From: Christian Araguas
To: "Vogtle SR" <>
Date: 10/16/2007 10:42:30 AM
Subject: Resp to OIs from SNC & ACRS Meeting Agenda
cc: <lance.vail@pnl.gov>,<Rajiv.Prasad@pnl.gov>

All:

Attached are the responses to the open items that were sent to SNC on the review of the Vogtle ESP application. Sometime this week, the public website will be updated and will contain links to the SER, the application, LWA supplement, and the most recently issued public schedule. While we transition to using EPM please also make sure to visit the website and make yourself aware of all the major milestones remaining on the project.

Also attached is the agenda for the ACRS subcommittee meeting scheduled for Wednesday October 24, 2007. The November 1, 2007 ACRS full committee meeting agenda has not been posted yet but it is planned to begin sometime in the afternoon. I will follow up with this agenda once it has been made available to me. Let me know if you have any questions. As you'll see on the agenda, the meeting on Vogtle ends at 4:00 pm, but following the meeting there will be a status meeting on implementation of ESP lessons learned. For those of you that supported last years ESP lessons learned meeting, I will also need you to stick around for this meeting as well. It is a short meeting and shouldn't go past the scheduled time. Thanks.

Christian

Hearing Identifier: Vogtle_Non_Public
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Mail Envelope Properties (472A06CA.HQGWDO01.TWGWPO04.200.2000007.1.CF2AC.1)

Subject: Resp to OIs from SNC & ACRS Meeting Agenda
Creation Date: 10/16/2007 10:42:30 AM
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Options
Priority: Standard
Reply Requested: No
Return Notification: None
None

Concealed Subject: No
Security: Standard

Advisory Committee on Reactor Safeguards
Early Site Permits Subcommittee
Vogtle Early Site Permit Application
October 24, 2007
Rockville, Maryland

-PROPOSED AGENDA-

Cognizant Staff Engineer: David C. Fischer DCF@NRC.GOV (301) 415-6889

Topics		Lead	Presentation Time
I	Introduction	Dr. D. Powers, ACRS	8:30 am - 8:35 am
II	Southern Nuclear Operating Company - Overview of Application - Response to NRC Issues - Schedule	SNC Rep.	8:35 am -10:15 am
	BREAK		10:15 am - 10:30 am
III	NRC Presentation - Status and Overview - DSER Review - Open Items - Upcoming Milestones - Schedule	T. Bergman, NRO/DNRL C. Araguas, NRO/DNRL	10:30 am - 12:00 pm
	LUNCH		12:00 pm - 1:00 pm
IV	Geology, Seismology, and Geotechnical Engineering	SNC Rep. NRO/DNRL	1:00 pm - 3:00 pm
	Break		3:00 pm - 3:15 pm
V	Radiological Consequences of DBAs	SNC Rep. NRO/DNRL	3:15 pm - 3:30 pm
VI	NRC Staff's Conclusions	C. Araguas, NRO/DNRL	3:30 pm - 3:45 pm
VII	Public Comments		3:45 pm - 4:00 pm
VIII	Status of Implementing Lessons Learned While Conducting Licensing Activities Pursuant to 10 CFR Part 52	C. Araguas, NRO/DNRL	4:00 pm - 4:50 pm
IX	General discussion / Adjourn	Dr. D. Powers, ACRS	4:50 pm - 5:00 pm

NOTE:

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- 35 copies of the presentation materials to be provided to the Subcommittee.

J. A. "Buzz" Miller
Senior Vice President
Nuclear Development

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SOUTHERN COMPANY
Energy to Serve Your World℠

OCT 15 2007

Docket No.: 52-011

AR-07-1773

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Southern Nuclear Operating Company
Vogtle Early Site Permit Application
Response to Safety Evaluation Report Open Items

Ladies and Gentlemen:

By letter dated August 30, 2007, the U.S. Nuclear Regulatory Commission (NRC) provided Southern Nuclear Operating Company (SNC) with the Safety Evaluation Report (SER) for the Vogtle Early Site Permit (ESP) Application with 41 open items (OIs). In that letter, the NRC requested SNC to respond to the OIs contained in the SER no later than October 15, 2007. The SER OIs involve the subject areas of Meteorology, Hydrology, Geology/Seismology, and Emergency Planning from SER Sections 2.3, 2.4, 2.5, and 13.3, respectively. This letter provides SNC's response to 27 SER OIs. As discussed with NRC project management, a schedule for OIs linked to additional COL or new ESP testing, analysis or modeling has been provided with the remaining 14 OIs.

The SNC contact for this OI response letter is J. T. Davis at (205) 992-7692.

Mr. J. A. (Buzz) Miller states he is a Senior Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

JA Miller

Joseph A. (Buzz) Miller

Sworn to and subscripted before me this 15th *day of* October, *2007*

Dana M. Williams

Notary Public

My commission expires: 12/29/2010

JAM/BJS/dmw

Enclosures:
1. Response to NRC Safety Evaluation Report Open Items on the Vogtle ESP Application
2. Proposed Revision to ESP Emergency Plan V2 Appendix 3 - Unit 3 ITAAC
3. Proposed Revision to ESP Emergency Plan V2 Appendix 4 - Unit 4 ITAAC
4. Letters of Agreement from Radiation Management Consultants
5. Revised Burke County Emergency Plan

cc: Southern Nuclear Operating Company
Mr. J. B. Beasley, Jr., President and CEO (w/o enclosures)
Mr. J. T. Gasser, Executive Vice President, Nuclear Operations (w/o enclosures)
Mr. T. E. Tynan, Vice President - Vogtle (w/o enclosures)
Mr. D. M. Lloyd, Vogtle Deployment Director (w/o enclosures)
Mr. C. R. Pierce, Vogtle Development Licensing Manager (w/o enclosures)
Mr. W. H. Lee, Emergency Planning Supervisor (w/o enclosures)
Mr. D. P. Moore, Engineering Programs Consulting Engineer (w/o enclosures)
Document Services RTYPE: AR01
File AR.01.01.06

Nuclear Regulatory Commission
Mr. R. W. Borchardt, Director of Office of Nuclear Regulation (w/o enclosures)
Mr. W. D. Travers, Region II Administrator (w/o enclosures)
Mr. D. B. Matthews, Director of New Reactors (w/o enclosures)
Ms. S. M. Coffin, AP1000 Manager of New Reactors (w/o enclosures)
Mr. C. J. Araguas, Project Manager of New Reactors
Mr. J. E. Lyons, Director of Site and Environmental Review (w/o enclosures)
Mr. W.F. Burton, Chief – Environmental Technical Support (w/o enclosures)
Mr. M. D. Notich, Environmental Project Manager
Mr. G. J. McCoy, Senior Resident Inspector of VEGP (w/o enclosures)

Georgia Power Company
Mr. O. C. Harper, Vice President, Resource Planning and Nuclear Development (w/o enclosures)

Oglethorpe Power Corporation
Mr. M. W. Price, Chief Operating Officer (w/o enclosures)

Municipal Electric Authority of Georgia
Mr. C. B. Manning, Senior Vice President and Chief Operating Officer (w/o enclosures)

Dalton Utilities
Mr. D. Cope, President and Chief Executive Officer (w/o enclosures)

Bechtel Power Corporation
Mr. J. S. Prebula, Project Engineer
Mr. R. W. Prunty, Licensing Engineer

Tetra Tech NUS, Inc.
Ms. K. K. Patterson, Project Manager (w/o enclosures)

Southern Nuclear Operating Company

AR-07-1773

Enclosure 1

Response to

NRC Safety Evaluation Report Open Items

on the Vogtle ESP Application

SER Section 2.3.1 – Regional Climatology

2.3-1 Calculate the following AP1000 specific temperature site characteristics based on a 100-year return period.

- **Maximum safety dry-bulb temperature with a coincident wet-bulb temperature**
- **Maximum safety noncoincident wet-bulb temperature**

Response:

Maximum safety dry-bulb temperature with a coincident wet-bulb temperature

A 45-year data set from the International Station Meteorological Climate Summary for Augusta, GA was used to develop a dry-bulb to wet-bulb correlation curve. The dry-bulb temperatures ranging from 1° F to 105° F (the maximum value from the data set), were plotted in 2° F intervals along with the maximum observed coincident wet-bulb temperature to obtain a correlation curve. The curve was extrapolated to 115° F (the previously determined 100-yr return maximum dry-bulb temperature) to determine the 100-yr return coincident wet-bulb temperature of 77.7^{o} F. This site-specific maximum safety dry-bulb temperature of 115° F and coincident wet-bulb temperature of 77.7^{o} F is bounded by the Westinghouse DCD maximum safety values of 115° F dry-bulb / 80° F coincident wet-bulb.

Maximum safety non-coincident wet-bulb temperature

The maximum safety non-coincident wet-bulb temperature was determined in a two-step process using hourly temperature data from the NCDC summaries for Augusta, GA:

- The maximum wet-bulb temperature that persisted for at least two consecutive hours was plotted for a 21-year period for which hourly data was available resulting in a curve fit equation.
- A 100-yr value was extrapolated from the equation utilizing the 21 years of maximum 2-hour sustained wet-bulb temperatures.

The 100-yr maximum safety wet-bulb temperature was determined from the equation to be 84.3^{o} F. Therefore, the VEGP site is bounded by the DCD maximum safety non-coincident wet-bulb temperature of 85.5^{o} F.

This information will be reflected in ESP Revision 3.

SER Section 2.4.8 – Cooling Water Canals and Reservoirs

2.4-1 The NRC staff reviewed the information provided by the applicant in the SSAR. The NRC staff concluded that as proposed in the application, the new VEGP Units 3 and 4 will not rely on any external water source for safety-related cooling water. The applicant did not propose any safety-related canals or reservoirs as a source for cooling water. However, there will be the need for safety-related water for initial filling and occasional makeup purposes. Therefore, the applicant should provide design parameters for these values.

Response:

As described in the Westinghouse DCD, Tier 1 Section 2.2.2 and Tier 2 Section 6.2.2, the AP1000 design utilizes a Passive Containment Cooling System (PCS).

The PCS performs safety-related functions related to delivering water from the passive containment cooling water storage tank (PCCWST) to the outside surface of the containment vessel. The PCCWST is incorporated into the safety-related shield building structure and nominally contains 800,000 gallons of water. A minimum storage volume of 756,700 gallons is verified by Technical Specifications every seven days. This stored volume provides water for short-term containment cooling for at least 72 hours following system actuation.

Prior to 72 hours after an event, operator actions are taken to align the passive containment ancillary water storage tank (PCCAWST), which is located outside the auxiliary building at ground level, to perform the nonsafety-related function of delivering cooling water to the PCCWST from hour 72 through day 7. An alternate water source can also provide water directly to the containment shell through an installed safety-related seismic piping connection. Water sources used for normal filling operations can be used to replenish the water supply. (Tier 1 Figure 2.2.2-1 shows the relationship of the tanks and water makeup connection to the containment vessel.)

It is clear from the descriptions in the DCD that the safety-related function of the external water supply is fulfilled by the PCCWST during the initial 72-hour stage of a containment cooling event. Technical Specifications ensure the availability of safety-related water. After 72 hours, operator actions are required to realign and re-supply the PCCWST from the nonsafety-related PCCAWST or the external water makeup connection. There are no DCD-imposed limitations on the source of the makeup water.

Since the DCD's inherent passive safety design and technical Specifications govern the safety-related cooling function, there is no requirement for any fill or makeup water to be classified as safety-related, and thus no design parameters are necessary. Further, since no site parameters related to external makeup water supply have been specified by Westinghouse in the DCD, there is not an identified need for any permit condition to restrict the use of any water supply that is otherwise of suitable quality to provide the nonsafety-related makeup function either prior to or after a design basis cooling event for the AP1000.

SER Section 2.4.12 - Groundwater

2.4-2 The applicant should provide an improved and complete description of the current and future local hydrological conditions, including alternate conceptual models, to demonstrate that the design bases related to groundwater-induced loadings on subsurface portions of safety-related SSCs would not be exceeded. Alternatively, the applicant can provide design parameters for buoyancy evaluation of the plant structures.

Response:

As described in the Westinghouse DCD, Tier 2, Section 2.4, Hydrologic Engineering, the AP1000 is designed for a normal groundwater elevation up to two feet below grade elevation (220 ft MSL for VEGP Units 3 and 4). DCD Section 3.4.1.2.1, External Flooding, further states that the base mat and exterior walls of seismic Category I structures are designed to resist upward and lateral pressures caused by high groundwater level. The minimum factor of safety for floatation is 3.7, as described in DCD Section 3.8.5.5.2, Floatation, and associated Table 3.8.5-2.

As described in the VEGP ESP Application, Revision 2, Section 2.4.12.4, Design Basis for Subsurface Hydrostatic Loading, groundwater elevations in the power block area are approximately 20 ft or more below the base slab elevation and approximately 60 ft or more below grade elevation. The significant difference between groundwater elevation and the base mat elevation (greater than 20 ft) suggests that the factor of safety for floatation essentially approaches infinity.

Therefore, the ESP Application demonstrates that the design bases related to groundwater-induced loadings on the subsurface portions of safety-related SSC's would not be exceeded.

SER Section 2.4.13 – Accidental Releases of Radioactive Liquid Effluents in Ground and Surface Waters

2.4-3 The NRC staff found the applicant's analysis in the SSAR to be incomplete; because it did not include consideration for the inevitable change in hydrology, and, hence, the potential change in flow direction within the Water Table aquifer for some release locations within the protected area (PA). The applicant's analysis provided no assurance that an adequate number of combinations of release locations and feasible pathways had been considered.

Response:

A numerical groundwater model is being developed to support resolution of Open Items 2.4-3 and 2.4-4. A two-dimensional single layer model is used to simulate groundwater flow in the Water Table aquifer. The base of the model is the low permeability Blue Bluff Marl which separates the water table aquifer from the underlying Tertiary aquifer. The boundaries of the model are selected to coincide with key physical features of the area. The northeast boundary of the model is a drainage boundary corresponding to the Savannah River. It is described by a series of drains accounting for groundwater discharge along the bluffs bordering the Georgia side of the river. The southwest and northwest boundaries are defined as no-flow boundaries, coinciding with the boundary of the local watershed, with the assumption that the groundwater divide coincides with the surface water divide. The southeast boundary was selected to coincide with Beaver Dam Creek and is treated as a constant head boundary. Drains are placed along ephemeral streams within the model domain. Several small ponds are included in the model and are

treated either as constant head cells or as areas of increased recharge, where it is evident that they do not communicate with the water table.

Surficial geology maps are used to delineate the extent of the aquifer by identifying areas where the Blue Bluff Marl outcrops. Soil boring data from the Units 1 and 2 FSAR and the Units 3 and 4 ESP and COL subsurface investigations are used to define the top of the Blue Bluff Marl.

The model will be calibrated by varying the hydraulic conductivity and the rate of net gain of the water table aquifer due to aquifer recharge and leakage, and comparing modeled head values against observed head values. Aquifer recharge is varied across the model domain to account for variations in surficial geology, vegetative cover, and local land use patterns.

To predict post-construction groundwater flow conditions, the model will account for the different hydraulic conductivity value of the fill material associated with the excavated areas for Units 3 & 4, as well as changes in groundwater recharge due to building and parking lot construction, regrading, and assumed changes in vegetative cover patterns.

