00	5.03E+00	1.49E+01	4.95E+00	1.99E+01
Xe-133m	2.02E+01	2.69E+01	7.64E+01	2.48E+01	1.03E+02
Xe-133	6.66E+02	8.87E+02	2.60E+03	8.57E+02	3.49E+03
Xe-135m	3.24E+01	3.28E+01	1.43E-01	2.68E-06	3.30E+01
Xe-135	1.59E+02	2.08E+02	4.64E+02	1.32E+02	6.72E+02
Xe-138	1.29E+02	1.30E+02	3.72E-01	3.01E-06	1.30E+02
I-130	8.45E-01	1.17E-01	1.33E+00	5.65E-01	1.45E+00
I-131	3.77E+01	5.39E+00	7.51E+01	3.46E+01	8.05E+01
I-132	2.79E+01	3.45E+00	1.48E+01	3.95E+00	1.83E+01
I-133	4.86E+01	6.86E+00	8.29E+01	3.64E+01	8.98E+01
I-134	2.88E+01	2.76E+00	2.98E+00	2.09E-01	5.74E+00
I-135	4.19E+01	5.68E+00	5.22E+01	2.05E+01	5.79E+01
Cs-134	1.29E+00	1.82E-01	2.40E+00	1.11E+00	2.59E+00
Cs-136	5.63E-01	8.45E-02	7.79E-01	3.47E-01	8.63E-01
Cs-137	7.74E-01	1.10E-01	1.41E+00	6.51E-01	1.52E+00
Cs-138	6.08E+00	7.29E-01	3.35E+00	1.13E+00	4.08E+00
Rb-86	1.33E-02	1.83E-03	2.73E-02	1.27E-02	2.91E-02
Total	1.62E+03	1.84E+03	3.99E+03	1.23E+03	5.82E+03

Note: The release period of 6-8 hr yields the maximum 2-hr EAB dose with feedwater available.

Table 15-5 Activity Releases for Spectrum of Rod Cluster Control Assembly Ejection Accidents

Isotope	Activity Release (Ci)					
	0-2 hr	2-8 hr	8-24 hr	24-96 hr	96-720 hr	Total
Kr-85m	1.12E+02	6.48E+01	3.87E+01	1.77E+00	2.51E-05	2.18E+02
Kr-85	5.01E+00	5.60E+00	1.49E+01	3.35E+01	2.88E+02	3.47E+02
Kr-87	1.82E+02	2.60E+01	1.03E+00	8.37E-05	0.00E+00	2.09E+02
Kr-88	2.91E+02	1.18E+02	3.49E+01	3.59E-01	8.41E-09	4.45E+02
Xe-131m	4.94E+00	5.46E+00	1.42E+01	2.86E+01	1.16E+02	1.69E+02
Xe-133m	2.67E+01	2.81E+01	6.49E+01	8.45E+01	5.31E+01	2.57E+02
Xe-133	8.79E+02	9.58E+02	2.40E+03	4.27E+03	8.45E+03	1.70E+04
Xe-135m	7.34E+01	5.30E-02	4.33E-09	0.00E+00	0.00E+00	7.35E+01
Xe-135	2.15E+02	1.72E+02	2.09E+02	4.35E+01	1.79E-01	6.39E+02
Xe-138	2.99E+02	1.38E-01	3.19E-09	0.00E+00	0.00E+00	2.99E+02
I-130	4.90E+00	7.28E+00	4.32E+00	2.03E-01	2.95E-04	1.67E+01
I-131	1.36E+02	2.45E+02	2.31E+02	3.10E+01	1.68E+01	6.60E+02
I-132	1.53E+02	9.94E+01	9.85E+00	8.24E-03	0.00E+00	2.62E+02
I-133	2.72E+02	4.40E+02	3.18E+02	2.28E+01	2.41E-01	1.05E+03
I-134	1.66E+02	2.85E+01	1.37E-01	4.48E-08	0.00E+00	1.95E+02
I-135	2.39E+02	2.97E+02	1.19E+02	2.39E+00	7.32E-05	6.57E+02
Cs-134	3.08E+01	6.22E+01	6.03E+01	7.76E+00	5.16E+00	1.66E+02
Cs-136	8.79E+00	1.75E+01	1.67E+01	2.05E+00	6.58E-01	4.57E+01
Cs-137	1.79E+01	3.62E+01	3.51E+01	4.52E+00	3.05E+00	9.68E+01
Cs-138	1.09E+02	7.05E+00	1.68E-03	0.00E+00	0.00E+00	1.16E+02
Rb-86	3.62E-01	7.27E-01	6.96E-01	8.67E-02	3.42E-02	1.91E+00
Total	3.23E+03	2.62E+03	3.58E+03	4.53E+03	8.93E+03	2.29E+04

Table 15-6 Activity Releases for Failure of Small Lines Carrying Primary Coolant Outside Containment

Isotope	Activity Release (Ci)
	0-2 hr
Kr-85m	1.24E+01
Kr-85	4.40E+01
Kr-87	7.05E+00
Kr-88	2.21E+01
Xe-131m	1.99E+01
Xe-133m	2.50E+01
Xe-133	1.84E+03
Xe-135m	2.59E+00
Xe-135	5.20E+01
Xe-138	3.65E+00
I-130	1.89E+00
I-131	9.26E+01
I-132	3.49E+02
I-133	2.01E+02
I-134	1.58E+02
I-135	1.68E+02
Cs-134	4.16E+00
Cs-136	6.16E+00
Cs-137	3.00E+00
Cs-138	2.21E+00
Total	3.02E+03

Table 15-7 Activity Releases for Steam Generator Tube Rupture with Pre-Existing Iodine Spike

Isotope	Activity Release (Ci)			
	0-2 hr	2-8 hr	8-24 hr	Total
Kr-85m	5.53E+01	1.93E+01	7.53E-03	7.46E+01
Kr-85	2.20E+02	1.09E+02	1.34E-01	3.29E+02
Kr-87	2.39E+01	3.61E+00	9.12E-05	2.75E+01
Kr-88	9.22E+01	2.65E+01	5.43E-03	1.19E+02
Xe-131m	9.96E+01	4.88E+01	5.91E-02	1.48E+02
Xe-133m	1.24E+02	5.91E+01	6.61E-02	1.83E+02
Xe-133	9.19E+03	4.47E+03	5.29E+00	1.37E+04
Xe-135m	3.44E+00	5.86E-03	0.00E+00	3.45E+00
Xe-135	2.46E+02	1.02E+02	7.10E-02	3.47E+02
Xe-138	4.56E+00	5.07E-03	0.00E+00	4.57E+00
I-130	1.79E+00	5.39E-02	2.68E-01	2.12E+00
I-131	1.21E+02	5.27E+00	3.06E+01	1.56E+02
I-132	1.42E+02	7.43E-01	1.92E+00	1.44E+02
I-133	2.16E+02	7.63E+00	4.06E+01	2.64E+02
I-134	2.74E+01	4.40E-03	4.23E-03	2.74E+01
I-135	1.27E+02	2.70E+00	1.17E+01	1.42E+02
Cs-134	1.63E+00	6.05E-02	2.16E-01	1.90E+00
Cs-136	2.42E+00	8.86E-02	3.14E-01	2.82E+00
Cs-137	1.17E+00	4.37E-02	1.56E-01	1.37E+00
Cs-138	5.64E-01	2.91E-06	5.73E-07	5.64E-01
Total	1.07E+04	4.85E+03	9.14E+01	1.56E+04

Table 15-8 Activity Releases for Steam Generator Tube Rupture with Accident-Initiated Iodine Spike

Isotope	Activity Release (Ci)			
	0-2 hr	2-8 hr	8-24 hr	Total
Kr-85m	5.53E+01	1.93E+01	7.53E-03	7.46E+01
Kr-85	2.20E+02	1.09E+02	1.34E-01	3.29E+02
Kr-87	2.39E+01	3.61E+00	9.12E-05	2.75E+01
Kr-88	9.22E+01	2.65E+01	5.43E-03	1.19E+02
Xe-131m	9.96E+01	4.88E+01	5.91E-02	1.48E+02
Xe-133m	1.24E+02	5.91E+01	6.61E-02	1.83E+02
Xe-133	9.19E+03	4.47E+03	5.29E+00	1.37E+04
Xe-135m	3.44E+00	5.86E-03	0.00E+00	3.45E+00
Xe-135	2.46E+02	1.02E+02	7.10E-02	3.47E+02
Xe-138	4.56E+00	5.07E-03	0.00E+00	4.57E+00
I-130	8.87E-01	1.62E-01	8.24E-01	1.87E+00
I-131	4.36E+01	1.14E+01	6.76E+01	1.23E+02
I-132	1.47E+02	4.86E+00	1.29E+01	1.65E+02
I-133	9.33E+01	2.00E+01	1.08E+02	2.22E+02
I-134	5.59E+01	6.04E-02	5.94E-02	5.60E+01
I-135	7.61E+01	9.88E+00	4.38E+01	1.30E+02
Cs-134	1.63E+00	6.05E-02	2.16E-01	1.90E+00
Cs-136	2.42E+00	8.86E-02	3.14E-01	2.82E+00
Cs-137	1.17E+00	4.37E-02	1.56E-01	1.37E+00
Cs-138	5.64E-01	2.91E-06	5.73E-07	5.64E-01
Total	1.05E+04	4.88E+03	2.40E+02	1.56E+04

Table 15-9 Activity Releases for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary

Isotope	Activity Release (Ci)					Total
	1.4-3.4 hr	0-8 hr	8-24 hr	24-96 hr	96-720 hr	
I-130	5.64E+01	1.12E+02	5.37E+00	7.10E-01	1.27E-02	1.18E+02
I-131	1.68E+03	3.49E+03	2.66E+02	2.39E+02	7.19E+02	4.71E+03
I-132	1.23E+03	2.14E+03	1.64E+01	1.46E-02	0.00E+00	2.15E+03
I-133	3.23E+03	6.54E+03	3.83E+02	1.04E+02	1.04E+01	7.04E+03
I-134	6.60E+02	1.14E+03	2.96E-01	6.79E-08	0.00E+00	1.14E+03
I-135	2.56E+03	4.89E+03	1.58E+02	6.09E+00	3.16E-03	5.06E+03
Kr-85m	1.42E+03	3.77E+03	1.87E+03	8.56E+01	1.22E-03	5.73E+03
Kr-85	8.31E+01	2.97E+02	7.06E+02	1.59E+03	1.36E+04	1.62E+04
Kr-87	1.10E+03	1.95E+03	4.97E+01	4.05E-03	0.00E+00	1.99E+03
Kr-88	3.11E+03	7.26E+03	1.70E+03	1.75E+01	4.09E-07	8.97E+03
Xe-131m	8.26E+01	2.94E+02	6.79E+02	1.37E+03	5.57E+03	7.91E+03
Xe-133m	4.43E+02	1.54E+03	3.15E+03	4.11E+03	2.58E+03	1.14E+04
Xe-133	1.47E+04	5.19E+04	1.16E+05	2.06E+05	4.07E+05	7.80E+05
Xe-135m	1.06E+01	3.59E+01	2.14E-07	0.00E+00	0.00E+00	3.59E+01
Xe-135	3.15E+03	9.64E+03	1.01E+04	2.11E+03	8.68E+00	2.19E+04
Xe-138	3.11E+01	1.20E+02	1.58E-07	0.00E+00	0.00E+00	1.20E+02
Rb-86	3.04E+00	6.32E+00	2.99E-01	9.83E-02	5.13E-01	7.23E+00
Cs-134	2.58E+02	5.38E+02	2.57E+01	9.11E+00	7.74E+01	6.50E+02
Cs-136	7.33E+01	1.52E+02	7.16E+00	2.28E+00	9.88E+00	1.72E+02
Cs-137	1.51E+02	3.13E+02	1.50E+01	5.32E+00	4.57E+01	3.79E+02
Cs-138	1.50E+02	3.30E+02	2.18E-03	0.00E+00	0.00E+00	3.30E+02
Sb-127	2.42E+01	4.80E+01	2.29E+00	5.67E-01	7.82E-01	5.16E+01
Sb-129	5.10E+01	8.94E+01	1.51E+00	4.95E-03	4.90E-08	9.09E+01
Te-127m	3.15E+00	6.30E+00	3.16E-01	1.11E-01	8.71E-01	7.60E+00
Te-127	2.05E+01	3.83E+01	1.15E+00	2.75E-02	1.33E-04	3.94E+01
Te-129m	1.07E+01	2.15E+01	1.07E+00	3.65E-01	2.36E+00	2.52E+01
Te-129	1.88E+01	2.83E+01	2.69E-02	3.54E-08	0.00E+00	2.84E+01
Te-131m	3.17E+01	6.20E+01	2.64E+00	3.35E-01	7.81E-02	6.50E+01
Te-132	3.23E+02	6.40E+02	3.02E+01	7.04E+00	7.83E+00	6.85E+02
Sr-89	9.23E+01	1.85E+02	9.24E+00	3.19E+00	2.26E+01	2.20E+02
Sr-90	7.95E+00	1.59E+01	7.99E-01	2.84E-01	2.44E+00	1.94E+01

Table 15-9 (cont.) Activity Releases for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary

Isotope	Activity Release (Ci)					
	1.4-3.4 hr	0-8 hr	8-24 hr	24-96 hr	96-720 hr	Total
Sr-91	9.68E+01	1.81E+02	5.46E+00	1.35E-01	7.06E-04	1.87E+02
Sr-92	6.83E+01	1.13E+02	1.01E+00	5.15E-04	0.00E+00	1.14E+02
Ba-139	5.44E+01	8.30E+01	1.49E-01	9.91E-07	0.00E+00	8.32E+01
Ba-140	1.63E+02	3.25E+02	1.61E+01	5.11E+00	2.17E+01	3.68E+02
Mo-99	2.15E+01	4.25E+01	1.98E+00	4.29E-01	3.78E-01	4.53E+01
Tc-99m	1.47E+01	2.66E+01	6.05E-01	5.27E-03	1.33E-06	2.72E+01
Ru-103	1.73E+01	3.46E+01	1.73E+00	5.93E-01	3.99E+00	4.09E+01
Ru-105	8.18E+00	1.44E+01	2.48E-01	8.86E-04	1.17E-08	1.46E+01
Ru-106	5.70E+00	1.14E+01	5.73E-01	2.03E-01	1.70E+00	1.39E+01
Rh-105	1.03E+01	2.02E+01	8.81E-01	1.29E-01	4.14E-02	2.12E+01
Ce-141	3.89E+00	7.78E+00	3.88E-01	1.32E-01	8.45E-01	9.15E+00
Ce-143	3.46E+00	6.78E+00	2.93E-01	4.05E-02	1.14E-02	7.13E+00
Ce-144	2.94E+00	5.89E+00	2.96E-01	1.05E-01	8.68E-01	7.15E+00
Pu-238	9.16E-03	1.83E-02	9.21E-04	3.27E-04	2.82E-03	2.24E-02
Pu-239	8.06E-04	1.61E-03	8.10E-05	2.88E-05	2.48E-04	1.97E-03
Pu-240	1.18E-03	2.37E-03	1.19E-04	4.22E-05	3.63E-04	2.89E-03
Pu-241	2.66E-01	5.31E-01	2.67E-02	9.48E-03	8.14E-02	6.49E-01
Np-239	4.48E+01	8.87E+01	4.08E+00	8.15E-01	5.70E-01	9.41E+01
Y-90	8.08E-02	1.60E-01	7.44E-03	1.59E-03	1.35E-03	1.70E-01
Y-91	1.19E+00	2.37E+00	1.19E-01	4.12E-02	3.00E-01	2.83E+00
Y-92	7.89E-01	1.35E+00	1.80E-02	2.86E-05	0.00E+00	1.37E+00
Y-93	1.21E+00	2.28E+00	7.08E-02	1.98E-03	1.42E-05	2.35E+00
Nb-95	1.60E+00	3.19E+00	1.59E-01	5.44E-02	3.55E-01	3.76E+00
Zr-95	1.59E+00	3.18E+00	1.59E-01	5.52E-02	4.08E-01	3.80E+00
Zr-97	1.43E+00	2.74E+00	1.03E-01	6.73E-03	3.71E-04	2.85E+00
La-140	1.67E+00	3.29E+00	1.46E-01	2.36E-02	9.62E-03	3.47E+00
La-141	1.03E+00	1.79E+00	2.71E-02	6.41E-05	2.01E-10	1.81E+00
La-142	5.38E-01	8.31E-01	2.09E-03	3.39E-08	0.00E+00	8.33E-01
Nd-147	6.16E-01	1.23E+00	6.06E-02	1.90E-02	7.29E-02	1.38E+00
Pr-143	1.39E+00	2.78E+00	1.37E-01	4.40E-02	1.94E-01	3.15E+00
Am-241	1.20E-04	2.39E-04	1.20E-05	4.27E-06	3.68E-05	2.92E-04
Cm-242	2.82E-02	5.65E-02	2.83E-03	9.98E-04	8.08E-03	6.84E-02

Table 15-9 (cont.) Activity Releases for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary

Isotope	Activity Release (Ci)					
	1.4-3.4 hr	0-8 hr	8-24 hr	24-96 hr	96-720 hr	Total
Cm-244	3.46E-03	6.93E-03	3.48E-04	1.24E-04	1.06E-03	8.47E-03
Total	3.53E+04	9.85E+04	1.35E+05	2.15E+05	4.30E+05	8.79E+05

Table 15-10 Activity Releases for Fuel Handling Accident

Isotope	Activity Release (Ci)
	0-2 hr
Kr-85m	3.42E+02
Kr-85	1.11E+03
Kr-87	6.00E-02
Kr-88	1.07E+02
Xe-131m	5.54E+02
Xe-133m	2.80E+03
Xe-133	9.66E+04
Xe-135m	1.26E+03
Xe-135	2.49E+04
I-130	2.51E+00
I-131	3.76E+02
I-132	3.01E+02
I-133	2.40E+02
I-135	3.94E+01
Total	1.29E+05

Table 15-11 Atmospheric Dispersion Factors

Accident	Location	Time (hr)	DCD χ/Q (sec/m ³)	Site χ/Q (sec/m ³)	χ/Q Ratio (Site/DCD)
LOCA	EAB	0 – 2	5.10E-04	3.49E-04	0.684
	LPZ	0 – 8	2.20E-04	7.04E-05	0.320
		8 – 24	1.60E-04	5.25E-05	0.328
		24 – 96	1.00E-04	2.77E-05	0.277
		96 – 720	8.00E-05	1.11E-05	0.139
Other Accidents	EAB	0 – 2	8.00E-04	3.49E-04	0.436
	LPZ	0 – 8	5.00E-04	7.04E-05	0.141
		8 – 24	3.00E-04	5.25E-05	0.175
		24 – 96	1.50E-04	2.77E-05	0.185
		96 – 720	8.00E-05	1.11E-05	0.139

Note: The DCD χ/Q values for LOCA are consistent with AP1000 DCD Table 15A-5. Although not indicated as such in the DCD, a different set of χ/Q values was used by Westinghouse to calculate doses for accidents other than LOCA (**Westinghouse 2006b**). It is seen that the site χ/Q values are bounded by the DCD χ/Q values for all time steps.

Table 15-12 Summary of Design Basis Accident Doses

DCD/SRP Section	Accident	Site Dose (rem TEDE)			Dose Table
		EAB	LPZ	Limit	
15.1.5	Steam System Piping Failure				
	Pre-Existing Iodine Spike	0.35	0.11	25	15-13
	Accident-Initiated Iodine Spike	0.39	0.31	2.5	15-14
15.2.8	Feedwater System Pipe Break	a	a		
15.3.3	Reactor Coolant Pump Shaft Seizure				
	No Feedwater	0.31	0.05	2.5	15-15
	Feedwater Available	0.22	0.11	2.5	15-16
15.3.4	Reactor Coolant Pump Shaft Break	b	b		
15.4.8	Spectrum of Rod Cluster Control Assembly Ejection Accidents	1.3	0.80	6.3	15-17
15.6.2	Failure of Small Lines Carrying Primary Coolant Outside Containment	0.74	0.14	2.5	15-18
15.6.3	Steam Generator Tube Rupture				
	Pre-Existing Iodine Spike	0.79	0.18	25	15-19
	Accident-Initiated Iodine Spike	0.39	0.12	2.5	15-20
15.6.5	Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary	17	7.4	25	15-21
15.7.4	Fuel Handling Accident	2.4	0.48	6.3	15-22

- a. Feedwater System Pipe Break is bounded by Steam System Piping Failure, as indicated in the AP1000 DCD.
- b. Reactor Coolant Pump Shaft Break is bounded by Reactor Coolant Pump Shaft Seizure, as indicated in the AP1000 DCD.

Table 15-13 Doses for Steam System Piping Failure with Pre-Existing Iodine Spike

Time	DCD Dose (rem TEDE)		χ/Q Ratio (Site/DCD)	Site Dose (rem TEDE)	
	EAB	LPZ		EAB	LPZ
0-2 hr	8.0E-01		4.36E-01	3.49E-01	
0-8 hr		5.81E-01	1.41E-01		8.18E-02
8-24 hr		7.18E-02	1.75E-01		1.26E-02
24-96 hr		1.08E-01	1.85E-01		1.99E-02
96-720 hr		0.00E+00	1.39E-01		0.00E+00
Total	8.0E-01	7.61E-01		3.49E-01	1.14E-01
Limit				25	25

Table 15-14 Doses for Steam System Piping Failure with Accident-Initiated Iodine Spike

Time	DCD Dose (rem TEDE)		χ/Q Ratio (Site/DCD)	Site Dose (rem TEDE)	
	EAB	LPZ		EAB	LPZ
0-2 hr	9.00E-01		4.36E-01	3.93E-01	
0-8 hr		1.02E+00	1.41E-01		1.44E-01
8-24 hr		3.77E-01	1.75E-01		6.60E-02
24-96 hr		5.36E-01	1.85E-01		9.90E-02
96-720 hr		0.00E+00	1.39E-01		0.00E+00
Total	9.00E-01	1.94E+00		3.93E-01	3.09E-01
Limit				2.5	2.5

Table 15-15 Doses for Reactor Coolant Pump Shaft Seizure with No Feedwater

Time	DCD Dose (rem TEDE)		χ/Q Ratio (Site/DCD)	Site Dose (rem TEDE)	
	EAB	LPZ		EAB	LPZ
0-2 hr	7.00E-01		4.36E-01	3.05E-01	
0-8 hr		3.89E-01	1.41E-01		5.48E-02
8-24 hr		0.00E+00	1.75E-01		0.00E+00
24-96 hr		0.00E+00	1.85E-01		0.00E+00
96-720 hr		0.00E+00	1.39E-01		0.00E+00
Total	7.00E-01	3.89E-01		3.05E-01	5.48E-02
Limit				2.5	2.5

Table 15-16 Doses for Reactor Coolant Pump Shaft Seizure with Feedwater Available

Time	DCD Dose (rem TEDE)		χ/Q Ratio (Site/DCD)	Site Dose (rem TEDE)	
	EAB	LPZ		EAB	LPZ
6-8 hr	5.00E-01		4.36E-01	2.18E-01	
0-8 hr		7.94E-01	1.41E-01		1.12E-01
8-24 hr		0.00E+00	1.75E-01		0.00E+00
24-96 hr		0.00E+00	1.85E-01		0.00E+00
96-720 hr		0.00E+00	1.39E-01		0.00E+00
Total	5.00E-01	7.94E-01		2.18E-01	1.12E-01
Limit				2.5	2.5

Table 15-17 Doses for Spectrum of Rod Cluster Control Assembly Ejection Accidents

Time	DCD Dose (rem TEDE)		χ/Q Ratio (Site/DCD)	Site Dose (rem TEDE)	
	EAB	LPZ		EAB	LPZ
0-2 hr	2.90E+00		4.36E-01	1.27E+00	
0-8 hr		4.58E+00	1.41E-01		6.45E-01
8-24 hr		7.84E-01	1.75E-01		1.37E-01
24-96 hr		6.32E-02	1.85E-01		1.17E-02
96-720 hr		2.06E-02	1.39E-01		2.86E-03
Total	2.90E+00	5.45E+00		1.27E+00	7.97E-01
Limit				6.3	6.3

Table 15-18 Doses for Failure of Small Lines Carrying Primary Coolant Outside Containment

Time	DCD Dose (rem TEDE)		χ/Q Ratio (Site/DCD)	Site Dose (rem TEDE)	
	EAB	LPZ		EAB	LPZ
0-2 hr	1.70E+00		4.36E-01	7.42E-01	
0-8 hr		1.02E+00	1.41E-01		1.44E-01
8-24 hr		0.00E+00	1.75E-01		0.00E+00
24-96 hr		0.00E+00	1.85E-01		0.00E+00
96-720 hr		0.00E+00	1.39E-01		0.00E+00
Total	1.70E+00	1.02E+00		7.42E-01	1.44E-01
Limit				2.5	2.5

Table 15-19 Doses for Steam Generator Tube Rupture with Pre-Existing Iodine Spike

Time	DCD Dose (rem TEDE)		χ/Q Ratio (Site/DCD)	Site Dose (rem TEDE)	
	EAB	LPZ		EAB	LPZ
0-2 hr	1.80E+00		4.36E-01	7.85E-01	
0-8 hr		1.16E+00	1.41E-01		1.64E-01
8-24 hr		7.24E-02	1.75E-01		1.27E-02
24-96 hr		0.00E+00	1.85E-01		0.00E+00
96-720 hr		0.00E+00	1.39E-01		0.00E+00
Total	1.80E+00	1.23E+00		7.85E-01	1.76E-01
Limit				25	25

Table 15-20 Doses for Steam Generator Tube Rupture with Accident-Initiated Iodine Spike

Time	DCD Dose (rem TEDE)		χ/Q Ratio (Site/DCD)	Site Dose (rem TEDE)	
	EAB	LPZ		EAB	LPZ
0-2 hr	9.00E-01		4.36E-01	3.93E-01	
0-8 hr		6.27E-01	1.41E-01		8.83E-02
8-24 hr		1.69E-01	1.75E-01		2.96E-02
24-96 hr		0.00E+00	1.85E-01		0.00E+00
96-720 hr		0.00E+00	1.39E-01		0.00E+00
Total	9.00E-01	7.96E-01		3.93E-01	1.18E-01
Limit				2.5	2.5

Table 15-21 Doses for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary

Time	DCD Dose (rem TEDE)		χ/Q Ratio (Site/DCD)	Site Dose (rem TEDE)	
	EAB	LPZ		EAB	LPZ
1.4-3.4 hr	2.43E+01		6.84E-01	1.66E+01	
0-8 hr		2.17E+01	3.20E-01		6.94E+00
8-24 hr		7.69E-01	3.28E-01		2.52E-01
24-96 hr		3.71E-01	2.77E-01		1.03E-01
96-720 hr		8.70E-01	1.39E-01		1.21E-01
Total	2.43E+01	2.37E+01		1.66E+01	7.42E+00
Limit				25	25

Table 15-22 Doses for Fuel Handling Accident

Time	DCD Dose (rem TEDE)		χ/Q Ratio (Site/DCD)	Site Dose (rem TEDE)	
	EAB	LPZ		EAB	LPZ
0-2 hr	5.60E+00		4.36E-01	2.44E+00	
0-8 hr		3.44E+00	1.41E-01		4.84E-01
8-24 hr		0.00E+00	1.75E-01		0.00E+00
24-96 hr		0.00E+00	1.85E-01		0.00E+00
96-720 hr		0.00E+00	1.39E-01		0.00E+00
Total	5.60E+00	3.44E+00		2.44E+00	4.84E-01
Limit				6.3	6.3

Chapter 15 References

(EPA 1988) Federal Guidance Report 11, *Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion*, US Environmental Protection Agency, EPA-520/1-88-020, 1988.

(EPA 1993) Federal Guidance Report 12, *External Exposure to Radionuclides in Air, Water, and Soil*, US Environmental Protection Agency, EPA-402-R-93-081, 1993.

(Westinghouse 2005) AP1000 Document APP-GW-GL-700, *AP1000 Design Control Document*, Revision 15, Westinghouse Electric Company, 2005.

(Westinghouse 2006b) Westinghouse Document No. LTR-CRA-06-21, *AP1000 Accident Releases and Doses as Function of Time*, Westinghouse Electric Company, February 1, 2006.

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Chapter 17 Quality Assurance

17.1 ESP Quality Assurance

The Quality Assurance Program, used for development of the Vogtle Electric Generating Plant Early Site Permit (ESP) application, is described in the Southern Nuclear Operating Company, Inc. (SNC) Nuclear Development Quality Assurance Manual. This manual, and associated implementing procedures, provide for control of SNC activities that have the potential to affect the quality of safety related nuclear plant structures, systems, and components of the proposed new units. The SNC Nuclear Development Quality Assurance Manual, included as Appendix 17.1A, is a separately controlled document and therefore, does not conform to the ESP application formatting.

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Appendix

17.1A Nuclear Development Quality Assurance Manual

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Energy to Serve Your World®

Quality Assurance Manual

Title: Nuclear Development Quality Assurance Manual

Process/Program Owner: Quality Assurance Manager

	Version Number	Effective Date
	6.0	November 30, 2007

Revision Summary

Version 6.0:

Revised to reflect change due to Requests for Additional information from the NRC as well as to implement NEI 06-14-A.

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Senior Vice President Nuclear Development

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SOUTHERN NUCLEAR OPERATING COMPANY, INC

POLICY STATEMENT

Southern Nuclear Operating Company, Inc. (SNC) shall design, procure, and construct nuclear plants in a manner that will ensure the health and safety of the public and workers. These activities shall be performed in compliance with the requirements of the Code of Federal Regulations (CFR), the applicable Nuclear Regulatory Commission (NRC) Facility Operating Licenses, and applicable laws and regulations of the state and local governments.

The SNC Nuclear Development Quality Assurance Program (NDQAP) described in the SNC Nuclear Development Quality Assurance Manual (NDQAM) and associated implementing documents provide for control of SNC activities that affect the quality of safety-related nuclear plant structures, systems, and components and include all planned and systematic activities necessary to provide adequate confidence that such structures, systems, and components will perform satisfactorily in service. The NDQAP may also be applied to certain equipment and activities that are not safety-related, but support safe plant operations, or where other NRC guidance establishes program requirements.