The model will be used to identify viable alternative conceptual models that include different assumptions regarding boundary conditions, communication of ponds with groundwater, geographic variation of recharge rates, and combinations of recharge rates and hydraulic conductivity values that produce acceptable agreement between simulated and measured water table levels.

Post-construction release points, groundwater pathways and discharge points will be evaluated using particle tracking for each viable conceptual model. In each case, particles are released from the auxiliary buildings of Units and 3 & 4, as well as from other points within the perimeter of the Protected Area surrounding the two new units (see DSER, Figure 2.4.14-1) and tracked to their potential discharge points.

The results of this modeling will be presented in ESP Revision 3, currently scheduled for late November 2007.

2.4-4 The NRC staff's review of the release location, migration, attenuation, and dilution of the radioactive liquid effluent inventory was incomplete because, as stated in Open Item 2.4-3, the applicant has not considered a sufficient number of alternate conceptual models to identify potential release points and pathways. Therefore, the applicant needs to specify the nearest point along each potential pathway that may be accessible to the public.

Response:

Refer to OI 2.4-3 response.

SER Section 2.5.2 – Vibratory Ground Motion

2.5-1 Provide additional justification to support the low weights for the larger M_{max} values for the Electric Power Research Institute (EPRI) seismic source zones that include the ESP site.

Response:

A response to this Open Item involves two issues: (1) the "process" for updating or revising the EPRI seismic source model; and (2) the technical basis or justification for updating or revising the EPRI seismic source model. These two issues are first described in general and then followed with specific justification for the weighting of Mmax values for the EPRI seismic source zones that include the ESP site.

(1) Process. Regulatory Guides 1.165 and 1.208 provide guidance to establish a stable process for developing a seismic source model for use in a probabilistic seismic hazard analysis (PSHA) for an ESP or COL applicant. The guidance allows the applicant to start with an accepted seismic source model, such as EPRI or LLNL, and to revise or update the source model based on new data or information. The EPRI source model was developed using a level of effort that would later be defined as a SSHAC Level 4 process. This SSHAC Level 4 EPRI study encompassed the range of informed professional opinion based on the data and information available at that time. In order to maintain stability in development of an acceptable seismic source model for use in a PSHA, the applicant is not responsible for re-defending the original EPRI source parameters or weights, unless new (post EPRI) data or information become available (i.e., a technical basis for revising or updating EPRI described below). Under the SSHAC process, it is not permissible to discount, re-weight, or alter the EPRI source model (without new data or information) simply because we might disagree with one or more of the Earth Science Teams (ESTs) or specific parameters of an individual team (such as probability of activity or Mmax). In addition, any revision to the EPRI source model based on new data or information similarly must be performed using a SSHAC process (Level 2, 3, or 4).

(2) Technical Basis. There are no new data that would support revision to the EPRI seismic source model in the southeastern United States, with the exception of the Charleston seismic source [the Charleston seismic source was updated following a SSHAC Level 2 process as described in Bechtel (2006)]. For example, an updated seismicity catalog shows that there has been no change in the pattern, rate, location, or size of seismicity since the original EPRI 1986 study. In addition, with the exception of Charleston, there have been no new discoveries of geologic, tectonic, or geophysical features in the SEUS that would require revision to the basic seismotectonic setting known at the time of the original EPRI 1986 study.

However, since development of the EPRI 1986 seismic source model, several new re-interpretations of pre-existing data have been published in either peer-reviewed or "gray" literature. In this context, these studies may be viewed as "new information" although, in practice, these "new" interpretations reflect additional opinions of the informed professional community rather than a replacement of the EPRI 1986 EST opinions.

Maintaining the Mmax weights assigned to the EPRI source zones that include the ESP site is justified by the process, whereby regulatory guidance strives to achieve a stable source model that incorporates a broad range of uncertainty. There are also technical reasons, such as a recent seismic source characterization performed as part of the TIP study, that also support the EPRI weights of Mmax used for the Vogtle host zones.

From a process standpoint, the EPRI weighting of Mmax values for host zones is justified. The entire seismic evaluation process embedded in Regulatory Guide 1.165 begins with the EPRI source model. To change implementations of EPRI sources model strikes at the underpinnings of the stable and consistent process that the NRC and the industry have worked to develop over the years. Clearly, if new data or information has come to light since the EPRI model was developed that is not captured by the range of EPRI source parameters, sensitivity analyses and updates to the model should be performed. In order to maintain a stable source model and regulatory process between different nuclear sites, the assessment must start with an accepted model (e.g., EPRI) and changes must be made when demanded by new data. Updates or changes to the EPRI source model should utilize the SSHAC process in order to incorporate the composite range of views by the informed technical community. Consistency and stability cannot be achieved by individually "tweaking" elements of the EPRI source characterization without a minimum SSHAC Level 2 effort to update parameters or resolve certain technical issues. Disagreement with the implementation of the EPRI model does not, by itself, necessitate "new data" that warrants changes to the source model, such as how the Dames & Moore team decided to not include background zones in certain regions of the CEUS.

Regulatory Guide 1.165 clearly indicates that it is anticipated that future information will fall within the bounds of the EPRI source model, but will not necessitate changes to the model if the new information falls within the range of EPRI parameters. Regulatory Guide 1.165, E.3 Procedure and Evaluation (p. 39) states:

> *The EPRI and LLNL studies provide a wide range of interpretations of the possible seismic sources for most regions of the CEUS, as well as a wide range of interpretations for all the key parameters of the seismic hazard model. The first step in comparing the new information with those interpretations is determining whether the new information is consistent with the following EPRI and LLNL parameters: (1) the range of seismogenic sources as interpreted by the seismicity experts or teams involved in the study, (2) the range of seismicity rates for the region around the site as interpreted by the seismicity experts or teams involved in the study, and (3) the range of maximum magnitudes determined by the seismicity experts or teams. The new information is considered not significant and no further evaluation is needed if it is consistent with the assumptions used in the PSHA, no additional alternative seismic sources or seismic parameters are needed, or it supports maintaining or decreasing the site median seismic hazard."*
>
> *An example is an additional nuclear unit sited near an existing nuclear power plant site that was recently investigated by state-of-the-art geosciences techniques and evaluated by current hazard methodologies. Detailed geological seismological, and geophysical site-specific investigations would be required to update existing information regarding the new site,* ***but it is very unlikely that significant new information would invalidate the previous PSHA****.*

Regulatory Guide 1.165, E.3 Procedure and Evaluation (p. 40) also states:

> *It is expected that the new information will be* ***within the range*** *of the interpretations in the existing data base, and the data will not result in an increase in overall seismicity rate or increase in the range of maximum earthquakes to be used in the probabilistic analysis. It can then be concluded that the current LLNL or EPRI results apply.*

As pointed out in the DSER, the Dames & Moore team assigned low probabilities of activity (P_A) to some of its sources, such as source zones 41 and 53. Zone 53 (Southern Appalachian Mobile Belt) is a default zone for several Triassic rift basin sources, represents a host zone for the Vogtle site, and has a $P_A = 0.26$. The lack of a background zone beneath the region covered by source 53 results in a source-less area when

53 is "turned off." While the implementation of this aspect of the Dames & Moore source model has been the subject of debate, this is not an "error" or misinterpretation in their model. Statements in both the Dames & Moore EPRI report (1986) as well as recent discussions with James McWhorter, an original member of the Dames & Moore EST, indicate that Dames & Moore intended to represent the earthquake process in this fashion.

On page 5-3 of the Dames & Moore report (1986, volume 6), the discussion indicates they believe earthquake occurrence can be explained by tectonic reasons and that they do not use background zones as in other traditional seismic hazard assessments:

> *In our model, uniform seismicity is a consequence of a reasonable tectonic explanation for earthquake occurrence in the zone. To avoid muddling the tectonic aspect, our team does not use backgrounds. There is either a tectonic reason for a block of the earth's crust to be seismically active or there is not. So what we formerly called a "global background" no longer exists; the sources replacing it have a P_A reflecting our confidence in a tectonic reason for earthquake activity there.*

This implementation is different from the other ESTs, but it still represents the range of expert opinion in the EPRI SSHAC Level 4 study. From a process standpoint, it is not the responsibility of the applicant to defend the original rationale or implementation of the EPRI study, which has been approved by the NRC in Regulatory Guide 1.165 and forms the basis for evaluating sites across the CEUS. The individual teams were given latitude as to how to model seismic hazard in order to capture the full range of opinion for the poorly understood earthquake process in the CEUS. Without new data to invalidate the model, an individual team or model should not be reinterpreted or disregarded simply because their resultant hazard is less than the other EST source models.

From the technical perspective, the EPRI Mmax weighting of host zones is also supported. The ESP site lies near the boundary between Mesozoic extended Eastern Seaboard and Paleozoic Piedmont domains of Kanter (1994). The EPRI source zones that include the ESP site (host zones) are generally large source zones that include both portions of the Mesozoic extended crust as well as the Paleozoic Piedmont. The source zones listed below (with their minimum, weighted mean, and maximum values of their Mmax distributions) represent the EPRI host zones that contributed to 99% of the hazard at the Vogtle site.

EST	Source	Min	Weighted Mean	Max
BEC	BZ4	6.5	7.1	7.9
D&M	53	5.2	5.7	7.5
LAW	C09	6.8	6.8	6.8
RND	26	5.4	6.3	6.8
WES	26	5.7	6.0	7.5
WCC	29B	5.0	6.0	7.2

The broad range of magnitudes for these host zones adequately capture the range of more recent source characterizations by the USGS (Frankel, 1996; 2002), SCDOT (Chapman and Talwani, 2002), and the Trial Implementation Project (TIP) study (Savy et al., 2002). The EPRI maximum or upper bound values of Mmax have relatively low weights. The weighted mean of these six source zones range from M5.7 to M7.1 and the average of these six weighted means is about M6.3. While the EPRI source zones have relatively low weights associated with large magnitudes when compared to the USGS source model, they

are not relatively low when compared to the TIP study, which represents a more in depth characterization of the Vogtle host zones than the USGS model.

The EPRI Earth Science Teams (ESTs) were aware that extended Mesozoic crust produced the largest earthquakes in stable cratons worldwide, even though the Johnston et al. (1994) study of global stable continental regions (SCRs) was not final at that time (Coppersmith et al. 1987). The study of global SCRs began as an effort to support the ESTs, by replacing space for time in assessing the maximum magnitude earthquakes in stable cratons, such as the CEUS. One of the most significant findings was the observation that the world's largest SCR earthquakes of M>7 were limited to Mesozoic extended crust. This information was part of the database of knowledge that the ESTs used to formulate their source characterizations for the CEUS and is supported by the statement in Johnston et al. (1994):

> *The results of this study lend support to the preliminary indications from this work (Coppersmith et al., 1987) that were used in the assessments of maximum magnitude for seismic source zones in the EPRI SOG seismic hazard methodology.*

In response to Open Item 2.5-2, we were requested to review the TIP study, which provided a trial implementation of the SSHAC process. This more recent TIP study (2002), which was based on workshops held in 1997 and 1998, also had the benefit of the final Johnston et al. (1994) results of worldwide seismicity and implications for Mmax. The TIP study assigned a wide range of Mmax values for the Vogtle host zones covering the South Carolina-Georgia Piedmont and Coastal Plain region and are much more similar to the EPRI range of magnitudes than the 1996 and 2002 USGS source model that assigned a uniform M7.5 to the entire eastern seaboard. The USGS source model uses a high probability for a large magnitude (M7.5), but this characterization does not capture the range of opinion expressed by the informed technical community. The TIP study does not report discrete magnitudes and weights to represent Mmax distributions, but rather provides tabulated minimums, maximums, and modes of the distributions as well as graphical representations of the distributions. For the Vogtle host zones, the composite Mmax distributions (representing the combined characterizations of the five experts) are characterized by a bimodal distribution, with each mode having similar probabilities. The TIP host zone Mmax distributions are summarized below:

Source Zone	Min	Low Mode	High Mode	Max
3a	5.0	5.5	7.0	7.5
3B-3a	4.5	5.5	6.5	7.2
3c	5.0	5.5	6.3	7.0
3b-3c	4.8	5.0	7.0	7.5

The Mmax distributions for the four TIP source zones that include the Vogtle site range from a minimum of M4.5 to a maximum of M7.5, which is very similar to the EPRI host zone range of M5.0 to M7.9. The bimodal distributions of Mmax for the TIP source zones (shown graphically on pages F-8 throught F-11 in Savy et al., 2002) reflect mean Mmax values on the order of a low magnitude 6. The TIP study represents a more recent assessment of the host zones for the Vogtle site and supports the EPRI characterizations of Mmax. While the geometries of the TIP host zones differ from the EPRI host zones, the hazard at the ESP site should not be sensitive to the boundaries of these generally large source zones. However, the TIP Mmax ranges are similar to the EPRI characterizations and therefore, support the weighting of Mmax values by the EPRI ESTs.

In summary, without new data to invalidate the model, an individual team or model should not be reinterpreted or disregarded simply because their resultant hazard is less than the other EST source models. Otherwise this would create instability in the regulatory process in regards to consistent application of the PSHA. In addition, the weights of magnitudes for the EPRI source zones that include the ESP site are supported by the recent TIP study that specifically addressed the host zones in detail. The TIP study, which we were requested to evaluate in Open Item 2.5-2, supports the magnitude ranges and weights of magnitudes used by EPRI, since both studies have similar weighted mean magnitude values on the order of ~ M6 to 6.5.

2.5-2 Provide an evaluation of any information contained in the Trial Implementation Project (TIP) study that is relevant to the seismic source characterization of the ESP site.

Response:

First, we respond by reiterating our position that the Trial Implementation Project (TIP) study was primarily an exercise in implementation of the SSHAC process. As such, the seismic source model developed in the TIP study should be evaluated with this in mind. The purpose and objectives of the TIP study are clearly spelled out in numerous locations within the text and some of these are listed below.

- Abstract, page iii: *The present study is a trial implementation of the SSHAC guidance.*
- Executive Summary, page xi-xii: *The scope of TIP was to test the recommendation of the SSHAC on the characterization of the seismic sources, and to finalize the development of ground motion attenuation models for eastern North America started by SSHAC.*
- Section 1.2, page 1: *Implementation Project has the purpose of improving our ability to quantify and reduce uncertainties in seismic hazard estimation. The objectives of this study are to exercise the process improvement recommended in the SSHAC report specifically for seismic source characterization and to implement the methodology in a manner designed to achieve optimum stability in the PSHA results.*
- Section 4.2.7, p. 28: *Recalling that the purpose of this project is to produce a guidance document for performing a PSHA, the role of this feedback was to get some insights of the aspects of the process with which the EVA felt comfortable and those with which they did not, and to understand what worked and what did not.*

The fact that all final seismic source model parameters and weights are not presented in the TIP report also support that this study focused primarily on implementation of the SSHAC process as opposed to the development and publication of a new source model for the southeastern US. The absence of a complete set of parameters and weights in the TIP study also makes it difficult to replicate the entire source model and directly compare with some of the specific EPRI model parameters. The TIP report provides tables and figures that illustrate how the individual EVA's (experts) evaluated or weighted certain issues or parameters, but the report does not provide a final tabulation of all source parameters and weights that were used in the computation of hazard in the TIP study.

However, the TIP study does address some key issues and provides assessments of these issues by the five experts assembled (Bollinger, Chapman, Coppersmith, Jacob, and Talwani) that can be evaluated and compared, in a more general sense, to the EPRI EST source model parameters. The TIP study included multiple workshops to define, clarify, and elicit expert opinion on several critical issues relating to the source characterization process and specific technical questions on seismic sources that were judged to be significant to the hazard at the Vogtle and Watts Bar sites.

An evaluation of the TIP study reveals that several aspects of this recent seismic source characterization, fall within the range of EPRI source models and also the new Updated Charleston Seismic Source (UCSS) model. The information in the TIP study that is relevant to the seismic source characterization of the ESP site includes the following issues summarized below. Specific examples of how the TIP study supports the ESP seismic source characterization are also presented in responses to Open Item 2.5-1, 2.5-3, and 2.5-5.

- **Charleston earthquake source**. On the issue of whether the Charleston earthquake process should be restricted to a local Charleston source or allowed to float over a broader region, the experts in the TIP study heavily favored a local Charleston source and assigned a weight of nearly 80%. Three of the experts assigned weights of 100% to the local Charleston source and another gave it a weight of 90%. Only one expert favored a regional Charleston source. The local Charleston source zones developed in the TIP study are very similar in extent to the geometries of the UCSS that was developed to replace the EPRI Charleston source zones in the ESP seismic source model. As described in the response to Open Item 2.5-5, David Amick at a TIP study workshop indicated that he has found no paleoliquefaction evidence for strong ground shaking in the inland Bowman microseismicity zone, thus further supporting a local Charleston source.

- **Local source zone issue for the Vogtle site**. A key issue addressed by the TIP study was how to treat Vogtle local source zones, namely the Pen Branch fault and Dunbarton basin. The composite weighting of the experts favored a regional source (67%) over a local source (33%). The EPRI Bechtel and Dames & Moore ESTs included local Dunbarton basin sources with probabilities of activity of 10% and 28%, however, these sources did not belong to the final set of the EPRI sources that contributed to 99% of the total site hazard. Recently, more definitive studies of the Pen Branch fault have demonstrated that this fault, which bounds the Dunbarton basin, is not a capable tectonic source and therefore, need not be considered in the seismic source model. Therefore the TIP study's weighting of this issue is in general agreement with the ESP seismic source characterization.

- **Mmax weighting of Vogtle host zones.** As described in the response to Open Item 2.5-1, the TIP study supports the magnitude ranges and weights of magnitudes used by EPRI, since both studies have similar weighted mean magnitude values on the order of ~ M6 to 6.5 for the sources that include the ESP site.

- **Eastern Tennessee seismic zone (ETSZ)**. It was recognized in the TIP study that defining the Mmax distributions is a critical issue for the Watts Bar site in Tennessee. The composite Mmax distributions for each of the eight ETSZ sources defined in the TIP study are represented by modal magnitudes of M6.3 or M6.5, and are described in more detail in the response to Open Item 2.5-3. The greatest weights assigned to moderate magnitudes in the TIP study supports the EPRI ETSZ broad range of Mmax values rather than the heavily weighted large Mmax values in the USGS source models (Frankel et al., 1996, 2002). The TIP magnitude distributions for ETSZ also support the idea that the ETSZ does not contribute significantly to the total hazard at the ESP site.

The TIP study was designed as a trial implementation of the SSHAC Level 4 process by formally incorporating expert judgment and uncertainty into the seismic source characterization and PSHA for the Vogtle and Watts Bar sites. This report does not present a complete documentation of the source model parameters, which makes it difficult to replicate the TIP seismic source model. However, the TIP report does present logic trees, tables, and plots that summarize different aspects of their seismic source characterization and uncertainty in several key parameters. Therefore, the report is instructive in

illustrating how an expert elicitation characterized seismic sources and uncertainties in the late 1990's. Several of the key issues addressed in the TIP study support the wide range of uncertainty expressed in the EPRI EST seismic source characterizations for the ESP site.

2.5-3 Provide additional justification to support the low weights for the larger M_{max} for the Eastern Tennessee seismic zone. In addition, provide additional information to show that the Eastern Tennessee seismic zone does not significantly contribute to the hazard at the ESP site if larger M_{max} values are considered.

Response:

The Eastern Tennessee seismic zone (ETSZ) lies between the New York-Alabama and Ocoee aeromagnetic anomalies in what Kanter (1994) has classified as non-extended crust. Wheeler (1995; 1996) has defined this region associated with Eastern Tennessee seismicity as Late Proterozoic/early Paleozoic Iapetan extended crust. Based on the Johnston et al. (1994) study of stable continental cratons, the global seismicity database indicates that the largest historic earthquakes (M>7) are limited to Mesozoic extended crust. The Johnston et al. (1994) data base show that Paleozoic non-extended crust has a mean Mmax of M6.4. Therefore, based on the global database, there is no analog to suggest that the ETSZ portion of the crust should fail in large (M>7) events.

The Trial Implementation Project (TIP) study (Savy et al., 2002) identified the ETSZ as a key issue in assessing hazard for the Watts Bar site in Tennessee. While this study was primarily a trial implementation of the SSHAC process, the NRC has requested in Open Item 2.5-2 that we more closely examine information contained in the TIP study that is relevant to the seismic source characterization of the ESP site. The TIP study defined eight source zones to represent uncertainty in the geometry of the ETSZ and defined composite Mmax distributions for each source zone using the weighting schemes from each of the five experts. The composite Mmax distributions are presented graphically (pages F-12 through F-19 of the TIP study) for each of the ETSZ source zones, and are summarized in the table below with values of the minimum, maximum, and mode of the distributions.

Source Zone	Min	Mode	Max
4a1	4.5	6.5	7.5
4a1+2	5.0	6.5	7.5
4a1+2+3	5.0	6.5	7.5
4b1	5.0	6.5	7.5
4b2	5.0	6.3	7.5
4c	5.0	6.3	7.5
4d	5.0	6.3	7.5
4e	5.0	6.3	7.5

The magnitude distributions for all ETSZ source zone representations in the TIP study ranged from as low as M4.5 to as high as M7.5, with a mode of either M6.3 or M6.5 for each distribution. The modal values represent the greatest weight of the distributions, indicating that the experts participating in the trial implementation of the SSHAC Level 4 process felt that the majority of the weight belonged in the moderate magnitude events as opposed to the largest magnitudes. The broad distribution of the TIP study is similar to the distribution of M4.8 to M7.5 in the EPRI source zones.

The modal Mmax value for each of the TIP characterizations of the ETSZ is either M6.3 or M6.5. Even though the TIP study does not present discrete magnitudes and weights, the modal magnitudes suggest a mean magnitude on the order of ~M6.5 or less for the ETSZ.

There is no new evidence for the ETSZ that would suggest larger Mmax values than used in the EPRI study. The process-oriented TIP study published in 2002 has reassessed the ETSZ as part of a trial implementation of the SSHAC methodology. If the scientific conclusions of the TIP study were to be adopted, the ETSZ would still contribute less than 1% of the total hazard at the ESP site.

According to the sensitivity study presented in DSER Figure 2.5.2-11, a mean magnitude of M6.5 or less for the ETSZ would contribute less than 1% of the total hazard at 1 Hz for ground motions critical for design levels (0.1 g and higher). Therefore, the TIP study, which represents a SSHAC level 4 trial implementation effort to better define the ETSZ source model, supports the higher weight given by EPRI for moderate magnitudes, justifies the EPRI Mmax distributions and, in turn, the negligible contribution to hazard at the Vogtle site from the ETSZ.

Since no new data or evidence has been developed to imply large magnitude earthquakes in the ETSZ since the EPRI study, there is no basis for rejecting the Mmax interpretations of the EPRI teams, which cover the range of Mmax employed in more recent seismic source characterizations. Therefore additional calculations of seismic hazard with larger Mmax values for the ETSZ would be purely speculative and could not form a basis for conclusions.

2.5-4 Because the staff received the requested information from the applicant on June 18, 2007, it requires additional time to complete its review of the applicant's response to Request for Additional Information (RAI) 2.5.2-4. In addition, the staff requests that the applicant explain why only two of the four members of the Technical Advisory Group (TAG) panel reviewed and approved written copies of the engineering report describing the Updated Charleston Seismic Source (UCSS), as stated in it response to RAI 2.5.2-4.

Response:

The Updated Charleston Seismic Source (UCSS) model was presented to the entire Technical Advisory Group (TAG) panel in meetings on April 12-13, 2006. As such, the TAG performed participatory peer review of the UCSS, including reviewing the approach (i.e., SSHAC Level 2), data, and results of the updated model. The TAG panel consisted of three seismologists and one structural engineer. It was decided that it would be in the best interest of the project to also have a detailed review of UCSS engineering report by members of the TAG. The two seismologists most familiar with the tectonics and seismicity of the southeastern US, Dr. Martin Chapman and Dr. Carl Stepp, were requested to review written copies of the engineering report and provide comments.

2.5-5 Provide supporting evidence to rule out the occurrence of large inland earthquakes.

Response:

Providing direct evidence to conclusively support a negative finding (i.e., an earthquake has not occurred) is difficult in the earth sciences. Thus, many large areal source zones in the EPRI source model, including the host zones described in the response to Open Item 2.5-1, allow for the possibility of a large magnitude (M7+) event in the southeastern US.

The preponderance of evidence, however, suggests that Charleston-type earthquakes (i.e., large-magnitude events combined with a recurrence on the order of 500 years) are restricted to the South Carolina coastal zone, as indicated by four recent Charleston seismic source characterizations shown in Figure 2.5-5A: the Trial Implementation Project (TIP; Savy et al. 2002), the U.S. Geological Survey (USGS) seismic source model (Frankel et al. 1996, 2002), the South Carolina Department of Transportation (SCDOT) source model (Chapman and Talwani 2002), and the Updated Charleston Seismic Source (UCSS) model developed for the Vogtle ESP application.

Various researchers (e.g., Amick et al. 1990, Obermeier 1996) have published maps depicting the geographic distribution of 1886 liquefaction and paleoliquefaction sites in coastal South Carolina and along the eastern seaboard. These researchers do not, however, thoroughly document their reconnaissance of the rivers and drainage ditches that lack features indicative of strong ground shaking inland from the Charleston meizoseismal area, other than to say none was observed inland. The Edisto River sites [sites 117, 119, 120, and 121 from Amick et al.'s (1990) Table 1; also shown on Obermeier's (1996) Figure 7.6] appear to be the liquefaction sites that are located farthest inland. These four Edisto River sites likely record both 1886 and prehistoric strong ground shaking (S. Obermeier, pers. comm., 4/4/2007). It is instructive to note that these Edisto River liquefaction sites are closer to the Charleston meizoseismal area (<40 miles) than are the liquefaction sites up and down the coast that experienced liquefaction during the 1886 event (~100 miles). These observations indicate that the local Charleston source is capable of producing the observed inland liquefaction features along the Edisto River.

A recent implementation of the SSHAC process was performed for the TIP study (Savy et al., 2002), which addressed whether Charleston-type earthquakes are restricted to a local Charleston source or could occur over a much broader region. The TIP study states:

> *The hazard at the Vogtle plant will be sensitive to the northwestern and western extents of the Charleston source. There appears to be no compelling reason to extend the source to the northwest from the 1886 epicentral area by connecting the Summerville-Middleton Place and Bowman zones of microseismicity. Dave Amick has found no paleoliquefaction evidence for strong ground shaking in the Bowman area, and the microseismicity there is much shallower than in the epicentral area. (p. 19)*

The experts participating in the TIP study place a high probability (~80%) of restricting large, frequent earthquakes to a local Charleston source represented as five source zones shown in Figure 2.5-5A. Other recent Charleston source characterizations place a 100% weight on large, frequent earthquakes occurring within a local Charleston source zone. These include the SCDOT study (Chapman and Talwani, 2002) and the USGS model (Frankel et al., 1996; 2002). Each of these source models, including the UCSS, has similar inland extents (Figure 2.5-5A). None of the source zones associated with these four Charleston models include either (1) all of the inland Edisto River liquefaction locations or (2) the inland Bowman seismic zone.

The UCSS model used to describe the Charleston seismic source in the Vogtle ESP application is similar to three other, recent Charleston source characterizations that restrict (with a weighting of 80-100%) the occurrence of Charleston-type earthquakes to coastal South Carolina where the preponderance of data support recurring large earthquakes.

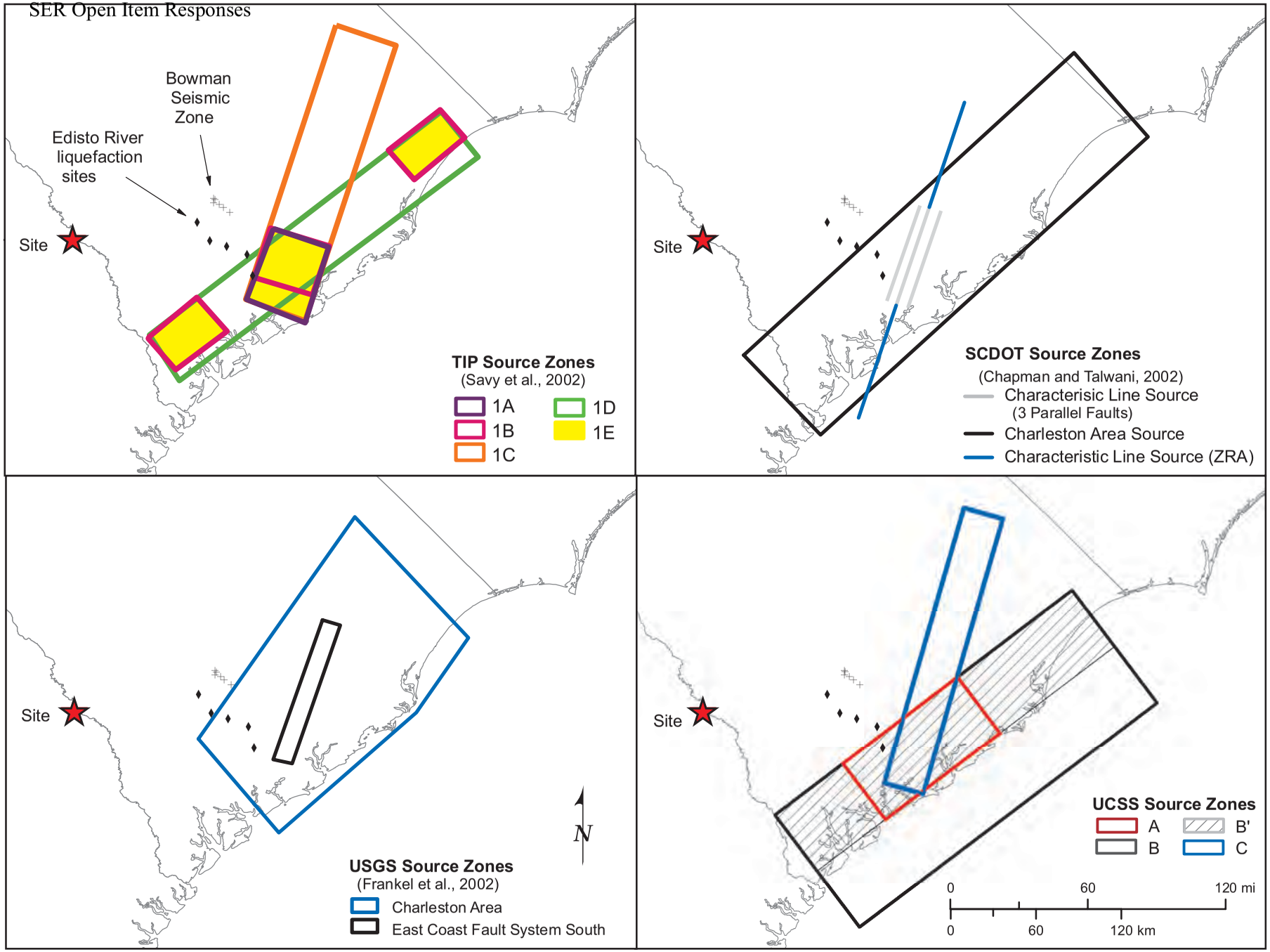


Figure 2.5-5A. Comparison of Charleston Source Zone Models

2.5-6 Because the staff received the requested information from the applicant on June 18, 2007, it requires additional time to complete its review of the applicant's supplemental response to RAI 2.5.2-19. In addition, address the differences between the Step 6 of the site response methodology description provided in response to RAI 2.5.2-19 with the information provided in the SSAR.