The NDQAM is the top-level policy document that establishes the manner in which quality is to be achieved and presents SNC's overall philosophy regarding achievement and assurance of quality. Implementing documents assign more detailed responsibilities and requirements and define the organizational interfaces involved in conducting activities within the scope of the NDQAM. Compliance with the NDQAM and implementing documents is mandatory for personnel directly or indirectly associated with implementation of the SNC NDQAP.

Signed Original signed by J. B. Beasley, Jr.
J. Bernie Beasley
President and Chief Executive Officer
Southern Nuclear Operating Company, Inc.

July 2006

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PART I INTRODUCTION

SECTION 1 GENERAL

This Southern Nuclear Operating Company, Inc. (SNC) Nuclear Development Quality Assurance Manual (NDQAM) is the top-level policy document that establishes the quality assurance policy and assigns major functional responsibilities for Nuclear Development activities conducted by or for SNC. The NDQAM describes the methods and establishes NDQAM and administrative control requirements that meet 10 CFR 50, Appendix B and 10 CFR 52. The NDQAM is based on the requirements of ASME NQA-1-1994, "Quality Assurance Requirements for Nuclear Facility Applications," Parts I and II, as specified in this document.

The NDQAM is defined by the NRC approved regulatory document that describes the Nuclear Development Quality Assurance Program (NDQAP) elements, along with the associated implementing documents. Procedures and instructions that control Nuclear Development activities will be developed prior to commencement of those activities. Policies establish high level responsibilities and authority for carrying out important administrative functions which are outside the scope of the NDQAM. Procedures establish practices for certain activities which are common to all SNC organizations performing those activities such that the activity is controlled and carried out in a manner that meets NDQAM requirements. Site or organization specific procedures establish detailed implementation requirements and methods, and may be used to implement Policies or be unique to particular functions or work activities.

1.1 Scope / Applicability

This NDQAM applies to ESP and COL activities affecting the quality and performance of safety-related structures, systems, and components, including, but not limited to:

Siting	Handling	Erecting	Inspecting	ESP Application Development
Designing	Licensing	Installing	Refueling	COL Application Development
Constructing	Operating	Repairing	Shipping	LWA Activities
Procuring	Maintaining	Training	Testing	Preoperational activities
Fabricating	Receiving	Modifying	Startup	(including ITAAC)
Cleaning	Storing			Decommissioning

This manual is initiated for the development of ESP and COL applications as well as Limited Work Authorization (LWA) activities and will be revised as the Nuclear Development organization and related activities evolve. The NDQAM applies to these activities until turnover to SNC Operations. It does not apply to SNC's operating units at Plants Farley, Hatch and Vogtle.

Safety-related systems, structures, and components, under the control of the NDQAM, are identified by design documents. The technical aspects of these items are considered when determining program applicability, including, as appropriate, the item's design safety function. The NDQAM may be applied to certain activities where regulations other than 10 CFR 50 and 10 CFR 52 establish NDQAM requirements for activities within their scope.

The policy of SNC is to assure a high degree of availability and reliability of its nuclear plants while ensuring the health and safety of its workers and the public. To this end, selected elements of the NDQAP are also applied to certain equipment and activities that are not safety-

related or important to safety, but support safe, economic, and reliable plant operations, or where other NRC guidance establishes quality assurance requirements. These include, but may not be limited to security and fire protection. Implementing documents establish program element applicability.

1.2 Responsibilities

SNC personnel engaged in activities described in this NDQAM shall comply with the requirements of the Nuclear Development Quality Assurance Program. Contractors, suppliers or other organizations supporting SNC, are required to comply with the NDQAP established by this NDQAM, or with their own programs determined by SNC to include sufficient controls to meet the applicable requirements of 10CFR50, Appendix B. All facilities shall be designed and constructed in compliance with the applicable Code of Federal Regulations and the applicable laws and regulations of the state and local governments in which the facility is located.

Quality assurance personnel have the authority to stop work actions when they perceive that work is not progressing in a manner that meets the quality assurance program.

1.3 Interfaces with Owners

Agreements exist between Southern Nuclear Operating Company, Inc. and the nuclear power plant owner organizations to establish responsibilities and authorities for the design and construction of said facilities.

1.4 NQA-1-1994 Commitment

- In establishing, implementing, and maintaining the NDQAM, SNC commits as described in this NDQAM to compliance with ASME NQA-1-1994. NDQAM revisions are reviewed by the SNC QA Manager and approved by the SNC Senior Vice President Nuclear Development. Changes to this NDQAM will be governed by and made in accordance with Part II, Section 2.5.

PART II NDQAM DETAILS

SECTION 1 ORGANIZATION

This Section describes the SNC organizational structure, functional responsibilities, levels of authority and interfaces for establishing, executing, and verifying NDQAP implementation. The organizational structure includes corporate and onsite functions for Nuclear Development including interface responsibilities for multiple organizations performing quality-related functions. Implementing documents assign more specific responsibilities and duties, and define the organizational interfaces involved in conducting activities and duties within the scope of this NDQAM. Management gives careful consideration to the timing, extent and effects of organizational structure changes.

The SNC Nuclear Development (ND) organization is responsible to size the Quality Assurance organization commensurate with the duties and responsibilities assigned. ND is responsible for new nuclear plant licensing, engineering, procurement, construction, startup and operations development activities. There are several organizations within SNC which implement and support the NDQAM. These organizations include, but are not limited to Nuclear Development, Engineering, Corporate Services and Quality Assurance.

Design, engineering and environmental services are provided to the SNC Nuclear Development Organization by three primary contractors during ESP and COL application development in accordance with their Quality Assurance Programs. These three contractors are Bechtel Power Corporation, Inc. (Bechtel), Westinghouse Electric Company LLC (Westinghouse), and Tetra Tech NUS, Inc. (TtNUS).

The following sections describe the reporting relationships, functional responsibilities and authorities for organizations implementing and supporting the Nuclear Development QA Program during the application development stage. Conceptual position descriptions necessary to support the construction phase, including activities performed under a Limited Work Authorization (LWA) are also provided; however, they are noted as construction phase. Likewise the Engineering Procurement Construction Contractor organizations are described. The Southern Nuclear Organization, the Nuclear Development Organization for ESP and COL application development and the Vogtle Deployment Construction Organization are shown in Figures II.1-1, II.1-2 and II.1-3, respectively.

1.1 President and CEO

The SNC President and Chief Executive Officer (President/CEO) is responsible for all aspects of design and construction of Southern Company's nuclear plants. The President/CEO is also responsible for all technical and administrative support activities provided by SNC and contractors. The President/CEO directs the Chief Nuclear Officer/Executive Vice President, the Senior Vice President – Nuclear Development, the Vice President and General Counsel, the Vice President Corporate Services, and the Vice President Engineering in fulfillment of their responsibilities. The President/CEO reports to the SNC Board of Directors with respect to all matters.

1.2 Nuclear Development

Southern Nuclear Operating Company, Nuclear Development (ND) organization is responsible for new nuclear plant licensing, engineering, procurement, construction, startup and operational development activities.

1.2.1 Senior Vice President – Nuclear Development

The Senior Vice President – Nuclear Development (SVPND) reports to the President/CEO and is responsible for the administration of the Nuclear Development QA Program described in this manual. The SVPND also directs the planning and development of the Nuclear Development staff, and organization resources. The SVPND is also responsible for establishing and managing the Westinghouse contract for the development of new nuclear generation.

1.2.1.1 Nuclear Technology and Start-up Director

The Nuclear Technology and Start-up Director (NTSD) reports to the Senior Vice President – Nuclear Development and is responsible for new plant standardized design and support for construction, start-up and operations development, including initial operations staffing and training.

1.2.1.2 Vogtle Deployment Director

The Vogtle Deployment Director (VDD) reports to the Senior Vice President – Nuclear Development and is responsible for the effective implementation of the NDQAP for Vogtle site new nuclear plant licensing, procurement, and construction activities. The VDD is responsible for ESP and COL license applications and the supporting site specific engineering activities. The VDD is responsible for the planning and oversight of new Vogtle nuclear plant construction and procurement activities.

1.2.1.2.1 Vogtle Deployment Licensing Manager

The Vogtle Licensing Manager (VDLM) reports to the Vogtle Deployment Director and is responsible for the effective implementation of the NDQAP for the Vogtle site new nuclear plant licensing activities. The VDLM has overall authority for all activities supporting development of the ESP and COL applications including licensing and license engineering activities. The VDLM and his staff are responsible for managing the principal contractors and all contractor-related activities, such as collecting and analyzing data, conducting testing for site suitability, and developing application content. The VDLM and his staff are responsible for coordinating actions of the principal contractors (Bechtel and TtNUS), Southern Company and SNC resources supporting development of license applications. The VDLM and his staff are also the primary interface with the NRC staff during the ESP and COL review process. During construction, the VDLM will oversee: FSAR maintenance, performance of design changes and environmental reviews, NRC interface, the corrective action program, ITAAC readiness, the NRC Construction Inspection Program, NRC inspection activities, and environmental permits.

1.2.1.2.2 Construction Interface Manager

During construction, the Construction Interface Manager (CIM) will report to the Vogtle Deployment Director and be responsible for the effective implementation of the NDQAP for the Vogtle site new nuclear plant construction activities. The CIM has overall authority for all activities supporting construction activities and will serve as the interface with the EPC contractor. The CIM and his staff are responsible for coordinating actions of the principal contractors (Westinghouse and SHAW Stone & Webster). During construction, the CIM will oversee: 1) administrative activities including document control, FFD, industrial safety, Information Technology and invoice management; 2) engineering activities including the design authority, configuration control and existing unit interfaces; and 3) project management activities including schedule and cost tracking, offsite fabrication and security.

1.2.1.2.4 Engineering, Procurement and Construction (EPC) Contractor

During construction, the Consortium of Westinghouse and SHAW Stone & Webster will serve as the Engineering, Procurement and Construction (EPC) Contractor to SNC. Each of the Consortium members has a Quality Assurance Program that meets the requirements of 10 CFR 50, Appendix B and NQA-1 (1994). The scope of each member of the Consortium is established through a Division of Responsibility (DOR). Subcontractors performing work within the scope of 10 CFR 50, Appendix B and which provide materials, services, or both that are nuclear safety related or important to nuclear safety, will maintain appropriate quality assurance programs at each site where work is been performed. As between SNC and the EPC Contractor, the EPC Contractor shall be responsible for the performance of work by subcontractors performing 10 CFR 50, Appendix B work under the applicable DOR scope. SNC will provide oversight of this responsibility through audits of the EPC Contractor and surveillances of the subcontractors.

The EPC Contractor will also be responsible to perform the quality control and inspection functions and activities. The persons performing quality control functions for the EPC Contractor will have sufficient authority and organizational freedom to identify quality problems; to initiate, recommend, or provide solutions; and to verify implementation of solutions. The persons performing these functions will have the requisite independence from cost and schedule when contrary to safety considerations.

1.2.1.3 Business Services Project Manager

The Business Services Project Manager (BSPM) reports to the Senior Vice President – Nuclear Development and is responsible for the effective implementation of the NDQAP involving contract negotiations, budgets, financials, and supply chain issues as related to new nuclear plant development. In this capacity, the BSPM will serve as liaison with related groups within SNC.

1.3 Engineering

The Engineering organization is responsible for support of the Nuclear Development organization by providing engineering, licensing, training, and document control support where applicable.

1.3.1 Vice President Engineering

The Vice President Engineering reports to the President/CEO and is responsible for the administration of Nuclear Licensing and Probabilistic Risk Assessment (PRA) Services, Engineering Administrative Services, Plant Support, and Nuclear Fuel activities supporting the NDQAP. For the purposes of this program, the description of the responsibilities of the Vice President Engineering will be limited to those activities that support Nuclear Development.

1.3.1.1 Nuclear Licensing and PRA Services

The Manager – Nuclear Licensing and PRA Services reports to the Vice President Engineering and has responsibility for providing specialized engineering and technical services in the areas of licensing and regulatory support. PRA Services will specifically support the Nuclear Development organization in the completion of the Westinghouse AP1000 PRA models for the new nuclear plants. Nuclear Licensing performs both plant specific and generic licensing activities for the SNC operating units. Nuclear Licensing will support Nuclear Development through licensing activities addressing impacts to the existing Vogtle units and through support of industry efforts related to new nuclear generation. Nuclear Licensing will also support Nuclear Development licensing activities after issuance of the COL.

1.3.1.2 Engineering Administrative Services

The Engineering Administrative Services Manager reports to the Vice President Engineering. The Engineering Administrative Services department includes the Document Services and the Technical Training sections.

The Document Services section is responsible for control and management of engineering documents. This includes record scanning, database indexing, and creating and distributing compact disks (CDs). Document Services will provide document control services for Nuclear Development.

The Technical Training section is responsible for developing, coordinating, tracking and administering technical training for corporate organizations. Technical Training will be responsible for maintaining records of staff training as well as the development of curriculum for initial and ongoing staff training. Technical Training will provide support for Nuclear Development.

1.3.1.3 Nuclear Fuel

The Nuclear Fuel Manager reports to the Vice President Engineering. The Nuclear Fuel department is comprised of the Core Analysis, Nuclear Fuel Services and Fuel Performance sections. Nuclear Fuel will provide fuel design and procurement for Nuclear Development.

1.4 Corporate Services

The Corporate Services organization is responsible for supporting the Nuclear Development organization through performing activities related to procurement, safety and health and information technology where applicable.

1.4.1 CFO and Vice President Corporate Services

The Chief Financial Officer (CFO) and Vice President Corporate Services, reports to the SNC President and Chief Executive Officer and is responsible for managing the overall Corporate Services organization including assuring that Supply Chain Management, Safety and Health and Information Technology support Nuclear Development activities in accordance with the NDQAP. For the purposes of this program, the description of the responsibilities of the CFO and Vice President Corporate Services will be limited to those activities that support Nuclear Development.

1.4.1.1 Supply Chain Management

The Supply Chain General Manager reports to the CFO and Vice President Corporate Services and is responsible for the effective management of the Supply Chain Management organization supporting Nuclear Development activities. The Supply Chain Management Department is responsible for the preparation of procurement documents for purchasing materials and services for SNC. In support of this effort, Supply Chain Management is responsible for preparing, with appropriate input from engineering, procurement documents for purchasing certain materials, components, equipment, and services which will include provisions for material identification and control. Supply Chain Management is also responsible for the review of these specifications for adequacy of identification, control, technical, and quality requirements. Similarly, Supply Chain Management reviews and approves information included in procurement documents to verify inclusion of adequate technical and quality requirements.

1.4.1.2 Safety and Health

Safety and Health reports to the CFO and Vice President Corporate Services and is responsible for coordinating the overall Fitness-for-Duty (FFD) program among SNC management, the corporate staff, the staff at each of the SNC nuclear plants and the Nuclear Development organization. In this capacity, Safety and Health administers the FFD program's random selection process; performs drug and alcohol testing at the corporate office and at each SNC nuclear plant pursuant to 10 CFR 26; "Fitness for Duty Programs;" ensures that testing procedures are in place; trains the FFD staff; and maintains associated training records.