Response:

Step 6 of the site response methodology description provided in response to RAI 2.5.2-19 was followed in the SSAR. This is consistent with the description of Step 6 in the SSAR. A simplified description of Step 6 is as follows:

> The uniform hazard response spectra at MAFEs of 10-4 and 10-5 at the control point location are calculated as follows. Starting from the 10-4 and 10-5 spectral acceleration (SA) hard rock values (from the hazard calculations described in 2.5.2.4) at the seven structural frequencies (call these "anchor frequencies"), interpolation is performed between those SA values using the spectral shapes from NUREG/CR-6728, and anchoring those shapes to the SA values at the anchor frequencies to obtain 10-4 and 10-5 SA values at the 300 structural frequencies. The interpolation is done as follows. At each intermediate frequency, an SA is estimated from the next higher of the anchor frequencies, by scaling the spectral shape to the SA value at that anchor frequency. Another SA is estimated from the next lower of the anchor frequencies, in the same manner. Then these two estimates are weighted, using weights based on the inverse logarithmic difference between the intermediate frequency and the next higher and lower anchor frequency. For each MAFE (10-4 and 10-5), two rock spectra are created: a HF spectrum and a LF spectrum. Note that the spectra shown in Tables 2.5.2-20a (for HF) and 2.5.2-20b (for LF) in the columns labeled "Hard rock input motion" are not these spectra, but are the HF and LF spectra used to represent rock motion for site response calculations.
>
> From the HF and LF rock spectra for each MAFE, **a single spectrum is created by using the HF rock spectrum for high frequencies and the LF rock spectrum for low frequencies. The frequency at which the transition is made is described below. This procedure corresponds (within several percent) to the envelope of the two motions and maintains the consistency of using HF earthquakes to represent the HF part of the spectrum and LF earthquakes to represent the LF part of the spectrum.** This results in one rock spectrum for each MAFE.
>
> Soil spectra for each MAFE are calculated as follows, using the 10-4 rock spectrum as an example. The 10-4 rock spectrum is multiplied by the mean amplification factor (AF) from Step 5C for the 10-4 soil motion for each of the 300 structural frequencies, creating a 10-4 soil spectrum. This mean AF is the average of the columns marked "EPRI" and "SRS" in Table 2.5.2-20a for frequencies above 8 Hz, and is the average of the columns marked "EPRI" and "SRS" in Table 2.5.2-20b for frequencies below 5 Hz. In between 8 Hz and 5 Hz the soil spectrum is interpolated to achieve a smooth spectrum and avoid an artificial spectral valley. Table 2.5.2-21 shows the 10-4 rock SA and the 10-4 soil SA, calculated in this way. The rock SA values at the anchor frequencies are consistent with the values shown in Table 2.5.2-16. The soil spectrum for 10-5 is created in a similar way, except that interpolation for 10-5 is done between 6 Hz and 4 Hz to achieve a smooth transition between the HF and LF controlled parts of the spectrum, resulting in a smooth 10-5 soil spectrum.
>
> These soil spectra for 10-4 and 10-5 are used to calculate the GMRS for the site, as shown in Table 2.5.2-22.

2.5-7 Provide further justification to support the claim that the equivalent-linear approach is suitable for higher strain levels.

Response:

EPRI (EPRI TR-102293, Guidelines for Determining Design Basis Ground Motion Estimation, November 1993) presents a comprehensive study comparing the equivalent linear method with the nonlinear methods for seismic site response analysis. The study was performed for three sites (Gilroy 2, Treasure Island, Lotung Taiwan) and included the equivalent linear method using RASCAL/SHAKE and the nonlinear methods with the programs SUMDES and TESS (see EPRI TR-102293, Volume 2, Appendix 6.B for details and references). The solution obtained from each method of analysis was compared with the recorded motion for each of the three sites. The sites comprised of soil layers ranging from sand and gravels to soft silts and stiff clays and had recordings of both high- and low-strain ground motions. The comparison of the results showed reasonably good agreement among the three methods. To extend the study to higher ground motions (maximum input accelerations ranging from 50%g to 125%g), a generic soil profile for Eastern North America was also analyzed using the same three programs. This study also confirmed that the amplification factors obtained from the equivalent linear method is in general agreement with the fully nonlinear methods. The predicted peaks at resonance frequency tend to be conservative using the equivalent method.

At the Vogtle site, the input rock motion is low compared to the range of the motions used in the EPRI study and the site is generally stiffer. Therefore, the conclusion of the EPRI study applies, confirming the equivalent linear method is adequate for the site response analysis at the Vogtle site.

2.5-8 Because the staff received the requested information from the applicant on June 18, 2007, it requires additional time to complete its review of the applicant's response to RAI 2.5.2-3. No additional information is requested from the applicant for this open item.

Response:

None required.

2.5-9 Provide further justification regarding the applicability of the Lee (2001) and the NUREG/CR-6728 V/H ratios to the ESP site. In addition, provide justification for the use of an approximate envelope of the Lee (2001) and the NUREG/CR-6728 V/H ratios.

Response:

Estimating earthquake ground motions in central and eastern US [CEUS] has always been a challenge due to the lack of empirical data. For hard rock CEUS sites EPRI (2004) considers 12 models to capture a robust estimate of the median horizontal ground motion and its uncertainty to capture the range of opinion of the technical community. Estimating vertical motions for CEUS sites, particularly soil sites, is even more challenging.

Regulatory Guide 1.60 presents both horizontal and vertical design response spectra from which V/H can be determined. In developing the V/H for SSAR Section 2.5.2 – similar to what has been presented for other ESP applications – it is our intent to develop a V/H function that considers more recently recognized parametric dependencies [e.g., magnitude, distance, site conditions].

NUREG/CR-6728 recommends V/H as a function of binned peak ground acceleration – as a simplified proxy for magnitude and distance – for generic rock sites in western US [WUS] and CEUS. The NUREG does not, however, recommend specific V/H for soil sites, but rather refers to an appendix [Appendix J] wherein a complex approach is described using empirical WUS V/H and ground motion modeling to develop a WUS-to-CEUS transfer function to obtain the desired CEUS V/H [$V/H_{CEUS,Soil}$]:

$$V/H_{CEUS,Soil} = V/H_{WUS,Soil,Empirical} * [V/H_{CEUS,Soil,Model} / V/H_{WUS,Soil,Model}] \qquad \text{Eq. 1}$$

In this approach the first term on the right side is developed from readily available empirical WUS attenuation relations. The second term on the right requires ground motion modeling for <u>both</u> generic WUS soil sites [$V/H_{WUS,Soil,Model}$], assumed consistent with the empirical ground motion relation [$V/H_{WUS,Soil,Empirical}$], and "site-specific" CEUS site [$V/H_{CEUS,Soil,Model}$]. Ground motion modeling – that is, estimating earthquake ground motions from theoretical and limited empirically-based parameterization of earthquake source, path, and near-site crustal and soil characteristics [e.g., see EPRI, 1993] – requires numerous assumptions and specifications of uncertainties [both epistemic and aleatory]. The complexities of modeling is why $V/H_{WUS,Soil,Empirical}$ / $V/H_{WUS,Soil,Model}$ is not simply 1.0, and it is intended that in the transfer function the "noise" of modeling cancels out, leaving a useful WUS-to-CEUS transfer function. The development of this transfer function, however, is not prescriptive and it is not unique.

Given the complexities, uncertainties, and non-uniqueness in applying Eq. 1, the SSAR considers the implementation of the NUREG approach [Eq. 1] – accepted by the NRC in the DSER – in two cases as <u>a guide</u> for recommending a V/H for the Vogtle project site. One case considers transfer functions presented in the NUREG Appendix J itself where the CEUS soil model is that of a generic "deep soil" [500 feet] site. The second case, also following the NUREG approach, uses an evaluation of V/H for a facility at the nearby Savannah River Site [SRS] (Lee, 2001). The subsurface shear-wave velocity profiles and depths to water table are similar at Vogtle and at the SRS facility.

While the results from SRS [second case] may seem arguably the most applicable for the Vogtle site, the generic nature of the first case is consistent with the generic character of the rock V/H recommendations of the NUREG. Therefore, both results are considered in the SSAR.

The second half of this Open Item asks about the apparently arbitrary way in which the two cases are enveloped. Like Reg. Guide 1.60 and the recommended V/H functions for rock sites in the NUREG, the intent is to derive a V/H that is relatively simple and smooth, but that reflects the general features of the results obtained above. The results from the two cases suggest the following general features:

1) similar to Reg. Guide 1.60 and the NUREG V/H for rock, V/H is higher at high frequncies than at low frequencies;

2) the two cases evaluated suggest that a relatively flat V/H value at high frequencies, slightly lower [~0.9] than that given by Reg. Guide 1.60 [1.0];

3) both cases suggest a lower V/H value [0.5] than that given by Reg. Guide 1.60 [2/3] in the lowest frequencies;

4) the envelope of the two cases suggests that the transition between the higher V/H at high frequencies and the lower V/H at low frequencies is more gradual than the relatively abrupt transition in Reg. Guide 1.60; and

5) the V/H at high frequencies is sustained at its high value longer toward lower frequencies [flatter] than suggested by CEUS rock V/H from the NUREG.

Given the complexities, assumptions, and uncertainties of developing CEUS, deep soil V/H for the Vogtle site, as well as the desire to develop a smooth function, a conservative envelope of the V/H for the two cases is developed. The three discrete accelerations intervals for which rock V/H is defined in the NUREG also suggests approximate evaluations of V/H. Therefore, some peaks are cut [e.g., ~1.3Hz] and valleys are filled [e.g., 2.5Hz], but these are not considered significant relative to other uncertainties in ground motion evaluations. One aspect of the approximate envelope that may be highlighted, however, is in the frequency range of about 0.3 to 1.0Hz. Here, the envelope of the two cases would suggest a noticeable dip in V/H as low as 0.25 or less. One explanation of this is resonances in the vertical and horizontal ground motions when using simple velocity models, and would be reduced if the profiles had been randomized [NUREG Appendix, p. J-12]. Regardless of the cause, it is our judgement that this low of V/H is not reasonable, so V/H was kept to a minimum value of 0.5.

SER Section 2.5.3 – Surface Faulting

2.5-10 Provide a more detailed description of the geometry and appearance of the injection sand dikes and their spatial association with dissolution depressions (including photographs of this feature, if available).

Response:

The injected sand dikes occur at three localities in the Bechtel (1984) trench (Figure 2.5-10A). These sand dikes were not observed at any other location either on or off the VEGP site during the ESP mapping effort. Within the trench, the sand dikes are only located within the upper Eocene Barnwell Group and as identified by Bechtel (1984), consist of lavender, loosely consolidated, well sorted, very fine, clean quartz sand and are confined to a single unit (Unit D) within the trench. These dikes were likely formed by fluid or plastic injection of sand from a source in underlying sand beds of Unit C. The sand dikes are locally mapped along the up-dip contact with Unit E, but do not penetrate Unit E (Figure 2.5-10A). As the dikes were mapped downward, they became irregular and indistinguishable as they entered/emerged from Unit C (Bechtel, 1984).

As described in Bechtel (1984), the orientation of the dikes varies greatly. At each location they dip steeply down the limbs of large depressions and appear to have a source within Unit C at the base of the depression. The dikes flatten upward toward the crest of arches (Figure 2.5-10A).

The sand dikes are plotted on the contour and 3-dimensional surface grid from Bechtel (1984, Figure 5) (Figure 2.5-10B). As shown on Figure 2.5-10B, the upper Eocene Barnwell Group is deformed into a series of irregular depressions that form an 'egg-carton' or 'dimpled' pattern. The depressions are not aligned or elongated in any preferred orientation, and are most likely the result of dissolution of the underlying Utley limestone and collapse of overlying strata. The injected dikes are concentrated in the area of greatest 'dimpling' and are absent from the area of least 'dimpling'. Bechtel (1984) identified only one large complex of sand dikes and this complex plots in a depression (Station 570 to 590, Figure 2.5-10B). The remaining two, single, laterally discontinuous, thin sand dikes plot along margins of depressions (Stations 642 and 830, Figure 2.5-10B). The close spatial association of the sand dikes with limbs of the depressions suggests that the liquid injection resulted from development of the depression. Subsequent deformation and faulting of the sand dikes (for example at Station 575) show that the sand dikes pre-date later phases of sediment collapse and formation of the depressions.

As described in Bechtel (1984) and reviewed by the USNRC (1985), variation in orientation of the depressions and associated dikes supports a local control for their formation versus a regional tectonic control that would produce more coherent orientations. The spatial relation of the sand dikes with the dissolution depressions supports the hypothesis that the sand dikes were created in response to increased overburden pressure during an early phase of sediment collapse. The sand dikes are further deformed and faulted by continued later phases of sediment collapse and formation of the depressions.

The age of the injected sand dikes, therefore, is related to the age of the collapse depressions. The depressions deform the overlying Miocene Hawthorne Formation but do not deform an erosion surface or an extensive paleosol that developed on the erosion surface. Mature, well-formed pedogenic "clastic dikes" have developed within the paleosol suggesting significant age as shown on Figure 2.5-10A. The paleosol is, in turn, overlain by Pleistocene to Holocene eolian sand (Figure 2.5-10A). Given the significant paleosol development on the erosion surface and extensive subsequent erosion of this former surface prior to eolian deposition on the modern landscape, Bechtel (1984) interpreted the erosion surface and paleosol to be late Miocene to Pliocene in age. Lack of deformation of the erosion surface or of the paleosol suggests that development of the depressions and related injection of the sand dikes likely occurred in the late Miocene or Pliocene.

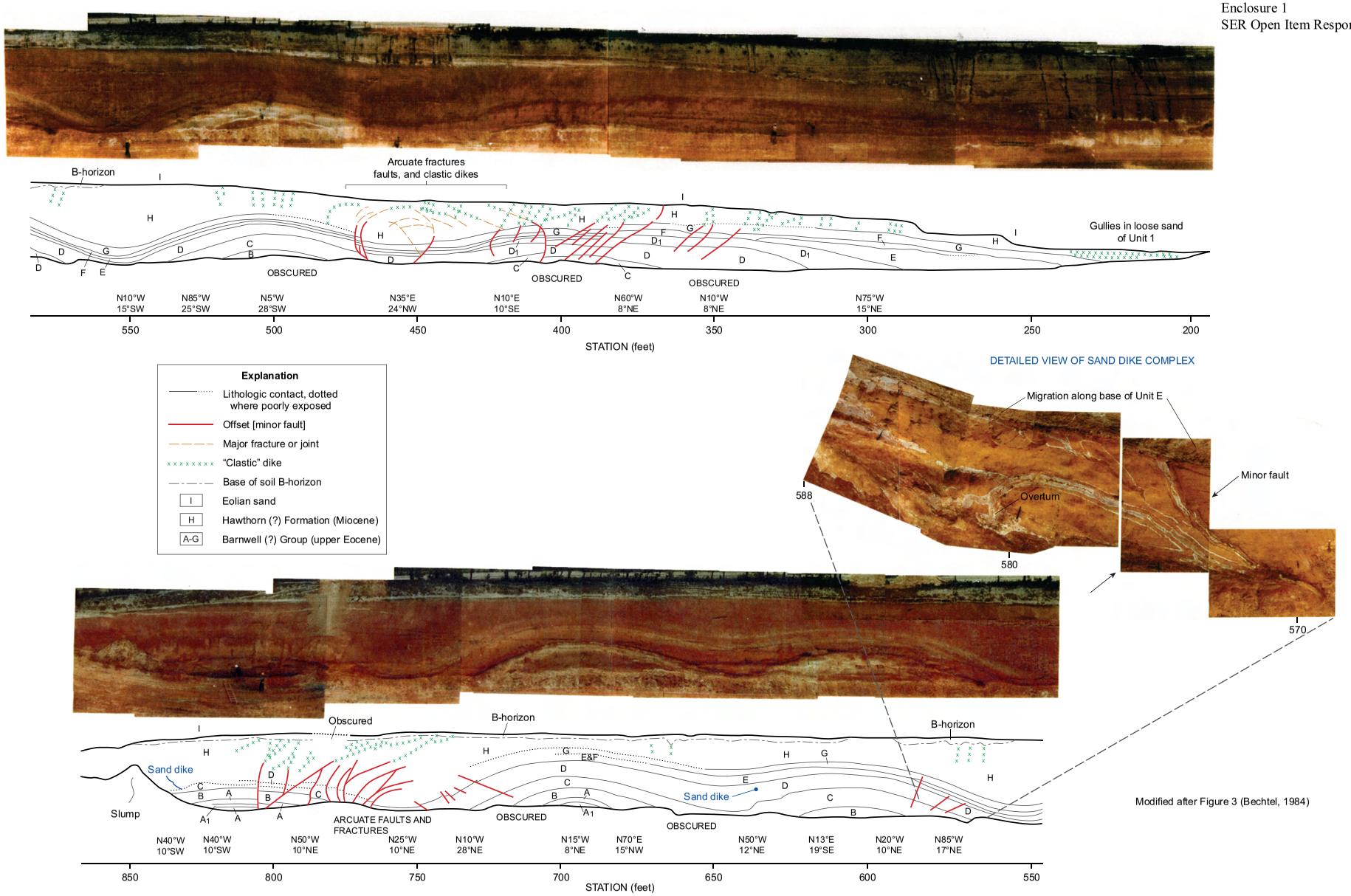
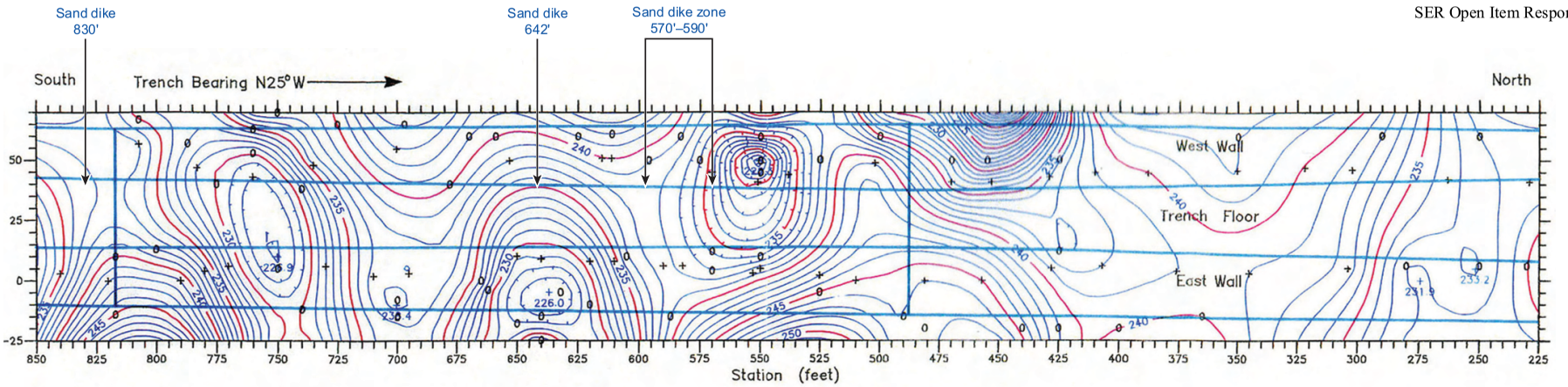
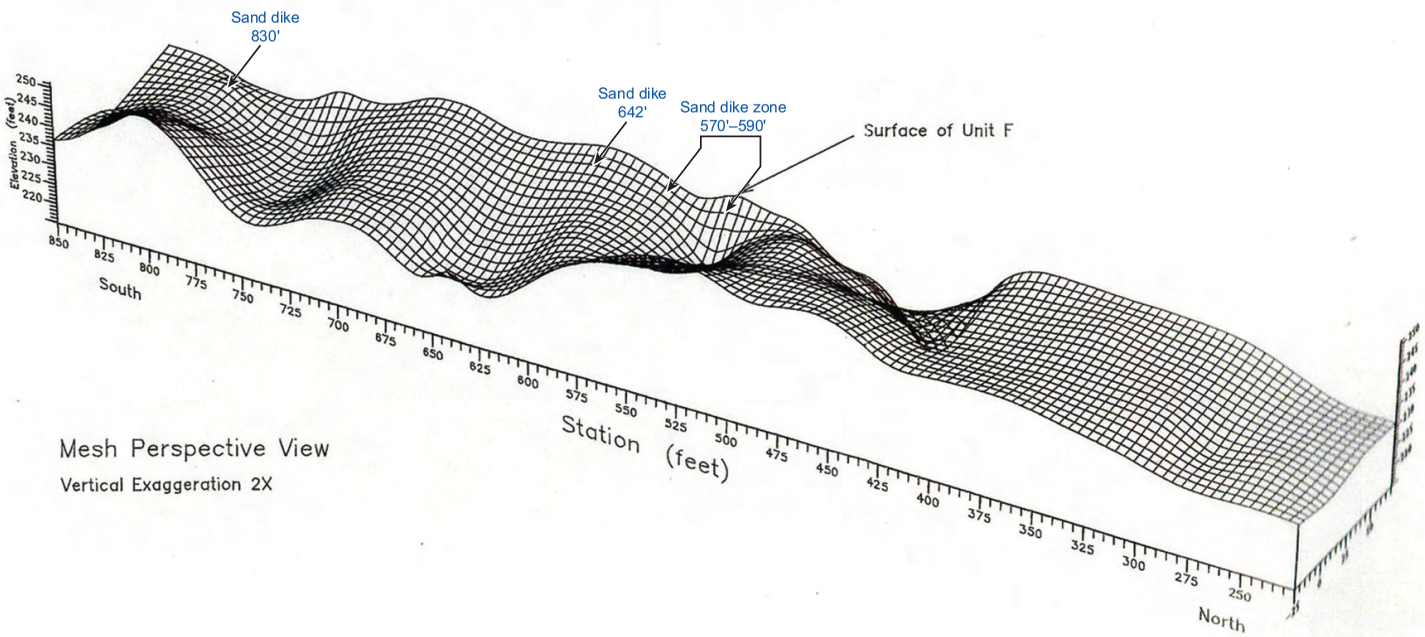


Figure 2.5-10A. Photo Mosiac and Geologic Interpretation of Trench, West Wall.



Structure Contour Map, Surface of Unit F – Trench Plan View



Explanation

+ Surveyed Elevation

0 Elevation Extrapolated From Bedding Attitude

Contour Interval 1 Foot

Modified after Figure 5 (Bechtel, 1984)

Figure 2.5-10B. Surface Geometry of Unit F Illustrating Localized Nature of Deformation and Sand Dike Locations within Unit D

SER Section 2.5.4 – Stability of Subsurface Materials and Foundations

2.5-11 Conduct sufficient field and laboratory tests to reliably determine static and dynamic property values, (instead of using the values from previous investigation) for the soils beneath the Blue Bluff Mart at the ESP site.

Response:

The intent of the ESP site investigation program was to conduct a limited study of the site to provide representative field and laboratory test data concerning the properties and stability of the soils and rock at the site. This was accomplished with a limited number of borings, geophysical testing, and a laboratory testing program. As stated in Section 2.5.4 of the SSAR, "The ESP geotechnical field and laboratory investigation performed for the application was intended to enhance the understanding of the VEGP site and complement the existing geotechnical data developed for the VEGP Units 1 and 2." As part of the ESP study, a data set from VEGP Units 1 and 2 was reviewed including 16 borings conducted for VEGP Units 1 and 2 that are located within the power block footprint of the ESP site. Eleven of these borings penetrated the Blue Bluff Marl and were terminated in the Lower Sands beneath the Blue Bluff Marl. The SSAR also acknowledged that additional investigations would be conducted during the COL phase. This approach to the ESP site investigation program is consistent with other accepted recent ESP studies and is in accordance with NRC guidance, RS-002, Processing Applications for Early Site Permits.

Since submission of the ESP application, the COL site investigation has been conducted. Sixty-eight borings were taken in the power block footprint of the ESP site. Forty-two of these borings penetrated the Blue Bluff Marl. Geophysical testing along with laboratory testing were also conducted for the COL phase investigation. These data, along with analyses of the data, will be presented in ESP Revision 3.

2.5-12 Provide sufficient data to derive reliably the undrained shear strength value for the Blue Bluff Marl, instead of using the values from previous investigation.

Response:

Standard penetration testing (SPT) and split-spoon sampling, in accordance with ASTM D 1586, was conducted in nearly all of the ESP borings. The SPT blow count value or N-value provides a measure of relative density for cohesionless soils and consistency for cohesive soils. During the field investigation, the geologist or geotechnical engineer logging the boring visually classified, based on ASTM D 2488 – Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), the sample from the material recovered in the split-spoon sampler. When split-spoon samplers are driven into massive in-situ materials such as micritic limestone or fossiliferous shell beds, these materials are converted to soil through the crushing process of driving the sampler. This crushing process breaks down the intact structure of the in-situ material and usually results in a coarse-grained matrix. The high recorded N-value in these materials is indicative of the crushing process that the driven sampler is applying to the in-situ material. Suggestions on how to identify this material are provided Appendix X2 of ASTM D 2488. As an example, paragraph X2.4.3 characterizes broken shells as "Poorly Graded Gravel with Silt and Sand (GP-GM). Similar descriptions were used to identify ESP samples. This characterization of the ESP borings has apparently led to some confusion about the subsurface conditions at the ESP site. Gravels were not encountered in any of the samples taken from the borings. Instead, gravel-sized particles of shell and or limestone were visually observed in some samples and were subsequently identified through grain size distribution testing.

As a result of this apparent confusion and in an attempt to clarify the subsurface conditions, each of the ESP samples has been visually re classified (by a geotechnical engineer and geologist) with greater consideration to the in-situ source of the material. Additional laboratory tests (grain size distribution, Atterberg Limits, and carbonate content) are currently being conducted on selected representative samples to confirm the visual re-classifications. The ESP boring logs will be revised/clarified as necessary and submitted in ESP Revision 3. The undrained shear strength of the Blue Bluff Marl will be update based on the revised/clarified data and submitted in ESP Revision 3.

Furthermore, additional field and laboratory data has been developed as part of the COL phase and will be used to verify or update as necessary the undrained shear strength of the Blue Bluff Marl. These data and results will be incorporated into ESP Revision 3.

2.5-13 Calculate preconsolidation pressure and OCRs for the Blue Bluff Marl using the reliable undrained shear strength based on sufficient test data (instead of using the data from previous investigation) from the ESP investigation.

Response:

As discussed in response to Open Item 2.5-11, the ESP site investigation was limited in scope in part due to the depth of knowledge about the site based on VEGP Units 1 and 2 site investigation studies. The ESP borings disclosed field measurement data consistent with data presented for VEGP Units 1 and 2. However, as described in the response to Open Item 2.5-12, some of the material descriptions used in the ESP borings logs have resulted in a misunderstanding about the similarity of the ESP site and the VEGP Units 1 and 2 site. This misunderstanding will be resolved with the revised/clarified borings logs to be submitted in ESP Revision 3. In response to Open Item 2.5-12, the undrained shear strength will be updated and this data will be used review and revise as necessary, the preconsolidation pressure and over consolidation ratio (OCR) for the Blue Bluff Marl.

In addition, COL data including shear strength testing and consolidation testing has been recently collected and analyzed and will be used to evaluate the ESP values for preconsolidation pressure and OCR. These data will be presented in ESP Revision 3.

2.5-14 Provide reliable effective angles of internal friction for the subsurface soils, instead of using the values from previous investigation.

Response:

The effective angle of internal friction of the subsurface soils was estimated based on empirical correlations associated with SPT N-values. A summary of the measured SPT N-values was presented in Table 2.5.4-5 of the SSAR. A large number of values were recorded from the Upper Sand Stratum. This stratum will be removed during construction and replaced with compacted structural fill. Many of the N-values measured below the Upper Sand stratum did not achieve a full 12 inches of penetration because of the high relative density of the material encountered or because of the intact nature of the in-situ material. An update of borings logs that is currently being conducted will validate the use of high N-values in correlations to develop the effective angle of internal friction for the subsurface soils. These data will be presented in ESP Revision 3.

In addition, COL data including additional N-values and shear strength testing has been recently collected and analyzed and will be used to verify or revise as necessary the effective angle of internal friction as presented in the ESP application. These data will be presented in ESP Revision 3.

2.5-15 Provide information to demonstrate that the marl will behave as a hard clay or soft rock material and thus not need to be addressed with relative density.

Response:

As discussed in response to Open Item 2.5-12, some of the material descriptions, including the Blue Bluff Marl, on the ESP borings logs, have led to confusion about the subsurface conditions at the site. In particular, some of the samples in the Blue Bluff Marl were identified as sands and gravels. While this description is technically correct, it is not indicative of the in-situ structure of the Blue Bluff Marl. A geotechnical engineer and geologists have revisited the ESP samples and are revising the material descriptions, as necessary, on the borings logs to clarify the material make-up of the Blue Bluff Marl. Additional laboratory testing is being conducted to evaluate the carbonate content of the Blue Bluff Marl materials previously identified as sands and gravels. Results will show that the Blue Bluff Marl is generally a soft rock, hard clay like material with lesser amounts of quartz sand and no gravel present. The gravel previously reported has been visually identified by the geologists as limestone fragments. Results of laboratory testing and revised boring logs will be presented in ESP Revision 3.