In addition, Safety and Health develops policies and procedures to ensure a safe and healthy workplace and compliance with standards established by the Occupational Safety and Health Administration.

1.4.1.3 Southern Company Services (SCS) Information Technology (IT)

The SCS IT Group Manager is responsible for SNC IT activities and reports administratively to the Regional Chief Information Officer – Generation and functionally to the SNC CFO and Vice President Corporate Services. The SCS IT Group Manager shall provide support to the Nuclear Development organization including but not limited to applications, servers, tape backup, voice and data, network infrastructure hardware, and emergency communication hardware. The IT Group Manager will provide support to Engineering or Corporate Services under this NDQAP and associated SNC procedures for software control, electronic document storage disaster prevention/recovery, and emergency planning. The IT Group Manager is

also responsible for maintaining controls for SNC software applications which are not required to be maintained under the SNC program described herein.

1.5 Executive Vice President

The Executive Vice President is the Chief Nuclear Officer (CNO) and is responsible for the safe, reliable, and efficient operation of the SNC nuclear plants. The CNO directs the Vice Presidents – Nuclear Plant Site (Vogtle, Hatch and Farley), the Vice President – Fleet Operations Support, and the Quality Assurance Manager. For the purposes of this program, the description of the responsibilities of the Executive Vice President will be limited to those activities that support Nuclear Development. The Executive Vice President will support Nuclear Development through the Vice President – Nuclear Plant Site (Vogtle), the Nuclear Fleet Security and Emergency Planning organization, and the Quality Assurance organization.

1.5.1 Vice President – Nuclear Plant Site (Vogtle)

The Vice President – Nuclear Plant Site (Vogtle) report to the Executive Vice President and is responsible for the overall safe and efficient operation of Vogtle Units 1 and 2, and for the implementation of quality assurance requirements in the areas specified by the operations Quality Assurance program.

For the purposes of this program, the description of the duties of the Vice President – Nuclear Plant Site (Vogtle) and staff is limited to those site activities that support Nuclear Development.

1.5.1.1 Nuclear Plant Site Organization

The Nuclear Plant Site Organization is responsible for operations and maintenance of the respective nuclear plant site. The Nuclear Plant Site Organization is responsible for operations quality inspection activities of operations on-site work, including any that support Nuclear Development ESP and COL application development, as well as controlling interfaces between the operating units and any preconstruction or construction activities.

1.5.2 Vice President – Fleet Operations Support

The Vice President – Fleet Operations Support report to the Executive Vice President and is responsible for Fleet Improvement, Fleet Integration and Nuclear Fleet Security and Emergency Planning. For the purposes of this program, the description of responsibilities of the Vice President – Fleet Operations Support will be limited to those activities that support Nuclear Development.

1.5.2.1 Nuclear Fleet Security and Emergency Planning

The Nuclear Fleet Security and Emergency Planning (NFSEP) Manager reports to the Vice President – Fleet Operations Support and is responsible for management of the NFSEP organization and the overall coordination of fleet security activities and programs, the corporate emergency planning programs (including the common Emergency Operations Facility) and the Access Authorization program. The NFSEP Manager also has responsibility for site emergency response communication. The NFSEP organization is responsible for providing information and support concerning emergency plans and security to the Nuclear Development organization.

For the Access Authorization Program, the Nuclear Fleet Security and Emergency Planning Manager shall assure compliance with 10 CFR 73.56 (Access Authorization), NRC Order EA-02-261, dated January 7, 2003 (Compensatory Measures Related to Access Authorization Program); and 10 CFR 73.57 (Criminal History Check and Pre-Access Suitable Inquiries.)

1.5.3 Quality Assurance

The SNC Quality Assurance Organization is responsible for independently planning and performing activities to verify the development and effective implementation of the SNC quality assurance programs including but not limited to nuclear development, engineering, licensing, document control, corrective action program and procurement that support new nuclear plant generation.

1.5.3.1 Quality Assurance Manager

The Quality Assurance Manager reports to the Executive Vice President for the operations activities and to the Senior Vice President – Nuclear Development for the new reactor activities and is responsible for developing and maintaining the SNC quality assurance programs, evaluating compliance to the programs and managing the QA organization resources.

1.5.3.1.1 Nuclear Development Quality Assurance Project Manager

The Nuclear Development Quality Assurance Project Manager (NDQAPM) reports administratively to the SNC QA Manager and functionally to the Senior Vice President – Nuclear Development, and is responsible for the development and verification of implementation of the NDQAP described in this manual. The NDQAPM is responsible for assuring compliance with regulatory requirements and procedures through audits and technical reviews; for monitoring organization processes to ensure conformance to commitments and licensing document requirements; for ensuring that vendors providing quality services, parts and materials to SNC are meeting the requirements of 10CFR50 Appendix B through NUPIC or SNC vendor audits. The NDQAPM has sufficient independence from other nuclear development priorities to bring forward issues affecting safety and quality and makes judgments regarding quality in all areas necessary regarding Southern Nuclear's Nuclear Development activities. The NDQAPM may make recommendations to the Nuclear Development management regarding improving the quality of work processes. If the NDQAPM disagrees with any actions taken by the ND organization and is unable to obtain resolution, the NDQAPM shall inform the QA Manager and bring the matter to the attention of the Senior Vice President – Nuclear Development who will determine the final disposition.

1.5.3.1.1.1 Quality Assurance Coordinator

During construction, the Quality Assurance Coordinator (QAC) will report to the Nuclear Development Quality Assurance Project Manager and have a matrix reporting relationship to the Vogtle Deployment Director. The QAC will be responsible for ensuring that appropriate vendor, construction and design audits and surveillances have been performed to satisfy the regulatory requirements. Additionally, the QAC will ensure that construction procedure approval is performed in accordance with the regulatory requirements.

1.5.3.1.2 Quality Assurance Supervisor (Corporate)

The Quality Assurance Supervisor (Corporate) reports to the Quality Assurance Manager and is responsible for supporting evaluations of the quality programs of suppliers and contractors performing Nuclear Development activities within the scope of the NDQAP. This is accomplished by scheduling and conducting triennial external audits, annual supplier quality assurance program evaluations, reviewing audits conducted by external organizations (e.g., other utilities and the Nuclear Procurement Issues Committee), and maintenance of the Qualified Suppliers List. In addition, the Quality Assurance Supervisor is responsible to the Quality Assurance Manager for assuring compliance with the corporate Quality Assurance program, administration of the internal audit program, and supervising and interfacing with corporate Quality Assurance personnel.

1.5.3.1.3 Quality Assurance Supervisor (Site)

The Quality Assurance Supervisor (Site) reports to the Quality Assurance Manager and is primarily responsible for operations quality assurance activities for the existing units. He and his staff may also support Nuclear Development activities by performing oversight of onsite work which supports ESP/COL development.

1.6 Vice President and General Counsel

The Vice President and General Counsel reports to the President/CEO and is responsible for managing the various functions associated with general counsel, compliance officer, and external affairs. Reporting to this position is the Manager of Environmental Affairs.

1.6.1 Environmental Affairs

The Environmental Affairs Manager reports to the Vice President and General Counsel and is responsible for managing environmental issues such as radiological environmental, non-radiological environmental, dose and shielding calculations, and low level radioactive waste functions supporting the Nuclear Development organization. Environmental Affairs is responsible for providing various licensing, engineering and environmental related services in support of the Nuclear Development organization.

1.7 Westinghouse Electric Company, LLC

Westinghouse Electric Company, LLC (Westinghouse) provides engineering services for plant design and licensing of Westinghouse AP-1000 plants on Southern Company sites. These engineering services for new nuclear generation include site specific engineering and design necessary to support development of ESP and COL applications, preconstruction and construction activities.

1.8 SHAW Stone & Webster

SHAW Stone & Webster (SHAW) provides Architect/Engineer services for plant design and licensing for the Westinghouse AP-1000 plants on Southern Company sites. These engineering services for new nuclear generation include generic engineering and design necessary to support preconstruction and construction activities.

1.9 Bechtel Power Corporation, Inc.

Bechtel Power Corporation, Inc (Bechtel) provides engineering services for the development of the ESP and COL applications. These engineering services include site specific license engineering, and design activities necessary to support development of the ESP and COL applications, and planning and support for preconstruction and construction of new nuclear generation.

1.10 Tetra Tech NUS, Inc.

Tetra Tech NUS, Inc (TtNUS) provides environmental services to the Nuclear Development organization in support of the development of the ESP and COL applications. These environmental services include site specific investigation and analysis necessary to support development of the ESP and COL applications, and planning and support for preconstruction and construction of new nuclear generation.

1.11 Authority to Stop Work

Quality assurance and inspection personnel have the authority, and the responsibility, to stop work in progress which is not being done in accordance with approved procedures or where safety or SSC integrity may be jeopardized. This extends to off-site work performed by suppliers furnishing safety-related materials and services to SNC.

1.12 Quality Assurance Organizational Independence

For the ESP/COL and construction, independence shall be maintained between the organization or organizations performing the checking (quality assurance and control) functions and the organizations performing the functions. This provision is not applicable to design review/verification.

1.13 NQA-1-1994 Commitment

In establishing its organizational structure, SNC commits to compliance with NQA-1-1994, Basic Requirement 1 and Supplement 1S-1.

Figure II.1-1

SNC Organization

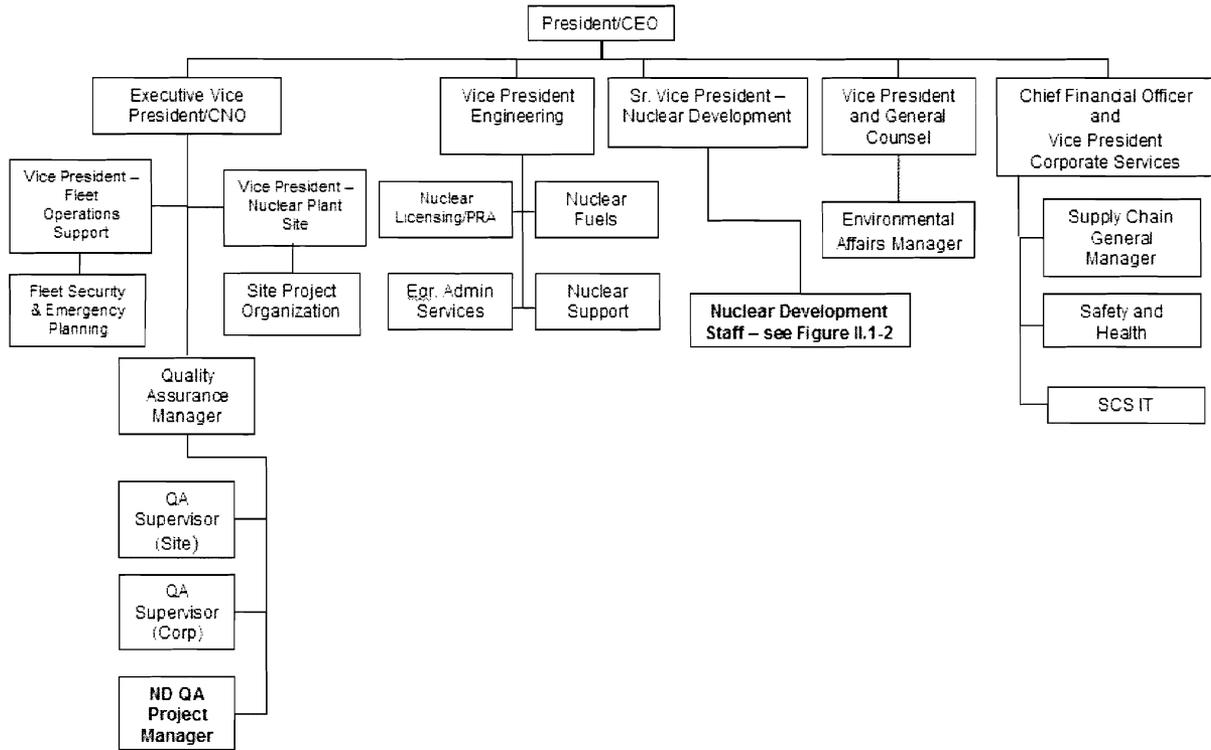


Figure II.1-2
Nuclear Development Organization

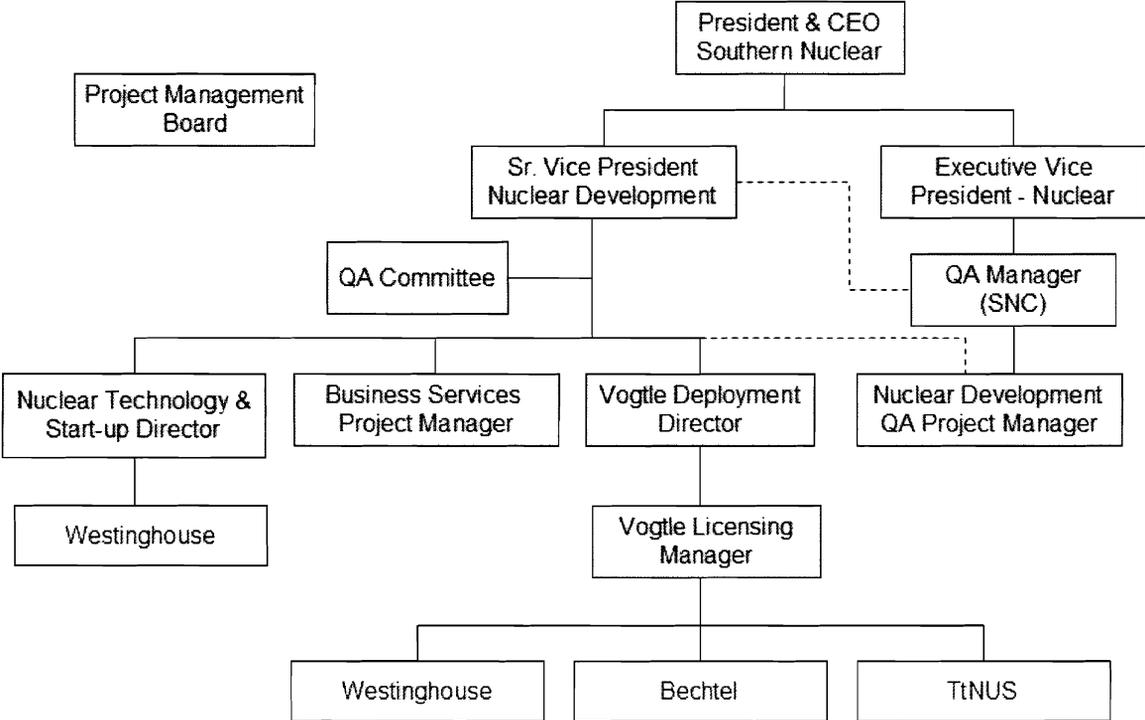
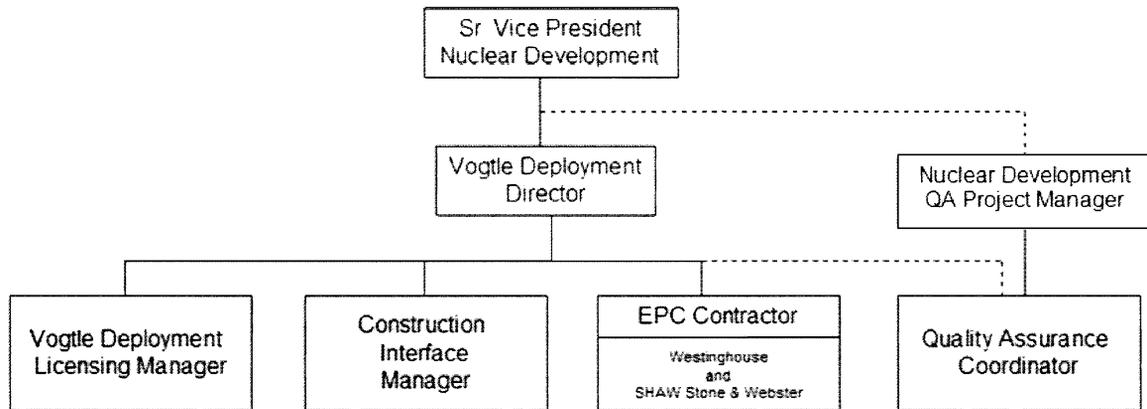


Figure II.1-3

Nuclear Development Construction Organization



SECTION 2 QUALITY ASSURANCE PROGRAM

SNC has established the necessary measures and governing procedures to implement the NDQAP as described in the NDQAM. SNC is committed to implementing the Quality Assurance Program in all aspects of work that are important to the safety of the nuclear plants as described and to the extent delineated in this NDQAM. Further, SNC ensures through the systematic process described herein that its suppliers of safety-related equipment or services meet the applicable requirements of 10 CFR 50, Appendix B. This NDQAP also applies to certain nonsafety-related structures, systems, components and activities to a degree consistent with their importance to safety. Senior management is regularly apprised of audit results evaluating the adequacy of implementation of the NDQAP through the audit functions described in the Audit Section of this NDQAM.

The objective of the NDQAP is to assure that SNC's nuclear generating plants are designed constructed and operated in accordance with governing regulations and license requirements. The program is based on the requirements of ASME NQA-1-1994, "Quality Assurance Requirements for Nuclear Facility Applications," as further described in this document. The NDQAP applies to those quality-related activities that involve the functions of safety-related structures, systems, and components (SSCs) associated with the design, licensing, construction and operation of new nuclear power plants as described in the ESP Site Safety Analysis Report and COL Final Safety Analysis Report. Examples of ESP/COL program safety-related activities include, but are not limited to, site specific engineering related to safety-related SSCs, site geotechnical investigations, site engineering analysis, seismic analysis, and meteorological analysis. A list or system identifying SSCs and activities to which this program applies is maintained at the appropriate facility. The Design Certification Document is used as the basis for this list. Cost and scheduling functions do not prevent proper implementation of the NDQAP.

Specific program controls are applied to non-safety related SSCs, for which 10 CFR 50, Appendix B is not applicable, that are significant contributors to plant safety. The specific program controls consistent with applicable sections of the NDQAM are applied to those items in a selected manner, targeted at those characteristics or critical attributes that render the SSC a significant contributor to plant safety.

Delegated responsibilities may be performed under a supplier's or principal contractor's NDQAP, provided that the supplier or principle contractor has been approved as a supplier in accordance with the NDQAP. Periodic audits and assessments of supplier QA programs are performed to assure compliance with the supplier's or principle contractor's NDQAP and implementing procedures. In addition, routine interfaces with project personnel assure that quality expectations are met.

For the ESP and/ COL applications, this NDQAP applies to those Nuclear Development and SNC activities that can affect either directly or indirectly the safety-related site characteristics or analysis of those characteristics. In addition, this NDQAP applies to engineering activities that are used to characterize the site or analyze that characterization.

New nuclear plant construction will be the responsibility of SNC's Nuclear Development organization. Detailed engineering specifications and construction procedures will be developed to implement the NDQAP, SHAW and Westinghouse QA programs prior to commencement of preconstruction (ESP) and/or construction (COL) activities. Examples of

Limited Work Authorization (LWA) activities that could impact safety-related SSCs would include impacts of construction to existing facilities and for construction of new plants, the design interface between non safety-related and safety-related SSCs and the placement of seismically designed backfill.

In general, the program requirements specified herein are detailed in implementing procedures that are either SNC implementing procedures, or supplier implementing procedures governed by a supplier quality program.

A grace period of 90 days may be applied to provisions that are required to be performed on a periodic basis unless otherwise noted. Annual evaluations and audits that must be performed on a triennial basis are examples where the 90 day general period could be applied. The grace period does not allow the “clock” for a particular activity to be reset forward. The “clock” for an activity is reset backwards by performing the activity early. Audits schedules are based on the month in which the audit starts.

2.1 Responsibilities

Personnel who work directly or indirectly for SNC are responsible for the achievement of acceptable quality in the work covered by this NDQAM. This includes those activities delineated in Part I, Section 1.1 of this NDQAM. SNC personnel performing verification activities are responsible for verifying the achievement of acceptable quality. Activities governed by the NDQAP are performed as directed by documented instructions, procedures and drawings that are of a detail appropriate for the activity’s complexity and effect on safety. Instructions, procedures and drawings specify quantitative or qualitative acceptance criteria as applicable or appropriate for the activity, and verification is against these criteria. Provisions are established to designate or identify the proper documents to be used in an activity, and to ascertain that such documents are being used. The Quality Assurance Project Manager is responsible to verify that processes and procedures comply with NDQAM and other applicable requirements, that such processes or procedures are implemented, and that management appropriately ensures compliance.

2.2 Delegation of Work

SNC retains and exercises the responsibility for the scope and implementation of an effective NDQAP. Positions identified in the Organization Section of this NDQAM may delegate all or part of the activities of planning, establishing, and implementing the program for which they are responsible to others, but retain the responsibility for the program's effectiveness. Decisions affecting safety are made at the level appropriate for its nature and effect, and with any necessary technical advice or review.

2.3 ESP and COL Identification of Site Specific Safety-Related Design Basis Activities

ESP site specific safety-related design basis activities are defined as those activities, including sampling, testing, data collection and supporting engineering calculations and reports that will be used to determine the bounding physical parameters of the site. The development of the SNC ESP and COL applications will involve site testing, data collection and calculations that may create or bound safety-related design basis data. Site testing and data collection of information pertaining to the physical characteristics of the site that have the potential to affect safety-related design will be considered safety-related. In addition, calculations and other

engineering data that bounds or characterizes the site will be classified as safety-related. The ND organization will develop an ESP application Quality Criteria Document (QCD) identifying the sections of the application that include safety-related design basis activities. In addition the QCD will identify those sections of the application and supporting analysis that will be treated with appropriate quality requirements. The ND organization will develop annotated outlines for the COL application that will identify the sections safety classification and the regulatory requirements applicable to the section content.

2.4 Periodic Review of the Quality Assurance Program

Management of those organizations implementing the QA program or portions thereof, must assess the adequacy of that part of the program for which they are responsible to assure its effective implementation at least once each year or at least once during the life of the activity, which ever is shorter. However, the period for assessing QA programs during the operations phase may be extended to once every two years.

2.5 Issuance and Revision to Quality Assurance Program Description

Administrative control of the NDQAM will be in accordance with 10 CFR 50.55(f) and 10 CFR 50.54(a), as appropriate. Changes to the NDQAM are evaluated by the ND Quality Assurance Project Manager to ensure that such changes do not degrade previously approved quality assurance controls specified in the NDQAP. This document shall be revised as appropriate to incorporate additional QA commitments that may be established during the ESP and COL application development process. New revisions to the document will be reviewed, at a minimum, by the SNC Quality Assurance Manager and approved by the Senior Vice President - Nuclear Development.

10 CFR 50.34(b)(6)(ii) and 10 CFR 52.79(a)(25) require that the Final Safety Analysis Report (FSAR) include, among other things, the managerial and administrative controls to be used to assure safe operation, including a discussion of how the applicable requirements of Appendix B will be satisfied. In order to comply with this requirement, the FSAR references this NDQAM and, as a result, the requirements of 10 CFR 50.54(a) are satisfied by and apply to the NDQAM.

2.6 Personnel Qualifications

Personnel assigned to implement elements of the NDQAP shall be capable of performing their assigned tasks. To this end SNC establishes and maintains formal indoctrination and training programs for personnel performing, verifying, or managing activities within the scope of the NDQAP to assure that suitable proficiency is achieved and maintained. Plant and support staff minimum qualification requirements are as delineated in each site's Technical Specifications. Other qualification requirements may be established but will not reduce those required by Technical Specifications. Sufficient managerial depth is provided to cover absences of incumbents. When required by code, regulation, or standard, specific qualification and selection of personnel is conducted in accordance with those requirements as established in the applicable SNC procedures. Indoctrination includes the administrative and technical objectives, requirements of the applicable codes and standards, and the NDQAP elements to be employed. Training for positions identified in 10 CFR 50.120 and 10 CFR 52.79(a)(33) are accomplished

according to programs accredited by the National Nuclear Accrediting Board of the National Academy of Nuclear Training that implement a systematic approach to training. Records of personnel training and qualification are maintained.

The minimum qualifications of the Quality Assurance Manager and the Nuclear Development Quality Assurance Project Manager are that each holds an engineering or related science degree and has a minimum of four years of related experience (3 of the 4 years must include 2 years of nuclear power plant experience and 1 year of supervisory or management experience). Also, one year of experience performing quality verification activities is required. Special requirements shall include management and supervisory skills and experience or training in leadership, interpersonal communication, management responsibilities, motivation of personnel, problem analysis and decision making, and administrative policies and procedures. Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a cases-by-case basis and approved and documented by senior management.

The minimum qualifications of the individuals responsible for planning, implementing and maintaining the programs for the NDQAP are that each has a high school diploma or equivalent and has a minimum of one year of related experience. Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

2.7 Independent Review

Activities occurring during the operational phase shall be independently reviewed on a periodic basis. The independent review program shall be functional prior to initial core loading. The independent review function performs the following:

- a. Reviews proposed changes to the facility as described in the safety analysis report (SAR). The Independent Review Body/Plant Review Board (PRB) also verifies that changes do not adversely effect safety and if a technical specification change or NRC review is required.
- b. Reviews proposed tests and experiments not described in the SAR. Changes to proposed tests and experiments not described in the SAR that **do** require a technical specification change must be reviewed by the PRB prior to NRC submittal and implementation.
- c. Reviews proposed technical specification changes and license amendments relating to nuclear safety prior to NRC submittal and implementation, except in those cases where the change is identical to a previously approved change.
- d. Reviews violations, deviations, and reportable events that are required to be reported to the NRC in writing within 24 hours. This review includes the results of investigations and recommendations resulting from such investigations to prevent or reduce the probability of recurrence of the event.

- e. Reviews any matter related to nuclear safety that is requested by the Site Vice President, Plant Manager, or any PRB member,
- f. Reviews corrective actions for significant conditions adverse to quality.
- g. Reviews the adequacy of the audit program every 24 months.

In discharging its review responsibilities, the PRB keeps safety considerations paramount when opposed to cost or schedule considerations.

Additionally, a separate Safety Review Board provides for the following:

1. Is assigned independent review responsibilities.
2. Reports to a management level above the plant manager.
3. Is composed of no less than 5 persons, no more than a minority of members are from the onsite operating organization.

For example, at least 3 of the 5 members must be from offsite if there are 5 members on the committee. A minimum of the chairman or alternative chairman and 2 members must be present for all meetings.

4. During the period of initial operation, meetings are conducted no less frequently than once per calendar quarter. Afterwards meetings are conducted no less than twice a year.
5. Results of the meeting are documented and be recorded.
6. Consultants and contractors are used for the review of complex problems beyond the expertise of the offsite/onsite Safety Review Board.
7. Persons on the Safety Review Board are qualified as follows:
 - a. Supervisor or Chairman of the Safety Review Board
 - Education: baccalaureate in engineering or related science
 - Minimum experience: 6 years combined managerial and technical support

b. Safety Review Board members

Education: Baccalaureate in engineering or related science for those Independent review personnel who are required to review problems in

- nuclear power plant operations,
- nuclear engineering,
- chemistry and radiochemistry,
- metallurgy,
- nondestructive testing,
- instrumentation and control,
- radiological safety,
- mechanical engineering, and electrical engineering.

High school diploma for those independent review personnel who are required to review problems in administrative control and quality assurance practices, training, and emergency plans and related procedures and equipment.

Minimum experience: 5 years experience in their own area of responsibility (nuclear power plant operations, nuclear engineering, chemistry and radiochemistry, metallurgy, nondestructive testing, instrumentation and control, radiological safety, mechanical engineering, and electrical engineering, administrative control and quality assurance practices, training, and emergency plans and related procedures and equipment).

2.8 NQA-1-1994 Commitment / Exceptions

- In establishing qualification and training programs, SNC commits to compliance with NQA-1-1994, Basic Requirement 2 and Supplements 2S-1, 2S-2, 2S-3 and 2S-4, with the following clarifications and exceptions:
 - NQA-1-1994, Supplement 2S-1
 - Supplement 2S-1 will include use of the guidance provided in Appendix 2A-1 the same as if it were part of the Supplement. The following two alternatives may be applied to the implementation of this Supplement and Appendix:
 - (1) In lieu of being certified as Level I, II, or III in accordance with NQA-1-1994, personnel performing independent quality verification inspections, examinations, measurements, or tests of material, products, or activities will be required to possess qualifications equal to or better than those required for performing the task being verified; and the verification is within the skills of these personnel and/or is addressed by procedures. These individuals will not be responsible for the planning of quality verification inspections and tests (i.e., establishing hold points and acceptance criteria in procedures, and determining who will be responsible for performing the inspections), evaluating inspection training programs, nor certifying inspection personnel.
 - (2) A qualified engineer may be used to plan inspections, evaluate the capabilities of an inspector, or evaluate the training program for inspectors. For the purpose of these functions, a qualified engineer is one who has a baccalaureate in engineering in a discipline related to the inspection activity (such as electrical, mechanical, civil) and has a minimum of five years engineering work experience with at least two years of this experience related to nuclear facilities.
 - NQA-1-1994, Supplement 2S-2

- In lieu of Supplement 2S-2, for qualification of nondestructive examination personnel, SNC will follow the applicable standard cited in the version(s) of Section III and Section XI of the ASME Boiler and Pressure Vessel Code approved by the NRC for use at SNC sites.
- NQA-1-1994, Supplement 2S-3
 - The requirement that prospective Lead Auditors have participated in a minimum of five (5) audits in the previous three (3) years is replaced by the following, “The prospective lead auditor shall demonstrate his/her ability to properly implement the audit process, as implemented by SNC, to effectively lead an audit team, and to effectively organize and report results, including participation in at least one nuclear audit within the year preceding the date of qualification.”