2.5-16 Determine elastic modulus E using sufficient site-specific (ESP investigation) SPT N values for the Upper and Lower Sand Strata.

Response:

As previously stated, the ESP site investigation program was developed to be consistent other accepted ESP applications and in accordance with RS-002. Paragraph I.1.2 of Section 2.5.4 of this document states that "engineering properties of soil and rock strata underlying the site (be) supported by representative field and laboratory test data". Representative data were collected during the ESP site investigation and the measured SPT N-values were used to derive elastic moduli. Within the power block area, the Upper Sand stratum will be removed and replaced with compacted structural fill. Measured SPT N-values from the Lower Sand stratum are summarized in SSAR Table 2.5.4-5 and were used to derive elastic moduli. Additional SPT data have been collected in the Lower Sand stratum during the COL phase. These data were taken from 42 borings within the power block that penetrated into the Lower Sand stratum and will be used to evaluate the elastic moduli and either validate the ESP values or update them if necessary. These results and data will be provided in ESP Revision 3.

2.5-17 Calculate Unit Weight values for the ESP subsurface soils using sufficient ESP investigation data, instead of using the values from previous investigations.

Response:

As summarized in SSAR 2.5.4.2.5.2, unit weight were measured in selected samples of the Blue Bluff Marl and Lower Sand stratum, including 15 samples in the Blue Bluff Marl and three samples in the Lower Sand stratum. These data are tabulated below. Consistent with the scope of the ESP site investigation program, the number of unit weight measurements is limited in quantity. Additional unit weight measurements are being taken for the COL phase and will be included ESP Revision 3.

Stratum	Minimum, pcf	Maximum, pcf	Average, pcf
Blue Bluff Marl	103.6	140.2	120
Lower Sand	119.4	128.3	123

2.5-18 Define site-specific shear wave velocity profile using sufficient shear wave velocity measurements from the ESP investigation.

Response:

The shear wave velocity provided in the ESP was based on site specific data from velocity measurements taken in the footprint of the ESP site. The SSAR describes the velocity profile above the Blue Bluff Marl as developed from measurements using downhole seismic CPT data and P-S velocity logging data; while the profile including and below the Blue Bluff Marl as developed from measurements using P-S suspension logging. Profiles from nearby sites (VEGP Unit 1&2 and SRS) were considered and although generally consistent were not incorporated into the velocity profile for the ESP site. Additional site specific data velocity data (seismic CPTs in the Upper Sand stratum and P-S suspension logging in the Blue Bluff Marl and Lower Sand strata) have been collected for the COL phase. These data are being used to re-evaluate the ESP profile and will be included in ESP Revision 3.

2.5-19 Provide site-specific soil degradation and damping ratio curves for ESP soil amplification calculation.

Response:

Site specific soil degradation and damping ratio curves were not developed for the ESP site investigation. This work is currently being conducted as part of the COL phase site investigation. As stated in the SSAR and in response to RAI 2.5.4-5 and RAI 2.5.4-17, EPRI (1993) soil degradation relationships were used to model the dynamic response of the site. In addition, soil degradation and damping ratio curves from the nearby SRS site were also used in the analysis. The similarity of the geology between the Vogtle site and the SRS suggest that SRS degradation curves are applicable to the Vogtle site. The soil amplification results show small differences between the EPRI and SRS curves. However, these data will be confirmed after RCTS testing is completed during the COL phase.

2.5-20 Revise SSAR Sections 2.5.2.5.1.5, 2.5.4.7.2.1, and 2.5.4.7.2.2, along with associated tables and figures, to show the degradation curves only at a 1 percent or less cyclic shear strain.

Response:

The SSAR sections and associated tables and figures were revised in Revision 2 of the SSAR.

2.5-21 Confirm that the Blue Bluff Marl is not liquefiable with sufficient ESP soil property data.

Response:

As discussed in the response to Open Item 2.5-12, the ESP boring logs are being re-characterized to clarify the confusion over the presence of gravel in the Blue Bluff Marl. The gravel-sized fragments which were used to characterize portions of the stratum consisted of cemented fragments or nodules and are indicative of micritic limestone that has been crushed by the split-spoon sampler. The high N-values that were measured in this material reflect the very hard in-situ material and were not the result of gravel engagement during the SPT test. The updated borings logs along with associated laboratory test results will show that the Blue Bluff Marl is a hard clay / soft rock material. These data, with the previous response to RAI 2.5.4-14, support the conclusion that the Blue Bluff Marl is not liquefiable. The updated boring logs will be presented in ESP Revision 3.

Additional field and laboratory data has been collected for the COL phase site investigation and is being evaluated. These data include 68 borings that penetrated into the Blue Bluff Marl in the power block area. Field and laboratory test data from this stratum will be used to confirm the liquefaction potential in Blue Bluff Marl presented in the ESP. These data are conclusions will be presented in ESP Revision 3.

2.5-22 Provide appropriate bearing capacity with consideration of factors, 1) settlements; 2) allowable pressures used in design of the wall/basemat intersection; and 3) toe pressures developed during potential overturning and sliding of the facility.

Response:

Bearing and settlement analysis is currently scheduled for completion in December 2007. The wall/basemat pressures and the toe pressures developed during potential overturning and sliding will be develop by a site specific seismic analysis. This analysis is currently schedule to be completed by the end of January 2008. These results will be provided to the NRC as they become available. They will not be provided as part of ESP Revision 3.

SER Section 13.3 – Emergency Planning

13.3-1 Provide the bases for why Unit 3 inspections, tests, analyses and acceptance criteria (ITAAC) 9.1 will demonstrate sufficiency of the ITAAC in relation to Unit 4, or supplement Table V2A4-1 with comparable Unit 4 ITAAC.

Response:

Table V2A4-1 has been modified to add an ITAAC (9.1) related to the submission of implementing procedures that will be used for Unit 4. A copy of the proposed revision to Table V2A4-1 is included in Enclosure 3. The proposed revision to Table V2A4-1 will be included in Revision 3 of the ESP Application.

13.3-2 Provide an adequate basis for the 75-minute staff augmentation time in ESP Plan Table B-1 for Units 3 and 4.

Response:

The 75 minutes referenced in the ESP Plan Table B-1 is intended to clarify the current commitment in the existing emergency plan for VEGP Units 1 and 2 which states "60 minutes from notification". Notification timeframes are not expected to exceed 15 minutes from declaration of the emergency. Therefore, physical response times in the existing and proposed plans are consistent. The inclusion of the timeframe associated with notification into the physical response time serves to clarify the commitment to staff facilities within the specified timeframe. This approach is consistent with available guidance for activation of emergency response facilities within "about an hour." The augmentation process remains capable of ensuring augmentation of the initial response staff in accordance with existing activation requirements. The augmentation of the on-shift staff during an actual emergency remains sufficient to ensure that the planning standard will be met.

13.3-3 Provide a letter of agreement from Radiation Management Consultants (RMC), current at the time of the application and has not expired.

Response:

The referenced letter is currently issued on an annual basis in conjunction with a purchase order for the referenced services. A current letter for 2007, as well as a copy of the original signed document in effect at the time of the application, is included in Enclosure 4.

13.3-4 The review and acceptance of the application's Emergency Action Levels (EALs) for Units 3 and 4.

Response:

A revised set of EALs for Units 3 and 4 will be provided with Revision 3 of the ESP Application. In addition, an ITAAC has been added to the Unit 3 ITAAC (1.1.2) related to the verification that setpoints have been calculated for those items in the EAL scheme that cannot yet be completed. A copy of the proposed revision to Table V2A3-1 is included in Enclosure 2. The proposed revision to Table V2A3-1 will be included in Revision 3 of the ESP Application.

13.3-5 Revise Unit 3 ITAAC 6.5 to accurately reflect the corresponding allowable generic ITAAC (consistent with RG 1.206).

Response:

Units 3 and 4 ITAAC 6.5 has been revised to reflect the corresponding ITAAC found in RG 1.206. Copies of the proposed revisions to Units 3 and 4 ITAAC are included in Enclosures 2 and 3, respectively. The proposed revisions to Unit 3 and Unit 4 ITAAC will be included in Revision 3 of the ESP Application.

13.3-6 The applicant must either provide the bases for why Unit 3 ITAAC criteria 6.1 - 6.3 and 6.5 - 6.7 will demonstrate the sufficiency of the ITAAC in relation to Unit 4 (i.e., describe why these are not site-specific and reflect both Unit 3 and Unit 4), or supplement Table V2A4-1 with comparable Unit 4 ITAAC; as was done for ITAAC 6.4. (The completion of the Unit 3 ITAAC, which demonstrates that the acceptance criteria have been met – to the extent that they apply to equipment and systems common to Unit 4 – would not have to be repeated as part of the Unit 4 ITAAC; only those capabilities specific to Unit 4.)

Response:

Unit 3 ITAAC criteria 6.1 – 6.3 and 6.5 – 6.7 have been added to the Unit 4 ITAAC. A proposed revision to Table V2A4-1 is included in Enclosure 3. The proposed revision to Table V2A4-1 will be included in Revision 3 of the ESP Application.

13.3-7 Update the Burke County Emergency Plan, including review and approval by the Burke County Emergency Management Agency (EMA) Director.

Response:

The Burke County plan has been revised to incorporate the referenced information. The revised plan, including the approval page, is provided in Enclosure 5.

13.3-8 Resolve the apparent inconsistency of the use of buses to evacuate non-auto-owning residents, and evaluate the time to mobilize the buses, travel through the emergency planning zone (EPZ) to pick up residents, and then exit the EPZ.

Response:

For purposes of emergency planning within Burke County, the population that is considered as non-automobile owning is identified as the same as the population that is considered to have special transportation needs. The VEGP calendar contains a post card that may be filled in and mailed by the population that may have special transportation needs including the unavailability of an automobile. Burke County EMA (BEMA) maintains a list of people needing transportation assistance during an evacuation including those that do not own an automobile.

As discussed in the response to RAI 13.3-29.d, the BEMA is also responsible for the Burke County Transit Authority which has 8 passenger vans (five 14 - passenger and three 9-passenger). Additionally, the BEMA has access to 12 ambulances and 100 school buses. All of these vehicles could be used to transport individuals requiring assistance in the event of an evacuation. The number of individuals identified as requiring assistance in the EPZ is 20. Dispatch of the needed vehicles would be immediate at the direction of the EMA Director and would be coordinated to maximize the available resources. No additional trips would be expected.

The evacuation time estimate (ETE) assumption of non-automobile owning residents of 8% is conservative and the overall ETE is not changed.

13.3-9 Explain how the sportsmen population numbers for zones G-10 and H-10 (200 each) were derived, and clarify the sportsmen population associated with the Yuchi Wildlife Management Area.

Response:

The values for transient population within the South Carolina portions of the VEGP EPZ (G-10 and H-10) include hunters visiting the Cowden Plantation in Aiken County, boaters using Gray's Landing and the Barnwell Boat Landing, visitors to the St. Mary's Baptist Church, and visitors to the Creek Plantation area for horse auctions or shows. Peak population estimates developed for each of these areas were based on studies performed in support of the evacuation time estimate update performed in 1985 which specifically addressed these areas. Assumptions utilized in the updated study are consistent with current usage of these areas.

Access to the Yuchi Wildlife Management Area (WMA) is controlled by the Georgia Department of Natural Resources (DNR). Maximum usage for the WMA, for various hunting seasons (i.e., deer, turkey, etc.), were utilized in the development of the updated ETE. Data obtained from the Georgia DNR shows that the 8-year average for the period of 2000-2007 is 190 hunters. This number represents the total number of hunters for the designated season.

13.3-10 Discuss whether State & local agencies have reviewed the (new) ETE and provided comments, and discuss the resolution of those comments (including impact on existing offsite plans, in relation to the ESP application).

Response:

State and local agencies have reviewed the updated ETE and did not find, as a result of their review, any significant impact to their current plans or procedures. Revisions identified in the Burke County Emergency Plan to address the Lord's House of Prayer have been incorporated [see 13.3-7].

13.3-11 Verify the population numbers used in the MIDAS software, and update the software to reflect the new population numbers.

Response:

Population data within the MIDAS code has been reviewed to determine the impact of the updated ETE. The values contained within the code were determined to be conservative compared with the updated ETE for the purposes of dose assessment. The code allows for modifications of the population estimates based on actual populations at the time of the event for the purposes of post accident dose reconstruction through the system utility MIDEP. Values are provided for the plume, ground, vegetable, meat, cow, and inhalation pathways, and are editable under the MIDEP task in the system utility. No programming changes are required.

13.3-12 Revise the non-specific (*should be*) terminology in ITAAC 8.1 to include objective acceptance criteria (the completion of which is easily discernible).

Response:

ITAAC terminology has been revised to include objective acceptance criteria. Proposed revisions to Units 3 and 4 ITAAC (8.1) are included in Enclosures 2 and 3, respectively. Proposed revisions to Table V2A3-1 and Table V2A4-1 will be included in Revision 3 of the ESP Application.

13.3-13 Provide the bases for why Unit 3 ITAAC 8.1 will demonstrate the sufficiency of the ITAAC in relation to Unit 4, or supplement Table V2A4-1 with comparable Unit 4 ITAAC.

Response:

An ITAAC comparable to Unit 3 ITAAC 8.1 has been added to the Unit 4 ITAAC. The Unit 4 ITAAC included only those objectives and supporting criteria that are specific to Unit 4. A proposed revision to Table V2A4-1 is included in Enclosure 3. The proposed revision to Table V2A4-1 will be submitted with Revision 3 of the ESP Application.

Southern Nuclear Operating Company

AR-07-1773

Enclosure 2

Proposed Revision to ESP Emergency Plan V2 Appendix 3 - Unit 3 ITAAC

NOTE: This enclosure contains a proposed 18-page revision to ESP Emergency Plan V2 Appendix 3.

V2 Appendix 3 Unit 3 ITAAC

Table V2A3-1 *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
1.0 Emergency Classification System			
10 CFR 50.47(b)(4) – A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.	1.1 An emergency classification and emergency action level scheme must be established by the licensee. The specific instruments, parameters or equipment status shall be shown for establishing each emergency class, in the in-plant emergency procedures. The plan shall identify the parameter values and equipment status for each emergency class. [D.1]	1.1.1 An inspection of the control room, technical support center (TSC), and emergency operations facility (EOF) will be performed to verify that they have displays for retrieving system and effluent parameters specified in Table Annex V2 D.2-1, Hot Initiating Condition Matrix, Modes 1,2,3, and 4, Table V2 D.2-2, Cold Initiating Condition Matrix, Modes 5,6, and De-fueled, and EIPs (Emergency Implementing Procedures).	1.1.1 The parameters specified in Table Annex V2 H-1, *Post Accident Monitoring Variables,* are retrievable in the control room, TSC, and EOF. The ranges encompass the values specified in the emergency classification and EAL scheme
		1.1.2 An analyses of the EAL technical bases will be performed to verify	1.1.2 The setpoints are developed in accordance with the applicable site setpoint development methodology and a Safety Evaluation Report (SER) has been issued by the NRC approving the EAL scheme.