SECTION 3 DESIGN CONTROL

SNC has established and implements a process to control the design, design changes and temporary modifications (e.g. temporary bypass lines, electrical jumpers and lifted wires, and temporary setpoints) of items that are subject to the provisions of this NDQAM. The design process includes provisions to control design inputs, outputs, changes, interfaces, records and organizational interfaces within SNC and with suppliers. These provisions assure that design inputs (such as design bases and the performance, regulatory, quality, and quality verification requirements) are correctly translated into design outputs (such as analyses, specifications, drawings, procedures, and instructions) so that the final design output can be related to the design input in sufficient detail to permit verification. Design change processes and the division of responsibilities for design-related activities are detailed in SNC and supplier procedures. The design control program includes interface controls necessary to control the development, verification, approval, release, status, distribution and revision of design inputs and outputs. Design changes and disposition of nonconforming items as “use as is” or “repair” are reviewed and approved by the SNC design organization or by other organizations so authorized by SNC.

Design documents are reviewed by individuals knowledgeable in QA to ensure the documents contain the necessary QA requirements.

3.1 Design Verification

SNC design processes provide for design verification to ensure that items and activities subject to the provisions of this NDQAM are suitable for their intended application, consistent with their effect on safety. Design changes are subjected to these controls, which include verification measures commensurate with those applied to original plant design.

Design verifications are performed by competent individuals or groups other than those who performed the original design but who may be from the same organization. The verifier shall not have taken part in the selection of design inputs, the selection of design considerations, or the selection of a singular design approach, as applicable. This verification may be performed by the originator’s supervisor provided the supervisor did not specify a singular design approach, rule out certain design considerations, and did not establish the design inputs used in the design, or if the supervisor is the only individual in the organization competent to perform the verification. If the verification is performed by the originator’s supervisor, the justification of the need is documented and approved in advance by management.

The extent of the design verification required is a function of the importance to safety of the item under consideration, the complexity of the design, the degree of standardization, the state-of-the-art, and the similarity with previously proven designs. This includes design inputs, design outputs and design changes. Design verification procedures are established and implemented to assure that an appropriate verification method is used, the appropriate design parameters to be verified are chosen, the acceptance criteria are identified, and the verification is satisfactorily accomplished and documented. Verification methods may include, but are not limited to, design reviews, alternative calculations and qualification testing. Testing used to verify the acceptability of a specific design feature demonstrates acceptable performance under conditions that simulate the most adverse design conditions expected for item’s intended use.

SNC normally completes design verification activities before the design outputs are used by other organizations for design work, and before they are used to support other activities such as

procurement, manufacture or construction. When such timing cannot be achieved, the design verification is completed before relying on the item to perform its intended design or safety function.

3.2 Design Records

SNC maintains records sufficient to provide evidence that the design was properly accomplished. These records include the final design output and any revisions thereto, as well as record of the important design steps (e.g., calculations, analyses and computer programs) and the sources of input that support the final output.

Plant design drawings reflect the properly reviewed and approved configuration of the plant.

3.3 Computer Application and Digital Equipment Software

The NDQAP shall govern the development, procurement, testing, maintenance, and use of computer application and digital equipment software when used in safety-related applications and designated non safety-related applications. SNC and suppliers shall be responsible for developing, approving, and issuing procedures, as necessary, to control the use of such computer application and digital equipment software. The procedures shall require that the application software be assigned a proper quality classification and that the associated quality requirements be consistent with this classification. Each application software and revision thereto shall be documented and approved by designated SNC and supplier management and listed in a software register for identifying active quality related applications. This NDQAP shall also be applicable to the administrative functions associated with the maintenance and security of computer hardware where such functions are considered essential in order to comply with other NDQAP requirements such as QA records.

3.4 Setpoint Control

Instrument and equipment setpoints that could affect nuclear safety shall be controlled in accordance with written instructions. As a minimum, these written instructions shall:

- (1) Identify responsibilities and processes for reviewing, approving, and revising setpoints and setpoint changes originally supplied by the Design Certification holder, the A/E, and the plant's technical staff.
- (2) Ensure that setpoints and setpoint changes are consistent with design and accident analysis requirements and assumptions.
- (3) Provide for documentation of setpoints, including those determined operationally.
- (4) Provide for access to necessary setpoint information for personnel who write or revise plant procedures, operate or maintain plant equipment, develop or revise design documents, or develop or revise accident analyses.

3.5 NQA-1-1994 Commitment

In establishing its program for design control and verification, SNC commits to compliance with NQA-1-1994, Basic Requirement 3, and Supplement 3S-1, the subsurface investigations requirements contained in Subpart 2.20 and the standards for computer software contained in Subpart 2.7.

SECTION 4 PROCUREMENT DOCUMENT CONTROL

SNC has established the necessary measures and governing procedures to assure that purchased items and services are subject to appropriate quality and technical requirements. Procurement document changes shall be subject to the same degree of control as utilized in the preparation of the original documents. These controls include provisions such that:

- Where original technical or quality assurance requirements cannot be determined, an engineering evaluation is conducted and documented by qualified staff to establish appropriate requirements and controls to assure that interfaces, interchangeability, safety, fit and function, as applicable, are not adversely affected or contrary to applicable regulatory requirements.
- Applicable technical, regulatory, administrative, quality and reporting requirements (such as specifications, codes, standards, tests, inspections, special processes, and 10 CFR 21) are invoked for procurement of items and services. 10 CFR 21 requirements for posting, evaluating and reporting will be followed and imposed on suppliers when applicable. Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents for procurement of items and services. To the extent necessary, procurement documents shall require suppliers to have a documented QA program that is determined to meet the applicable requirements of 10 CFR 50, Appendix B, as appropriate to the circumstances of procurements (or the supplier may work under the licensee's approved QA program).

Reviews of procurement documents shall be performed by personnel who have access to pertinent information and who have an adequate understanding of the requirements and intent of the procurement documents.

4.1 NQA-1-1994 Commitment / Exceptions

In establishing controls for procurement, SNC commits to compliance with NQA-1-1994, Basic Requirement 4 and Supplement 4S-1, with the following clarifications and exceptions:

- NQA-1-1994, Supplement 4S-1
 - Section 2.3 of this Supplement 4S-1 includes a requirement that procurement documents require suppliers to have a documented QAP that implements NQA-1-1994, Part 1. In lieu of this requirement, SNC may require suppliers to have a documented supplier QAP that is determined to meet the applicable requirements of 10 CFR 50, Appendix B, as appropriate to the circumstances of the procurement.
 - With regard to service performed by a supplier, SNC procurement documents may allow the supplier to work under the SNC QAP, including implementing procedures, in lieu of the supplier having its own QAP.
 - Section 3 of this supplement 4S-1 requires procurement documents to be reviewed prior to bid or award of contract. The quality assurance review of procurement documents is satisfied through review of the applicable procurement specification, including the technical and quality procurement

requirements, prior to bid or award of contract. Procurement document changes (e.g., scope, technical or quality requirements) will also receive the quality assurance review.

- Procurement documents for Commercial Grade Items that will be procured by SNC for use as safety-related items shall contain technical and quality requirements such that the procured item can be appropriately dedicated.

SECTION 5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

SNC has established the necessary measures and governing procedures to ensure that activities affecting quality are prescribed by and performed in accordance with instructions, procedures or drawings of a type appropriate to the circumstances and which, where applicable, include quantitative or qualitative acceptance criteria to implement the NDQAM as described in the NDQAM. Such documents are prepared and controlled according to Part II, Section 6 of this NDQAM. In addition, means are provided for dissemination to the staff of instructions of both general and continuing applicability, as well as those of short-term applicability. Provisions are included for reviewing, updating, and canceling such procedures.

5.1 Procedure Adherence

The SNC policy is that procedures are followed, and the requirements for use of procedures have been established in administrative procedures. Where procedures cannot be followed as written, provisions are established for making changes in accordance with Part II, Section 6 of this NDQAM. Requirements are established to identify the manner in which procedures are to be implemented, including identification of those tasks that require (1) the written procedure to be present and followed step-by-step while the task is being performed, (2) the user to have committed the procedure steps to memory, (3) verification of completion of significant steps, by initials or signatures or use of check-off lists. Procedures that are required to be present and referred to directly are those developed for extensive or complex jobs where reliance on memory cannot be trusted, tasks that are infrequently performed, and tasks where steps must be performed in a specified sequence.

In cases of emergency, personnel are authorized to depart from approved procedures when necessary to prevent injury to personnel or damage to the plant. Such departures are recorded describing the prevailing conditions and reasons for the action taken.

5.2 Procedure Content

The established measures address the applicable content of procedures as described in the introduction to Part II of NQA-1-1994. In addition, procedures governing tests, inspections, operational activities and maintenance will include as applicable, initial conditions and prerequisites for the performance of the activity.

5.3 NQA-1-1994 Commitment

In establishing procedural controls, SNC commits to compliance with NQA-1-1994, Basic Requirement 5.

SECTION 6 DOCUMENT CONTROL

SNC has established the necessary measures and governing procedures to control the preparation of, issuance of, and changes to documents that specify quality requirements or prescribe how activities affecting quality, including organizational interfaces, are controlled to assure that correct documents are being employed. The control system (including electronic systems used to make documents available) shall be documented and shall provide for (a) through (f) below:

- (a) identification of documents to be controlled and their specified distribution;
- (b) a method to identify the correct document (including revision) to be used and control of superseded documents;
- (c) identification of assignment of responsibility for preparing, reviewing, approving, and issuing documents;
- (d) review of documents for adequacy, completeness, and correctness prior to approval and issuance.
- (e) a method for providing feedback from users to continually improve procedures and work instructions.
- (f) coordinating and controlling interface documents and procedures.

The types of documents to be controlled include:

- (a) drawings such as design, construction, installation, and as-built drawings;
- (b) engineering calculations
- (c) design specifications
- (d) purchase orders and related documents
- (e) vendor-supplied documents
- (f) audit, surveillance, and quality verification/inspection procedures
- (g) inspection and test reports
- (h) instructions and procedures for activities covered by this NDQAM including design, construction, installation, operating (including normal and emergency operations), maintenance, calibration, and routine testing
- (i) technical specifications
- (j) nonconformance reports and corrective action reports

During the operational phase, where temporary procedures are used, they shall include a designation of the period of time during which it is acceptable to use them.

6.1 Review and Approval of Documents

Documents shall be reviewed for adequacy by qualified persons other than the preparer. During the ESP or construction phase, procedures for design, construction, and installation shall also be reviewed to ensure quality assurance measures have been appropriately applied. The documented review signifies concurrence.

During the operations phase, documents affecting the configuration or operation of the station as described in the SAR shall be screened to identify those that require review by the PRB prior to implementation as described in Section 2 of this NDQAM.

To ensure effective and accurate procedures during the operational phase, applicable procedures shall be reviewed, and updated as necessary, based on the following conditions:

- (a) following any modification to a system;
- (b) following an unusual incident, such as an accident, significant operator error, or equipment malfunction;
- (c) when procedure discrepancies are found;
- (d) prior to use if not used in the previous two years;
- (e) QA audits are conducted in accordance with Section 18.1 of this NDQAM.

Prior to issuance or use, documents including revisions thereto, shall be approved by the designated authority. A listing of all controlled documents identifying the current approved revision, or date, is maintained so personnel can readily determine the appropriate document for use.

6.2 Changes to Documents

Changes to documents, other than those defined in implementing procedures as minor changes, shall be reviewed and approved by the same organizations that performed the original review and approval unless other organizations are specifically designated. The reviewing organization shall have access to pertinent background data or information upon which to base their approval. Where temporary procedure changes are necessary during the operations phase, changes that clearly do not change the intent of the approved procedure may be implemented provided they are approved by two members of the staff knowledgeable in the areas affected by the procedures. Minor changes to documents, such as inconsequential editorial corrections, do not require that the revised documents receive the same review and approval as the original documents. To avoid a possible omission of a required review, the type of minor changes that do not require such a review and approval and the persons who can authorize such a classification shall be clearly delineated in implementing procedures.

6.3 NQA-1-1994 Commitment

In establishing provisions for document control, SNC commits to compliance with NQA-1-1994, Basic Requirement 6 and Supplement 6S-1.

SECTION 7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

SNC has established the necessary measures and governing procedures to control the procurement of items and services to assure conformance with specified requirements. Such control shall provide for the following as appropriate: source evaluation and selection, evaluation of objective evidence of quality furnished by the supplier, source inspection, audit, and examination of items or services.

7.1 Acceptance of Item or Service

SNC establishes and implements measures to assess the quality of purchased items and services, whether purchased directly or through contractors, at intervals and to a depth consistent with the item's or service's importance to safety, complexity, quantity and the frequency of procurement. Verification actions include testing, as appropriate, during design, fabrication and construction activities. Verifications occur at the appropriate phases of the procurement process, including, as necessary, verification of activities of suppliers below the primary contractor/supplier.

Measures to assure the quality of purchased items and services include the following, as applicable:

- Items are inspected, identified, and stored to protect against damage, deterioration, or misuse.
- Prospective suppliers of safety-related items and services are evaluated to assure that only qualified suppliers are used. Qualified suppliers are audited on a triennial basis. In addition, if a subsequent contract or a contract modification significantly enlarges the scope of or changes the methods or controls for activities performed by the same supplier, an audit of the modified requirements is conducted, thus starting a new triennial period. SNC may utilize audits conducted by outside organizations for supplier qualification provided that the scope and adequacy of the audits meet SNC requirements. Documented annual evaluations are performed for qualified suppliers to assure they continue to provide acceptable products and services. Industry programs, such as those applied by ASME, Nuclear Procurement Issues Committee (NUPIC), or other established utility groups, are used as input or the basis for supplier qualification whenever appropriate. The results of the reviews are promptly considered for effect on a supplier's continued qualification and adjustments made as necessary (including corrective actions, adjustments of supplier audit plans, and input to third party auditing entities, as warranted). In addition, results are reviewed periodically to determine if, as a whole, they constitute a significant condition adverse to quality requiring additional action.
- Provisions are made for accepting purchased items and services, such as source verification, receipt inspection, pre- and post-installation tests, certificates of conformance, and document reviews (including Certified Material Test Report/Certificate). Acceptance actions/documents should be established by the Purchaser with appropriate input from the Supplier and be completed to ensure that procurement, inspection, and test requirements, as applicable, have been satisfied before relying on the item to perform its intended safety function.

- Controls are imposed for the selection, determination of suitability for intended use (critical characteristics), evaluation, receipt and acceptance of commercial-grade services or “off-the-shelf” items to assure they will perform satisfactorily in service in safety-related applications.
- If there is insufficient evidence of implementation of a QA program, the initial evaluation is of the existence of a QA program addressing the scope of services to be provided. The initial audit is performed after the supplier has completed sufficient work to demonstrate that its organization is implementing a QA program.

7.2 NQA-1-1994 Commitment / Exceptions

In establishing procurement verification controls, SNC commits to compliance with NQA-1-1994, Basic Requirement 7 and Supplement 7S-1, with the following clarifications and exceptions:

- NQA-1-1994, Supplement 7S-1
 - SNC considers that other 10 CFR 50 licensees, Authorized Nuclear Inspection Agencies, National Institute of Standards and Technology, or other State and Federal agencies which may provide items or services to SNC plants are not required to be evaluated or audited.
 - When purchasing commercial grade calibration services from a calibration laboratory, procurement source evaluation and selection measures need not be performed provided each of the following conditions are met:
 - (1) The purchase documents impose any additional technical and administrative requirements, as necessary, to comply with the SNC QA program and technical provisions. At a minimum, the purchase document shall require that the calibration certificate/report include identification of the laboratory equipment/standard used.
 - (2) The purchase documents require reporting as-found calibration data when calibrated items are found to be out-of-tolerance.
 - (3) A documented review of the supplier's accreditation shall be performed and shall include a verification of each of the following:
 - The calibration laboratory holds a domestic accreditation by the National Voluntary Laboratory Accreditation Program (NVLAP) or by the American Association for Laboratory Accreditation (A2LA) as recognized by NVLAP through the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA).
 - The accreditation is based on ANS/ISO/IEC 17025.