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
		site specific setpoints have been calculated for the following EALs: Abnormal Rad Levels/Radiological Effluent: RU1; RU2; RA1; RA2 Cold Shutdown./ Refueling System Malfunction: CU6; CU7; CS1; CG1 Fission Product Barrier Degradation: F2; F4; F5; F6 Hazards or Other Conditions Affecting Plant Safety: HU1, HS2 System Malfunction: SU4; S53	
3.0 Emergency Communications			
10 CFR 50.47(b)(6) Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.	3.1 The means exists for communications between the control room, OSC, TSC, EOF, principal State and local emergency operations centers (EOCs), and radiological field monitoring teams. [F.1.d]	3.1 & 3.2 A test will be performed of the capabilities	3.1 Communications are established between the control room, OSC, TSC, and EOF. Communications are established between the control room, TSC, and Georgia Emergency Management Agency (GEMA) Operation Center; Burke County Emergency Operations Center (EOC); SRS Operations Center; South Carolina Warning Point; and Aiken, Allendale, and Barnwell County Dispatchers. Communications are established between the TSC and radiological

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			monitoring teams.
	3.2 The means exists for communications from the control room, TSC, and EOF to the NRC headquarters and regional office EOC (including establishment of the Emergency Response Data System (ERDS) between the onsite computer system and the NRC Operations Center. [F.1.f]		3.2 Communications are established between the control room, TSC, and EOF to the NRC headquarters and regional office EOCs and an access port for ERDS is provided.
5.0 Emergency Facilities and Equipment			
10 CFR 50.47(b)(8) - Adequate emergency facilities and equipment to support the emergency response are provided and maintained.	5.1 The licensee has established a technical support center (TSC) and an onsite operations support center (OSC). [H.1]	5.1 An inspection of the as-built TSC and OSC will be performed, including a test of the capabilities	5.1.1The TSC has at least 2,175 square feet of floor space 5.1.2 Communication equipment is installed in the TSC and OSC, and voice transmission and reception are accomplished 5.1.3 The plant parameters listed in Table Annex V2H-1, Post Accident Monitoring Values can be retrieved and displayed in the TSC 5.1.4 The TSC is located within the protected area and no major security barriers exist between the TSC and the control room 5.1.6 The OSC is located adjacent to the passage from the annex building to the control room 5.1.7 The TSC ventilation system includes a high efficiency particulate air (HEPA) and charcoal filter and radiation monitors are installed 5.1.8 A reliable and back-up electrical power supply is available for the TSC.

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
	5.2 The Licensee has established an emergency operations facility (EOF). [H.2]	5.2 An inspection of the EOF will be performed, including a test of the capabilities.	5.2.3 Voice transmission and reception are accomplished between the EOF and the control room. 5.2.4 The plant parameters listed in Table Annex V2-1, Post Accident Monitoring Values can be retrieved and displayed in the EOF
6.0 Accident Assessment			
10 CFR 50.47(b)(9) - Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.	6.1 The means exist to provide initial and continuing radiological assessment throughout the course of an accident. [I.2]	6.1 A test of the emergency plan will be conducted by performing a drill to verify the capability to perform accident assessment.	6.1 Using selected monitoring parameters listed in Table Annex V2 H-1 of the VEGP emergency plan, simulated degraded plant conditions are assessed and protective actions are initiated in accordance with the following criteria: A. Accident Assessment and Classification 1. Demonstrate the ability to identify initiating conditions, determine emergency action levels (EAL) parameters and correctly classify the emergency throughout the drill. B. Radiological Assessment and Control 1. Demonstrate the ability to obtain onsite radiological surveys and samples. 2. Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers. 3. Demonstrate the ability to assemble and deploy field monitoring teams in a timely manner. 4. Demonstrate the ability to satisfactorily collect and disseminate field team data. 5. Demonstrate the ability to develop dose projections. 6. Demonstrate the ability to make the decision whether to issue radio- protective drugs, KI, to emergency workers

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			7. Demonstrate the ability to develop appropriate protective action recommendations (PAR) and expeditiously notify appropriate authorities.
	6.2 The means exist to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. [I.3]	6.2 An analyses of the emergency plan implementing procedures and the Off Site Dose Calculation Manual (ODCM) will be completed to verify ability to determine the source term, magnitude of releases.	6.2 The administrative procedures and ODCM correctly calculate source terms and magnitudes of postulated releases.
	6.3 The means exist to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. [I.4]	6.3 An analyses of the emergency plan implementing procedures and the Off Site Dose Calculation Manual (ODCM) will be completed to verify the relationship between effluent monitor readings and offsite exposures and contaminations has been established.	6.3 The administrative procedures and ODCM calculate the relationship between effluent monitor readings and offsite exposure and contamination.

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
	6.4 The means exist to acquire and evaluate meteorological information. [I.5]	6.4 A test will be performed to verify the ability to access meteorological information in the TSC and control room.	6.4 The following parameters are displayed in the TSC and control room. • Windspeed (at 10 m and 60 m) • Wind direction (at 10 m and 60 m) • Standard deviation of horizontal wind direction (at 10 m) • Vertical temperature difference (between 10 m and 60 m) • Ambient temperature (at 10 m) • Dewpoint temperature (at 10 m) • Precipitation (at the tower base)
	6.5 The means exist to make rapid assessments of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times. [I.8]	6.5 A test will be performed of the capabilities.	6.5 A drill or exercise is conducted demonstrating the capability for making rapid assessment of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways.

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
	6.7 The means exist to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). [I.10]	6.7 An analysis of the methodology contained in the EIPs for estimating dose, preparing protective action recommendations, and the ODCM will be performed to verify the ability to estimate an integrated dose from projected and actual dose rates.	6.7 The EIPs and ODCM estimate an integrated dose.
7.0 Protective Response			
10 CFR 50.47(b)(10) A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.	7.1 The means exists to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator including: • Employees not having emergency assignments • Visitors • Contractor and construction personnel • Other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area	7.1 A test of the onsite warning and communication capability EIPs including protective action guidelines, assemble and accountability and site dismissal will be performed during a drill.	7.1 The organization will satisfy the following objectives during the drill: 1. Demonstrate the capability to direct and control emergency operations. 2. Demonstrate the ability to transfer emergency direction from the Control Room (simulator) to the Technical Support Center (TSC) and from the TSC to the Emergency Operations Facility (EOF) in a timely manner. 3. Demonstrate the ability to prepare for around the clock staffing requirements. 4. Demonstrate the ability to perform assembly and accountability in a timely manner. 5. Demonstrate the ability to perform site dismissal.

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
8.0 Exercises and Drills			
10 CFR 50.47(b)(14) Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.	8.1 The licensee conducts a full participation exercise to evaluate major portions of emergency response capabilities, which includes participation by each State and local agency within the plume exposure EPZ, and each State within the ingestion pathway EPZ.	8.1 A full participation exercise (test) will be conducted within the specified timer periods of 10 CFR Part 50, Appendix E.	8.1.1 The exercise is completed within the specified time periods of 10 CFR Part 50, Appendix E; onsite exercise objectives listed below have been met, and there are no uncorrected onsite exercise deficiencies. A. Accident Assessment and Classification 1. Demonstrate the ability to identify initiating conditions, determine emergency action levels (EAL) parameters and correctly classify the emergency throughout the exercise. Standard Criteria: a. Determine the correct highest emergency classification level based on events which were in progress, considering past events, and their impact on the current conditions within 15 minutes from the time the initiating condition(s) or EAL is identified. B. Notifications 1. Demonstrate the ability to alert, notify and mobilize site emergency response personnel. Standard Criteria: a. Complete the designated checklist and perform the announcement within 5 minutes of the initial event

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			classification for an Alert or higher. b. Activate the emergency recall system within 5 minutes of the initial event classification for an Alert or higher. 2. Demonstrate the ability to expeditiously notify state, local and federal authorities (NRC) of emergency conditions. Standard Criteria: a. Transmit information using the designated checklist in accordance with approved procedure within 15 minutes of event classification. b. Transmit information using the designated checklist in accordance with approved procedures within 60 minutes of last transmittal for a follow-up notification to state and local authorities. c. Transmit information using the designated checklist within 60 minutes of event classification for an initial notification of the NRC. 3. Demonstrate the ability to warn or advise onsite individuals of emergency conditions. Standard Criteria:

Table V2A3-1 (Cont.) ***Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)***

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			a. Initiate notification of onsite individuals (via plant page or telephone) utilizing the designated checklist within 15 minutes of notification.
			4. Demonstrate the capability of the Prompt Notification System (PNS) for the public to operate properly when required.
			Standard Criteria:
			a. 90% of the sirens operate properly as indicated by the Whelen feedback system.
			b. A NOAA Tone Alert Radio is activated.
			C. Emergency Response
			1. Demonstrate the capability to direct and control emergency operations.
			Standard Criteria:
			a. Subjective evaluation of the command and control demonstrated by the Control Room in the early phase and the TSC in the latter phase of the emergency.
			2. Demonstrate the ability to transfer emergency direction from the Control Room (simulator) to the Technical Support Center (TSC) and from the TSC to the Emergency Operations Facility (EOF) in a timely

Table V2A3-1 (Cont.) ***Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)***

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			manner. Standard Criteria: a. Subjective evaluation of briefings that were conducted prior to turnover responsibility. Personnel document transfer of duties. 3. Demonstrate the ability to prepare for around the clock staffing requirements. Standard Criteria: a. Complete 24-hour staff assignments. 4. Demonstrate the ability to perform assembly and accountability in a timely manner. Standard Criteria: a. PA personnel assembly and accountability completed within 30 minutes of the Alert or higher emergency declaration via public address announcement. D. ERFs 1. Demonstrate timely activation of the TSC,

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			Operations Support Center (OSC), and EOF. Standard Criteria: a. The TSC, EOF and OSC are activated within about an hour of the initial notification. 2. Demonstrate the adequacy of equipment, security provisions, and habitability precautions for the TSC, OSC, EOF, and Emergency News Center (ENC) as appropriate. Standard Criteria: a. Subjective evaluation of the adequacy of the emergency equipment in the emergency response facilities. b. The Security Shift Captain implements and follows applicable emergency implementing procedures. c. The Health Physics Supervisor (TSC) implements the designated checklist an onsite/offsite release has occurred. 3. Demonstrate the adequacy of communications for all emergency support resources. Standard Criteria: a. Emergency response communications listed in emergency implementing procedures are available and operational.

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			b. Communications systems are tested in accordance with TSC, OSC, and EOF Activation Checklists. c. ERF personnel are able to operate all specified communication systems. d. Clear and timely communications links are established and maintained for the duration of the exercise.
			E. Radiological Assessment and Control
			1. Demonstrate the ability to obtain onsite radiological surveys and samples.
			Standard Criteria:
			a. HP Technicians demonstrate the ability to obtain appropriate instruments (range and type) and take surveys. b. Airborne samples are taken when the conditions indicate the need for the information.
			2. Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers.
			Standard Criteria:
			a. Emergency workers are issued self reading dosimeters when radiation levels require and exposures are controlled to 10CFR20 limits unless the ED authorizes emergency limits.

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			b. Exposure records are available, either from the ALARA computer or a hard copy dose report. c. Emergency workers include Security and personnel within all emergency facilities.
			3. Demonstrate the ability to assemble and deploy field monitoring teams in a timely manner.
			Standard Criteria:
			a. One Field Monitoring team is ready to be deployed within 1 hour of being requested from the OSC, and no later than 90 minutes from the declaration of an Alert or higher emergency.
			4. Demonstrate the ability to satisfactorily collect and disseminate field team data.
			Standard Criteria:
			a. Field data to be collected is dose rate or cpm from the plume, both open and closed window, and air sample gross/net cpm for particulate and iodine, if applicable. b. Satisfactory dissemination is from the field team to the Dose Assessment Supervisor via the field team communicator and field team coordinator.
			5. Demonstrate the ability to develop dose projections.

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			Standard Criteria: a. The on-shift HP/Chemistry Shared foreman or the Dose Assessment Supervisor performs dose projections timely and accurately in accordance with emergency implementing procedures.
			6. Demonstrate the ability to make the decision whether to issue radio- protective drugs, KI, to emergency workers.
			Standard Criteria: a. KI is taken (simulated) if the estimated dose to the thyroid will exceed 25 REM CDE.
			7. Demonstrate the ability to develop appropriate PARs and notify Georgia and/or South Carolina emergency management authorities. Standard Criteria: a. TEDE and CDE dose projections from the dose assessment computer code are compared to emergency implementing procedures. b. PARs are developed within 15 minutes of data availability. c. PAR's are transmitted via voice or fax within 15 minutes of event classification and/or PAR development.

Table V2A3-1 (Cont.) ***Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)***

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			F. Public Information
			1. Demonstrate the capability to develop and disseminate clear, accurate and timely information to the news media.
			Standard Criteria:
			a. Media information (e.g., press releases, press briefings, electronic media) are made available within 60 minutes of notification of the On-Call Media Representative. b. Follow-up information is provided at a minimum within 60 minutes of an emergency classification or protective action recommendation change.
			2. Demonstrate the capability to establish and effectively operate rumor control in a coordinated fashion.
			Standard Criteria:
			a. Calls are answered in a timely manner with the correct information. b. Calls are returned or forwarded as appropriate to demonstrate responsiveness. c. Rumors are identified and addressed.
			G. Evaluation

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			1. Demonstrate the ability to conduct a post-exercise critique to determine areas requiring improvement and corrective action. Standard Criteria: a. An exercise timeline is developed followed by an evaluation of the objectives. b. Significant problems in achieving the objectives are discussed to ensure understanding of why the objective was not fully achieved. c. Recommendations for improvement in non-objective areas should be discussed. 8.1.2 Onsite emergency response personnel are mobilized in sufficient number to fill the emergency positions identified in the emergency plan Section B, and they successfully perform their assigned responsibilities as outlined in Criterion 8.1.1.D, Emergency Response Facilities. 8.1.3 The exercise is completed within the specified time periods of 10 CFR Part 50, Appendix E; offsite exercise objectives have been met; and there are no uncorrected offsite deficiencies or a license condition requires offsite deficiencies to be corrected prior to operation above 5% of rated power.
9.0 Implementing Procedures			
10 CFR Part 50, Appendix E.V – No less than 180 days prior to the	9.1 The licensee has submitted detailed implementing procedures	9.1 An inspection of the submittal letter	9.1 The licensee has submitted detailed implementing procedures for the onsite emergency plan no less

Table V2A3-1 (Cont.) *Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
scheduled issuance of an operating license for a nuclear power reactor or a license to possess nuclear material, the applicant's detailed implementing procedures for its emergency plan shall be submitted to the Commission.	for its emergency plan no less than 180 days prior to fuel load.	will be performed.	than 180 days prior to fuel load.

Southern Nuclear Operating Company

AR-07-1773

Enclosure 3

Proposed Revision to ESP Emergency Plan V2 Appendix 4 - Unit 4 ITAAC

NOTE: This enclosure contains a proposed 14-page revision to ESP Emergency Plan V2 Appendix 4.