- The published scope of accreditation for the calibration laboratory covers the necessary measurement parameters, ranges, and uncertainties.

- For Section 8.1, SNC considers documents that may be stored in approved electronic media under SNC or vendor control and not physically located on the plant site but which are accessible from the respective nuclear facility site as meeting the NQA-1 requirement for documents to be available at the site. Following completion of the construction period, sufficient as-built documentation will be turned over to SNC to support operations. The SNC records management system will provide for timely retrieval of necessary records.

- In lieu of the requirements of Section 10, Commercial Grade Items, controls for commercial grade items and services are established in SNC documents using 10 CFR 21 and the guidance of EPRI NP-5652 as discussed in Generic Letter 89-02 and Generic Letter 91-05.

- For commercial grade items, special quality verification requirements are established and described in SNC documents to provide the necessary assurance an item will perform satisfactorily in service. The SNC documents address determining the critical characteristics that ensure an item is suitable for its intended use, technical evaluation of the item, receipt requirements, and quality evaluation of the item.

- SNC will also use other appropriate approved regulatory means and controls to support SNC commercial grade dedication activities. One example of this is NRC Regulatory Issue Summary 2002-22. SNC will assume 10 CFR 21 reporting responsibility for all items that SNC dedicates as safety-related.

SECTION 8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

SNC has established the necessary measures and governing procedures to identify and control items to prevent the use of incorrect or defective items. This includes controls for consumable materials and items with limited shelf life. The identification of items is maintained throughout fabrication, erection, installation and use so that the item can be traced to its documentation, consistent with the item's effect on safety. Identification locations and methods are selected so as not to affect the function or quality of the item.

8.1 NQA-1-1994 Commitment

In establishing provisions for identification and control of items, SNC commits to compliance with NQA-1-1994, Basic Requirement 8 and Supplement 8S-1.

SECTION 9 CONTROL OF SPECIAL PROCESSES

SNC has established the necessary measures and governing procedures to assure that special processes that require interim process controls to assure quality, such as welding, heat treating, and nondestructive examination, are controlled. These provisions include assuring that special processes are accomplished by qualified personnel using qualified procedures and equipment. Personnel are qualified and special processes are performed in accordance with applicable codes, standards, specifications, criteria or other specially established requirements. Special processes are those where the results are highly dependent on the control of the process or the skill of the operator, or both, and for which the specified quality cannot be fully and readily determined by inspection or test of the final product.

9.1 NQA-1-1994 Commitment

In establishing measures for the control of special processes, SNC commits to compliance with NQA-1-1994, Basic Requirement 9 and Supplement 9S-1.

SECTION 10 INSPECTION

SNC has established the necessary measures and governing procedures to implement inspections that assure items, services and activities affecting safety meet established requirements and conform to applicable documented specifications, instructions, procedures, and design documents. Inspection may also be applied to items, services and activities affecting plant reliability and integrity. Types of inspections may include those verifications related to procurement, such as source, in-process, final, and receipt inspection, as well as construction, installation, and operations activities. Inspections are carried out by properly qualified persons independent of those who performed or directly supervised the work. Inspection results shall be documented.

10.1 Inspection Program

The inspection program establishes inspections (including surveillance of processes), as necessary to verify quality: (1) at the source of supplied items or services, (2) in-process during fabrication at a Supplier's facility or at a Company facility, (3) for final acceptance of fabricated and/or installed items during construction, (4) upon receipt of items for a facility, as well as (5) during maintenance, modification, inservice, and operating activities.

The inspection program establishes requirements for planning inspections, such as the group or discipline responsible for performing the inspection, where inspection hold points are to be applied, determining applicable acceptance criteria, the frequency of inspection to be applied, and identification of special tools needed to perform the inspection. Inspection planning is performed by personnel qualified in the discipline related to the inspection and includes qualified inspectors or engineers. Inspection plans are based on, as a minimum, the importance of the item to the safety of the facility, the complexity of the item, technical requirements to be met, and design specifications. Where significant changes in inspection activities for the facilities are to occur, management responsible for the inspection programs evaluate the resource and planning requirements to ensure effective implementation of the inspection program.

Inspection program documents establish requirements for performing the planned inspections, and documenting required inspection information such as: reject, acceptance, and reinspection results; and the person(s) performing the inspection.

Inspection results are documented by the inspector, reviewed by authorized personnel qualified to evaluate the technical adequacy of the inspection results, and controlled by instructions, procedures, and drawings.

10.2 Inspector Qualification

SNC has established qualification programs for personnel performing quality inspections. The qualification program requirements are described in Section 2 of this NDQAM. These qualification programs are applied to individuals performing quality inspections regardless of the functional group where they are assigned.

10.3 NQA-1-1994 Commitment / Exceptions

- In establishing inspection requirements, SNC commits to compliance with NQA-1-1994, Basic Requirement 10, Supplement 10S-1 and Subpart 2.4, with the clarification that follows below. In addition, SNC commits to compliance with the requirements of Subparts 2.5 and 2.8 for establishing appropriate inspection requirements.
 - Subpart 2.4 commits SNC to IEEE 336-1985. IEEE 336-1985 refers to IEEE 498-1985. Both IEEE 336 -1985 and IEEE 498-1985 use the definition of “Safety Systems Equipment” from IEEE 603-1980. SNC commits to the definition of Safety Systems Equipment in IEEE 603-1980, but does not commit to the balance of that standard. This definition is only applicable to equipment in the context of Subpart 2.4.
 - An additional exception to Subpart 2.4 is contained in Section 12 of this NDQAM.

SECTION 11 TEST CONTROL

SNC has established the necessary measures and governing procedures to demonstrate that items subject to the provisions of this NDQAM will perform satisfactorily in service, that the plant can be operated safely and as designed, and that the coordinated operation of the plant as a whole is satisfactory. These programs include criteria for determining when testing is required, such as proof tests before installation, pre-operational tests, post-maintenance tests, post-modification tests, in-service tests, and operational tests (such as surveillance tests required by Plant Technical Specifications), to demonstrate that performance of plant systems is in accordance with design. Programs also include provisions for establishing and adjusting test schedules and maintaining status for periodic or recurring tests. Tests are performed according to applicable procedures that include, consistent with the effect on safety, (1) instructions and prerequisites to perform the test, (2) use of proper test equipment, (3) acceptance criteria, and (4) mandatory verification points as necessary to confirm satisfactory test completion. Test results are documented and evaluated by the organization performing the test and reviewed by a responsible authority to assure that the test requirements have been satisfied. If acceptance criteria are not met, retesting is performed as needed to confirm acceptability following correction of the system or equipment deficiencies that caused the failure.

The initial start-up test program is planned and scheduled to permit safe fuel loading and start-up; to increase power in safe increments; and to perform major testing at specified power levels. If tests require the variation of operating parameters outside of their normal range, the limits within which such variation is permitted will be prescribed. The scope of the testing demonstrates, insofar as practicable, that the plant is capable of withstanding the design transients and accidents. For new facility construction, the suitability of facility operating procedures is checked to the maximum extent possible during the preoperational and initial start-up test programs.

The tests are performed and results documented in accordance with applicable technical and regulatory requirements including those described in the Technical Specifications and SAR. The test programs ensure appropriate retention of test data in accordance with the records requirements of this NDQAM. The personnel performing or evaluating tests are qualified in accordance with the requirements established in Section 2 of this NDQAM.

11.1 NQA-1-1994 Commitment

In establishing provisions for testing, SNC commits to compliance with NQA-1-1994, Basic Requirement 11 and Supplement 11S-1.

11.2 NQA-1-1994 Commitment for Computer Program Testing

SNC establishes and implements provisions to assure that computer software used in applications affecting safety is prepared, documented, verified and tested, and used such that the expected output is obtained and configuration control maintained. To this end SNC commits to compliance with the requirements of NQA-1-1994, Supplement 11S-2 and Subpart 2.7 to establish the appropriate provisions.

SECTION 12 CONTROL OF MEASURING AND TEST EQUIPMENT

SNC has established the necessary measures and governing procedures to control the calibration, maintenance, and use of measuring and test equipment (M&TE) that provides information important to safe plant operation. The provisions of such procedures cover equipment such as indicating and actuating instruments and gages, tools, reference and transfer standards, and nondestructive examination equipment. The suppliers of commercial-grade calibration services shall be controlled as described in Section 7 of this NDQAM.

Installed Instrument and Control Devices

For the operations phase of the facilities, the SNC has established and implements procedures for the calibration and adjustment of instrument and control devices installed in the facility. The calibration and adjustment of these devices is accomplished through the facility maintenance programs to ensure the facility is operated within design and technical requirements. Appropriate documentation will be maintained for these devices to indicate the control status, when the next calibration is due, and identify any limitations on use of the device.

12.1 NQA-1-1994 Commitment / Exceptions

In establishing provisions for control of measuring and test equipment, SNC commits to compliance with NQA-1-1994, Basic Requirement 12 and Supplement 12S-1 with the following clarification and exception:

- The out of calibration conditions described in paragraph 3.2 of Supplement 12S-1 refers to when the M&TE is found out of the required accuracy limits (i.e. out of tolerance) during calibration.
- Measuring and test equipment are not required to be marked with the calibration status where it is impossible or impractical due to equipment size or configuration (such as the label will interfere with operation of the device) provided the required information is maintained in suitable documentation traceable to the device. This exception also applies to the calibration labeling requirement stated in NQA-1-1994, Subpart 2.4, Section 7.2.1 (ANSI/IEEE Std. 336-1985).

SECTION 13 HANDLING, STORAGE, AND SHIPPING

SNC has established the necessary measures and governing procedures to control the handling, storage, packaging, shipping, cleaning, and preservation of items to prevent inadvertent damage or loss, and to minimize deterioration. These provisions include specific procedures, when required to maintain acceptable quality of the items important to the safe operations of the plant. Items are appropriately marked and labeled during packaging, shipping, handling and storage to identify, maintain, and preserve the item's integrity and indicate the need for special controls. Special controls (such as containers, shock absorbers, accelerometers, inert gas atmospheres, specific moisture content levels and temperature levels) are provided when required to maintain acceptable quality.

Special or additional handling, storage, shipping, cleaning and preservation requirements are identified and implemented as specified in procurement documents and applicable procedures. Where special requirements are specified, the items and containers (where used) are suitably marked.

Special handling tools and equipment shall be used and controlled as necessary to ensure safe and adequate handling. Special handling tools and equipment shall be inspected and tested at specified time intervals and in accordance with procedures to verify that the tools and equipment are adequately maintained.

Operators of special handling and lifting equipment shall be experienced or trained in the use of the equipment. During the operational phase, SNC establishes and implements controls over hoisting, rigging and transport activities to the extent necessary to protect the integrity of the items involved, as well as potentially affected nearby structures and components. Where required, SNC complies with applicable hoisting, rigging and transportation regulations and codes.

13.1 Housekeeping

Housekeeping practices are established to account for conditions or environments that could affect the quality of structures, systems and components within the plant. This includes control of cleanliness of facilities and materials, fire prevention and protection, disposal of combustible material and debris, control of access to work areas, protection of equipment, radioactive contamination control and storage of solid radioactive waste. Housekeeping practices help assure that only proper materials, equipment, processes and procedures are used and that the quality of items is not degraded. Necessary procedures or work instructions, such as for electrical bus and control center cleaning, cleaning of control consoles, and radioactive decontamination are developed and used.

13.2 NQA-1-1994 Commitment / Exceptions

In establishing provisions for handling, storage and shipping, SNC commits to compliance with NQA-1-1994, Basic Requirement 13 and Supplement 13S-1. SNC also commits, during the construction and pre-operational phase of the plant, to compliance with the requirements of NQA-1-1994, Subpart 2.1, and Subpart 2.2 with the clarifications and exceptions shown below:

- NQA -1-1994, Subpart 2.2
 - Subpart 2.2, section 6.6, “Storage Records:” This section requires written records be prepared containing information on personnel access. As an alternative to this requirement, SNC documents establish controls for storage areas that describe those authorized to access areas and the requirements for recording access of personnel. However, these records of access are not considered quality records and will be retained in accordance with the administrative controls of the applicable plant.
 - Subpart 2.2, section 7.1 refers to Subpart 2.15 for requirements related to handling of items. The scope of Subpart 2.15 includes hoisting, rigging and transporting of items for nuclear power plants during construction.

SECTION 14 INSPECTION, TEST, AND OPERATING STATUS

SNC has established the necessary measures and governing procedures to identify the inspection, test, and operating status of items and components subject to the provisions of this NDQAM in order to maintain personnel and reactor safety and avoid inadvertent operation of equipment. Where necessary to preclude inadvertent bypassing of inspections or tests, or to preclude inadvertent operation, these measures require the inspection, test or operating status be verified before release, fabrication, receipt, installation, test or use. These measures also establish the necessary authorities and controls for the application and removal of status indicators or labels.

In addition, temporary design changes (temporary modifications), such as temporary bypass lines, electrical jumpers and lifted wires, and temporary trip-point settings, are controlled by procedures that include requirements for appropriate installation and removal, independent/concurrent verifications and status tracking.

The administrative procedures also describe the measures taken to control altering the sequence of required tests, inspections, and other operations. The review and approval for these actions is subject to the same control as taken during the original review and approval of tests, inspections, and other operations.

14.1 NQA-1-1994 Commitment

In establishing measures for control of inspection, test and operating status, SNC commits to compliance with NQA-1-1994, Basic Requirement 14.

SECTION 15 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

SNC has established the necessary measures and governing procedures to control items, including services, which do not conform to specified requirements to prevent inadvertent installation or use. Controls provide for identification, documentation, evaluation, segregation when practical, and disposition of nonconforming items, and for notification to affected organizations. Controls are provided to address conditional release of nonconforming items for use on an at risk basis prior to resolution and disposition of the nonconformance, including maintaining identification of the item and documenting the basis for such release. Conditional release of nonconforming items for installation requires the approval of the designated management. Nonconformances are corrected or resolved prior to depending on the item to perform its intended safety function. Nonconformances are evaluated for impact on operability of quality structures, systems, and components to assure that the final condition does not adversely affect safety, operation, or maintenance of the item or service. Nonconformances to design requirements dispositioned repair or use-as-is, shall be subject to design control measures commensurate with those applied to the original design. Nonconformance dispositions are reviewed for adequacy, analysis of quality trends, and reports provided to the designated management. Significant trends are reported to management in accordance with SNC procedures, regulatory requirements, and industry standards.

15.1 Reporting Program

SNC will establish the necessary measures and governing procedures that implement a reporting program which conforms to the requirements of 10 CFR 52, 10 CFR 50.55(e) and/or 10 CFR 21 during ESP/COL and construction and 10 CFR 21 during operations.

15.2 NQA-1-1994 Commitment

In establishing measures for nonconforming materials, parts, or components, SNC commits to compliance with NQA-1-1994, Basic Requirement 15, and Supplement 15S-1.

SECTION 16 CORRECTIVE ACTION

SNC has established the necessary measures and governing procedures to promptly identify, control, document, classify and correct conditions adverse to quality. SNC procedures assure that corrective actions are documented and initiated following the determination of conditions adverse to quality in accordance with regulatory requirements and applicable quality standards. SNC procedures require personnel to identify known conditions adverse to quality. When complex issues arise where it cannot be readily determined if a condition adverse to quality exists, SNC documents establish the requirements for documentation and timely evaluation of the issue. Reports of conditions adverse to quality are analyzed to identify trends. Significant conditions adverse to quality and significant adverse trends are documented and reported to responsible management. In the case of a significant condition adverse to quality, the cause is determined and actions to preclude recurrence are taken.

In the case of suppliers working on safety-related activities, or other similar situations, the licensee may delegate specific responsibilities of the Corrective Action program but the licensee maintains responsibility for the program's effectiveness.

16.1 Reporting Program

SNC has in-place the necessary measures and governing procedures that implement a program to identify, evaluate and report defects and non-compliances in accordance with 10 CFR 50.55(e) and/or 10 CFR Part 21, as applicable. Such a reporting program applies to safety-related activities and services performed by SNC and/or SNC suppliers / sub-suppliers providing input to the ESP and COL application development.

16.2 NQA-1-1994 Commitment

In establishing provisions for corrective action, SNC commits to compliance with NQA-1-1994, Basic Requirement 16.

SECTION 17 QUALITY ASSURANCE RECORDS

SNC shall establish the necessary measures and governing procedures to ensure that sufficient records of items and activities affecting quality are developed, reviewed, approved, issued, used, and revised to reflect completed work. The provisions of such procedures establish the scope of the records retention program for SNC and include requirements for records administration, including receipt, preservation, retention, storage, safekeeping, retrieval, access controls, user privileges, and final disposition.

17.1 Record Retention

Measures are required to be established that ensure that sufficient records of completed items and activities affecting quality are appropriately stored. Such records and their retention times are defined in appropriate procedures. In all cases where state, local, or other agencies have more restrictive requirements for record retention, those requirements will be met.

17.2 Electronic Records

When using electronic records storage and retrieval systems, SNC complies with NRC guidance Generic Letter 88-18, "Plant Record Storage on Optical Disks." SNC will manage the storage of QA Records in electronic media consistent with the intent of RIS 2000-18 and associated NIRMA Guidelines TG 11-1998, TG15-1998, TG16-1998, and TG21-1998.

17.3 NQA-1-1994 Commitment / Exceptions

In establishing provisions for records, SNC commits to compliance with NQA-1-1994, Basic Requirement 17 and Supplement 17S-1, with the following clarifications and exceptions:

- NQA-1-1994, Supplement 17S-1
 - Supplement 17S-1, section 4.2(b) requires records to be firmly attached in binders or placed in folders or envelopes for storage in steel file cabinets or on shelving in containers. For hard-copy records maintained by SNC, the records are suitably stored in steel file cabinets or on shelving in containers, except that methods other than binders, folders or envelopes may be used to organize the records for storage.

SECTION 18 AUDITS

SNC has established the necessary measures and governing procedures to implement audits to verify that activities covered by this NDQAM are performed in conformance with the requirements established. The audit programs are themselves reviewed for effectiveness as a part of the overall audit process.

18.1 Performance of Audits

Internal audits of selected aspects of licensing, design, construction phase and operating activities are performed with a frequency commensurate with safety significance and in a manner which assures that audits of safety-related activities are completed. During the early portions of Nuclear Development activities, audits will focus on areas including, but not limited to, site investigation, procurement, and corrective action. Functional areas of an organization's QA program for auditing include at a minimum verification of compliance and effectiveness of implementation of internal rules, procedures (e.g., operating, design, procurement, maintenance, modification, refueling, surveillance, test, security, radiation control procedures, and the emergency plan), Technical Specifications, regulations and license conditions, programs for training, retraining, qualification and performance of operating staff, corrective actions, and observation of performance of operating, refueling, maintenance and modification activities, including associated record keeping. The audits are scheduled on a formal preplanned audit schedule. The audit system is reviewed periodically and revised as necessary to assure coverage commensurate with current and planned activities. Additional audits may be performed as deemed necessary by management. The scope of the audit is determined by the quality status and safety importance of the activities being performed. These audits are conducted by trained personnel not having direct responsibilities in the area being audited and in accordance with preplanned and approved audit plans or checklists, under the direction of a qualified lead auditor and the cognizance of the Quality Assurance Project Manager.

SNC is responsible for conducting periodic internal and external audits. Internal audits are conducted to determine the adequacy of programs and procedures (by representative sampling), and to determine if they are meaningful and comply with the overall NDQAM. External audits determine the adequacy of supplier and contractor quality assurance program.

The results of each audit are reported in writing to the Senior Vice President Nuclear Development, or designee, as appropriate. Additional internal distribution is made to other concerned management levels in accordance with approved procedures.

Management responds to all audit findings and initiates corrective action where indicated. Where corrective action measures are indicated, documented follow-up of applicable areas through inspections, review, re-audits, or other appropriate means is conducted to verify implementation of assigned corrective action.

Internal Audits

a. Internal audits of organization and facility activities, conducted prior to placing the facility in operation, should be performed in such a manner as to assure that an audit of all applicable QA program elements is completed for each functional area at least once each year or at least once during the life of the activity, whichever is shorter. Internal audits of activities, conducted after placing the facility in operation, should be performed in such a manner as to assure that an

audit of all applicable QA program elements is completed for each functional area within a period of two years.

b. Internal audit frequencies of well established activities, conducted after placing the facility in operation, may be extended one year at a time beyond the above two-year interval based on the results of an annual evaluation of the applicable functional area and objective evidence that the functional area activities are being satisfactorily accomplished. The evaluation should include a detailed performance analysis of the functional area based upon applicable internal and external source data and due consideration of the impact of any functional area changes in responsibility, resources or management. However, the internal audit frequency interval should not exceed a maximum of four years. If an adverse trend is identified in the applicable functional area, the extension of the internal audit frequency interval should be rescinded and an audit scheduled as soon as practicable.

During the operations phase audits are performed at a frequency commensurate with the safety significance of the activities and in such a manner to assure audits of all applicable QA program elements are completed within a period of two years. These audits will include, as a minimum, activities in the following areas:

- (1) The conformance of facility operation to provisions contained within the Technical Specifications and applicable license conditions including administrative controls.
- (2) The performance, training, and qualifications of the facility staff.
- (3) The performance of activities required by the NDQAM to meet the criteria of 10 CFR 50, Appendix B.
- (4) The Fire Protection Program and implementing procedures. A fire protection equipment and program implementation inspection and audit is conducted utilizing either a qualified offsite licensed fire protection engineer or an outside qualified fire protection consultant.
- (5) Other activities and documents considered appropriate by the site Vice President, or the CNO.

Audits may also be used to meet the periodic review requirements of the code for the Security, Emergency Preparedness, and Radiological Protection programs within the provisions of the applicable code.

Internal audits include verification of compliance and effectiveness of the administrative controls established for implementing the requirements of this NDQAM; regulations and license provisions; provisions for training, retraining, qualification, and performance of personnel performing activities covered by this NDQAM; corrective actions taken following abnormal occurrences; and, observation of the performance of construction, fabrication, operating, refueling, maintenance and modification activities including associated record keeping.

c. Audits of suppliers of safety-related components and/or services are conducted as described in Section 7.1.

18.2 NQA-1-1994 Commitment

In establishing the independent audit program, SNC commits to compliance with NQA-1-1994, Basic Requirement 18 and Supplement 18S-1.

PART III NONSAFETY-RELATED SSC QUALITY CONTROL

SECTION 1 Nonsafety Related SSCs - Significant Contributors to Plant Safety

Specific program controls are applied to non-safety related SSCs, for which 10 CFR 50, Appendix B is not applicable, that are significant contributors to plant safety. The specific program controls consistent with applicable sections of the NDQAM are applied to those items in a selected manner, targeted at those characteristics or critical attributes that render the SSC a significant contributor to plant safety.

The following clarify the applicability of the QA Program to the nonsafety-related SSCs and related activities, including the identification of exceptions to the QA Program described in Part II, Sections 1 through 18 taken for nonsafety-related SSCs.

1.1 Organization

The verification activities described in this part may be performed by the SNC line organization, the QA organization described in Part II is not required to perform these functions.

1.2 QA Program

SNC QA requirements for nonsafety-related SSCs are contained in this NDQAM and appropriate procedures. Suppliers of these SSCs or related services describe the quality controls applied in appropriate procedures, a new or separate QA program is not required.

1.3 Design Control

SNC shall establish design control measures to ensure that the contractually established design requirements are included in the design. These measures ensure that applicable design inputs are included or correctly translated into the design documents, and deviations from those requirements are controlled. Design verification is provided through the normal supervisory review of the designer's work.

1.4 Procurement Document Control

Procurement documents for items and services obtained by or for SNC shall include or reference documents describing applicable design bases, design requirements, and other requirements necessary to ensure component performance. The procurement documents are controlled to address deviations from the specified requirements.

1.5 Instructions, Procedures, and Drawings

SNC shall provide documents such as, but not limited to, written instructions, plant procedures, drawings, vendor technical manuals, and special instructions in work orders, to direct the performance of activities affecting quality. The method of instruction employed shall provide an appropriate degree of guidance to the personnel performing the activity to achieve acceptable functional performance of the SSC.

1.6 Document Control

SNC shall establish controls for the issuance and change of documents that specify quality requirements or prescribe activities affecting quality to ensure that correct documents are used. These controls include review and approval of documents, identification of the appropriate revision for use, and measures to preclude the use of superseded or obsolete documents.

1.7 Control of Purchased Items and Services

SNC shall establish measures, such as inspection of items or documents upon receipt or acceptance testing, to ensure that all purchased items and services conform to appropriate procurement documents.

1.8 Identification and Control of Purchased Items

SNC shall establish measures where necessary, to identify purchased items and preserve their functional performance capability. Storage controls take into account appropriate environmental, maintenance, or shelf life restrictions for the items.

1.9 Control of Special Processes

SNC shall establish process and procedure controls for special processes, including welding, heat treating, and nondestructive testing. These controls are based on applicable codes, standards, specifications, criteria, or other special requirements for the special process.

1.10 Inspection

SNC shall establish documented instructions to ensure necessary inspections are performed to verify conformance of an item or activity to specified requirements or to verify that activities are satisfactorily accomplished. These inspections may be performed by personnel in the line organization through the SNC independent verification (IV)/ simultaneous verification (SV), or similar process that utilizes knowledgeable personnel to perform the verification function.

1.11 Test Control

SNC shall establish measures to identify required testing that demonstrates that equipment conforms to design requirements. These tests are performed in accordance with test instructions or procedures. The test results are recorded, and authorized individuals evaluate the results to ensure that test requirements are met.

1.12 Control of Measuring and Test Equipment (M&TE)

SNC shall establish measures to control M&TE use, and calibration and adjustment at specific intervals or prior to use.

1.13 Handling, Storage, and Shipping

SNC shall establish measures to control the handling, storage, cleaning, packaging, shipping, and preservation of items to prevent damage or loss and to minimize deterioration. These measures include appropriate marking or labels, and identification of any special storage or handling requirements.

1.14 Inspection, Test, and Operating Status

SNC shall establish measures to identify items that have satisfactorily passed required tests and inspections and to indicate the status of inspection, test, and operability as appropriate.

1.15 Control of Nonconforming Items

SNC shall establish measures to identify and control items that do not conform to specified requirements to prevent their inadvertent installation or use.

1.16 Corrective Action

SNC shall establish measures to ensure that failures, malfunctions, deficiencies, deviations, defective components, and nonconformances are properly identified, reported, and corrected.

1.17 Records

SNC shall establish measures to ensure records are prepared and maintained to furnish evidence that the above requirements for design, procurement, document control, inspection, and test activities have been met.

1.18 Audits

SNC shall establish measures for line management to periodically review and document the adequacy of the process and take any necessary corrective action. Audits independent of line management are not required. Line management is responsible for determining whether reviews conducted by line management or audits conducted by any organization independent of line management are appropriate. If performed, audits are conducted and documented to verify compliance with design and procurement documents, instructions, procedures, drawings, and inspection and test activities. Where the measures of this part (Part III) are implemented by the same programs, processes, or procedures as the comparable activities of Part II, the audits performed under the provisions of Part II may be used to satisfy the review requirements of this Section (Part III, Section 1.18).

SECTION 2 Nonsafety-Related SSCs Credited for Regulatory Events

The following criteria apply to fire protection (10 CFR 50.48), anticipated transients without scram (ATWS) (10 CFR 50.62), the station blackout (SBO) (10 CFR 50.63) SSCs that are not safety related.

SNC shall implement quality requirements to the fire protection system in accordance with Regulatory Position 1.7, "Quality Assurance," in Regulatory Guide 1.189, "Fire Protection for Operating Nuclear Power Plants."

SNC shall implement the quality requirements to ATWS equipment in accordance with Generic Letter 85-06, "Quality Assurance Guidance for ATWS Equipment That Is Not Safety Related."

SNC shall implement quality requirements to SBO equipment in accordance with Regulatory Position 3.5, "Quality Assurance and Specific Guidance for SBO Equipment That Is Not Safety Related," and Appendix A, "Quality Assurance Guidance for Non-Safety Systems and Equipment," in Regulatory Guide 1.155, "Station Blackout."

PART IV REGULATORY COMMITMENTS

NRC Regulatory Guides and Quality Assurance Standards

This section identifies the NRC Regulatory Guides and the other quality assurance standards which have been selected to supplement and support the SNC NDQAM. SNC commits to compliance with these standards to the extent described herein. Commitment to a particular Regulatory Guide or other QA standard does not constitute a commitment to the Regulatory Guides or QA standards that may be referenced therein.

Regulatory Guides:

Regulatory Guide 1.26, Revision 4, March 2007 – Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants

Regulatory Guide 1.26 defines classification of systems and components.

SNC commits to the applicable regulatory position guidance provided in this regulatory guide for Nuclear Development with the exception of Criteria C.1, C.1.a, C.1.b, and C.3. Refer to the Westinghouse AP1000 Design Control Document, Appendix 1A for a detailed discussion of these exceptions.

Regulatory Guide 1.29, Revision 4, March 2007 – Seismic Design Classification

Regulatory Guide 1.29 defines systems required to withstand a safe shutdown earthquake (SSE).

SNC commits to the applicable regulatory position guidance provided in this regulatory guide for Nuclear Development with the exception of Criteria C.1.d, C.1.g, and C.1.n. Refer to the Westinghouse AP1000 Design Control Document, Appendix 1A for a detailed discussion of these exceptions.

Standards:

ASME NQA-1-1994 Edition – Quality Assurance Requirements for Nuclear Facility Applications

SNC commits to NQA-1-1994, Parts I and II, as described in the foregoing sections of this document.

Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guides (TGs)

SNC commits to NIRMA TGs as described in Part II, Section 17 of this document.