V2 Appendix 4 Unit 4 ITAAC

Table V2A4-1 *Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
1.0 Emergency Classification System			
10 CFR 50.47(b)(4) – A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.	1.1 An emergency classification and emergency action level scheme must be established by the licensee. The specific instruments, parameters or equipment status shall be shown for establishing each emergency class, in the in-plant emergency procedures. The plan shall identify the parameter values and equipment status for each emergency class. [D.1]	1.1 An inspection of the control room will be performed to verify that it has the displays for retrieving system and effluent parameters specified in Table Annex V2 D.2-1, *Hot Initiating Condition Matrix, Modes 1,2,3, and 4,* Table V2 D.2-2, *Cold Initiating Condition Matrix, Modes 5,6, and De-fueled*, and Emergency Implementing Procedures (EIP)s.	1.1 The parameters specified in Table Annex V2 H-1, *Post Accident Monitoring Variables,* are retrievable in the control room. The ranges encompass the values specified in the emergency classification and EAL scheme
3.0 Emergency Communications			
10 CFR 50.47(b)(6) Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.	3.1 The means exists for communications between the control room, OSC, TSC, and EOF. [F.1.d]	3.1 & 3.2 A test will be performed of the capabilities	3.1 Communications are established between the control room, OSC, TSC, and EOF. Communications are established between the control room, Georgia Emergency Management Agency (GEMA) Operation Center; Burke County

Table V2A4-1 (Cont.) *Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			Emergency Operations Center (EOC); SRS Operations Center; South Carolina Warning Point; and Aiken, Allendale, and Barnwell County Dispatchers.
	3.2 The means exists for communications from the control room to the NRC headquarters and regional office EOC. [F.1.f]		3.2 Communications are established between the control room, TSC, and EOF, and NRC headquarters and regional office EOCs and an access port for ERDS is provided.
5.0 Emergency Facilities and Equipment			
10 CFR 50.47(b)(8) - Adequate emergency facilities and equipment to support the emergency response are provided and maintained.	5.1 The licensee has established a onsite operations support center (OSC). [H.1]	5.1 An inspection of the as-built OSC will be performed, including a test of the capabilities	5.1.1 Communication equipment is installed in the and OSC, and voice transmission and reception are accomplished 5.1.2 The plant parameters listed in Table Annex V2H-1, Post Accident Monitoring Values can be retrieved and displayed in the TSC 5.1.3 The OSC is located adjacent to the passage from the annex building to the control room
	5.2 The Licensee has established an emergency operations facility (EOF). [H.2]	5.2 An inspection of the EOF will be performed, including a test of the capabilities.	5.2.3 Voice transmission and reception are accomplished between the EOF and the control room. 5.2.4 The plant parameters listed in Table Annex V2-1, Post Accident Monitoring Values can be retrieved and displayed in the EOF

Table V2A4-1 (Cont.) *Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
6.0 Accident Assessment			
10 CFR 50.47(b)(9) - Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.	6.1 The means exist to provide initial and continuing radiological assessment throughout the course of an accident. [I.2]	6.1 A test of the emergency plan will be conducted by performing a drill to verify the capability to perform accident assessment.	6.1 Using selected monitoring parameters listed in Table Annex V2 H-1 of the VEGP emergency plan, simulated degraded plant conditions are assessed and protective actions are initiated in accordance with the following criteria: A. Accident Assessment and Classification 1. Demonstrate the ability to identify initiating conditions, determine emergency action levels (EAL) parameters and correctly classify the emergency throughout the drill. B. Radiological Assessment and Control 1. Demonstrate the ability to obtain onsite radiological surveys and samples. 2. Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers. 3. Demonstrate the ability to assemble and deploy field monitoring teams in a timely manner. 4. Demonstrate the ability to satisfactorily collect and disseminate field team data. 5. Demonstrate the ability to develop dose projections. 6. Demonstrate the ability to make the decision whether to issue radio- protective drugs, KI, to emergency workers 7. Demonstrate the ability to develop appropriate protective action recommendations (PAR) and expeditiously notify appropriate authorities.

Table V2A4-1 (Cont.) *Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
	6.2 The means exist to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. [I.3]	6.2 An analyses of the emergency plan implementing procedures and the Off Site Dose Calculation Manual (ODCM) will be completed to verify ability to determine the source term, magnitude of releases.	6.2 The administrative procedures and ODCM correctly calculate source terms and magnitudes of postulated releases.
	6.3 The means exist to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. [I.4]	6.3 An analyses of the emergency plan implementing procedures and the Off Site Dose Calculation Manual (ODCM) will be completed to verify the relationship between effluent monitor readings and offsite exposures and contaminations has been established.	6.3 The administrative procedures and ODCM calculate the relationship between effluent monitor readings and offsite exposure and contamination.
	6.4 The means exist to acquire and evaluate meteorological information. [I.5]	6.4 A test will be performed to verify the ability to access meterological	6.4 The following parameters are displayed in the TSC and control room. • Windspeed (at 10 m and 60 m)

Table V2A4-1 (Cont.) *Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
		information in the TSC and control room.	• Wind direction (at 10 m and 60 m) • Standard deviation of horizontal wind direction (at 10 m) • Vertical temperature difference (between 10 m and 60 m) • Ambient temperature (at 10 m) • Dewpoint temperature (at 10 m) • Precipitation (at the tower base)
	6.5 The means exist to make rapid assessments of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times. [I.8]	6.5 A test will be performed of the capabilities.	6.5 A drill or exercise is conducted demonstrating the capability for making rapid assessment of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways.
	6.7 The means exist to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). [I.10]	6.7 An analysis of the methodology contained in the EIPs for estimating dose, preparing protective action recommendations, and the ODCM will	6.7 The EIPs and ODCM estimate an integrated dose.

Table V2A4-1 (Cont.) *Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
		be performed to verify the ability to estimate an integrated dose from projected and actual dose rates.	
7.0 Protective Response			
10 CFR 50.47(b)(10) A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.	7.1 The means exists to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator including: • Employees not having emergency assignments • Visitors • Contractor and construction personnel • Other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area	7.1 A test of the onsite warning and communication capability EIPs including protective action guidelines, assemble and accountability and site dismissal will be performed during a drill.	7.1 The organization will satisfy the following objectives during the drill: 1. Demonstrate the capability to direct and control emergency operations. 2. Demonstrate the ability to transfer emergency direction from the Control Room (simulator) to the Technical Support Center (TSC) and from the TSC to the Emergency Operations Facility (EOF) in a timely manner. 3. Demonstrate the ability to prepare for around the clock staffing requirements. 4. Demonstrate the ability to perform assembly and accountability in a timely manner. 5. Demonstrate the ability to perform site dismissal.
8.0 Exercises and Drills			
10 CFR 50.47(b)(14) Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted	8.1 The licensee conducts a limited participation exercise to evaluate portions of emergency response capabilities, which includes participation by each State and local	8.1 A limited participation exercise (test) will be conducted within the specified timer	8.1.1 The exercise is completed within the specified time periods of 10 CFR Part 50, Appendix E; onsite exercise objectives listed below have been met, and there are no uncorrected onsite exercise deficiencies.

Table V2A4-1 (Cont.) *Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.	agency within the plume exposure EPZ, and each State within the ingestion pathway EPZ that have not been tested in a previous exercise.	periods of 10 CFR Part 50, Appendix E.	A. Accident Assessment and Classification 1. Demonstrate the ability to identify initiating conditions, determine emergency action levels (EAL) parameters and correctly classify the emergency throughout the exercise. Standard Criteria: a. Determine the correct highest emergency classification level based on events which were in progress, considering past events, and their impact on the current conditions within 15 minutes from the time the initiating condition(s) or EAL is identified. B. Notifications 1. Demonstrate the ability to alert, notify and mobilize site emergency response personnel. Standard Criteria: a. Complete the designated checklist and perform the announcement within 5 minutes of the initial event classification for an Alert or higher. b. Activate the emergency recall system within 5 minutes of the initial event classification for an Alert or higher.

Table V2A4-1 (Cont.) ***Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)***

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			2. Demonstrate the ability to expeditiously notify state, local and federal authorities (NRC) of emergency conditions. Standard Criteria: a. Transmit the designated checklist within 15 minutes of event classification. b. Transmit the designated checklist within 60 minutes of last transmittal for a follow-up notification to state and local authorities. c. Transmit information using the designated checklist within 60 minutes of event classification for an initial notification of the NRC. 3. Demonstrate the ability to warn or advise onsite individuals of emergency conditions. Standard Criteria: a. Complete the designated checklist within 15 minutes of notification (via plant page or telephone) from control room. C. Emergency Response 1. Demonstrate the capability to direct and control

Table V2A4-1 (Cont.) ***Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)***

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			emergency operations. Standard Criteria: a. Subjective evaluation of the command and control demonstrated by the Control Room in the early phase and the TSC in the latter phase of the emergency. 2. Demonstrate the ability to transfer emergency direction from the Control Room (simulator) to the Technical Support Center (TSC). Standard Criteria: a. Subjective evaluation of briefings that were conducted prior to turnover responsibility. Personnel document transfer of duties. 3. Demonstrate the ability to prepare for around the clock staffing requirements. Standard Criteria: a. Complete 24-hour staff assignments. 4. Demonstrate the ability to perform assembly and accountability in a timely manner.

Table V2A4-1 (Cont.) ***Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)***

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			Standard Criteria: a. PA personnel assembly and accountability completed within 30 minutes of the Alert or higher emergency declaration via public address announcement. D. ERFs 1. Demonstrate timely activation of the Operations Support Center (OSC). Standard Criteria: a. The OSC should be activated within about an hour of the initial notification. 2. Demonstrate the adequacy of equipment, security provisions, and habitability precautions for the OSC. Standard Criteria: a. Subjective evaluation of the adequacy of the emergency equipment in the emergency response facilities. b. The Security Shift Captain implements and follows applicable emergency implementing procedures.

Table V2A4-1 (Cont.) ***Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)***

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			c. The Health Physics Supervisor (TSC) implements the designated checklist an onsite/offsite release has occurred. 3. Demonstrate the adequacy of communications for all emergency support resources. Standard Criteria: a. Emergency response communications listed in emergency implementing procedures are available and operational. b. Communications systems are tested in accordance with the OSC activation checklist. c. ERF personnel are able to operate all specified communication systems. d. Clear and timely communications links are established and maintained for the duration of the exercise. E. Radiological Assessment and control 1. Demonstrate the ability to obtain onsite radiological surveys and samples. Standard Criteria: a. HP Technicians demonstrate the ability to obtain appropriate instruments (range and type) and take

Table V2A4-1 (Cont.) *Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			surveys. b. Airborne samples are taken when the conditions indicate the need for the information. 2. Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers. Standard Criteria: a. Emergency workers are issued self reading dosimeters when radiation levels require and exposures are controlled to 10CFR20 limits unless the ED authorizes emergency limits. b. Exposure records are available, either from the ALARA computer or a hard copy dose report. c. Emergency workers include Security and personnel within all emergency facilities. 3. Demonstrate the ability to assemble and deploy field monitoring teams in a timely manner. Standard Criteria: a. One Field Monitoring team is ready to be deployed within 1 hour of being requested from the OSC, and no later than 90 minutes from the declaration of an Alert or higher emergency.

Table V2A4-1 (Cont.) ***Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)***

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			4. Demonstrate the ability to satisfactorily collect and disseminate field team data. Standard Criteria: a. Field data to be collected is dose rate or cpm from the plume, both open and closed window, and air sample gross/net cpm for particulate and iodine, if applicable. b. Satisfactory dissemination is from the field team to the Dose Assessment Supervisor via the field team communicator and field team coordinator. 5. Demonstrate the ability to develop dose projections. Standard Criteria: a. The on-shift HP/Chemistry Shared foreman or the Dose Assessment Supervisor performs dose projections timely and accurately in accordance with emergency implementing procedures. 7. Demonstrate the ability to develop appropriate PARs and notify Georgia and/or South Carolina emergency management authorities. Standard Criteria: a. TEDE and CDE dose projections from the dose assessment computer code are compared to

Table V2A4-1 (Cont.) *Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)*

Planning Standard	EP Program Elements (From NUREG 0654/FEMA-REP-1)	Inspections, Tests, Analyses	Acceptance Criteria
			emergency implementing procedures. b. PARs are developed within 15 minutes of data availability. c. PAR's are transmitted via voice or fax within 15 minutes of event classification and/or PAR development.
			8.1.2 Onsite emergency response personnel are mobilized in sufficient number to fill the emergency positions identified in the emergency plan Section B, and they successfully perform their assigned responsibilities as outlined in Criterion 8.1.1.D, Emergency Response Facilities.
			8.1.3 The exercise is completed within the specified time periods of 10 CFR Part 50, Appendix E; offsite exercise objectives have been met; and there are no uncorrected offsite deficiencies or a license condition requires offsite deficiencies to be corrected prior to operation above 5% of rated power.
9.0 Implementing Procedures			
10 CFR Part 50, Appendix E.V – No less than 180 days prior to the scheduled issuance of an operating license for a nuclear power reactor or a license to possess nuclear material, the applicant's detailed implementing procedures for its emergency plan shall be submitted to the Commission.	9.1 The licensee has submitted detailed implementing procedures for its emergency plan no less than 180 days prior to fuel load.	9.1 An inspection of the submittal letter will be performed.	9.1 The licensee has submitted detailed implementing procedures for the onsite emergency plan no less than 180 days prior to fuel load.

Southern Nuclear Operating Company

AR-07-1773

Enclosure 4

Letters of Agreement from Radiation Management Consultants

NOTE: This enclosure contains two 2-page letters from Radiation Management Consultants to SNC.

RMC
Radiation Management Consultants

3019 Darnell Road # Philadelphia, PA 19154 # 215-824-1300

February 26, 2006

Lawrence E. Mayo
Emergency Preparedness Coordinator
Southern Nuclear Operating Company
Vogtle Electric Generating Plant
P. O. Box 1600
Waynesboro, GA 30830

RE: Emergency Medical Assistance Program for 2006

Dear Mr. Mayo:

This confirms an agreement between Radiation Management Consultants (RMC) and Southern Nuclear Operating Company, Inc., wherein RMC agrees to furnish certain services to Vogtle Electric Generating Plant. These services comprise a program that is identified by RMC as an Emergency Medical Assistance Program (EMAP). This agreement remains in effect from January 1, 2006 through December 31, 2006. The EMAP program contains the following provisions:

1. Twenty-four hour per day availability of expert medical consultation on the evaluation of radiation injuries.

2. Twenty-four hour per day availability of RMC's Radiation Emergency Medical Team (REM-Team) comprised of physicians, Certified Health Physicists and a technician with portable instrumentation to travel to the emergency site and assist hospital personnel, attending physicians and/or plant personnel in the initial evaluation of radiation injuries.

3. Availability of and assistance with transfer of patients to Definitive Care Centers established and maintained at Loyola University Medical Center, Chicago, IL (or any other qualified medical center at the client's discretion) for the treatment of radiation injuries.

4. Twenty-four hour per day availability of RMC's dose assessment capabilities including:

   A. Access to a bioassay laboratory for urine, fecal, sputum and tissue analysis.
   B. Mobile Whole Body Counting Facilities
   C. Experienced Certified Health Physicists and Physician Team for evaluation of radiation exposures.

5. Annual training for the plant personnel in the handling and treatment of injured/contaminated patient(s).

6. Annual training for EMS personnel in the rescue and transport of injured/contaminated patient(s).

7. Annual training for hospital personnel in the handling, treatment and evaluation of injured/contaminated patient(s).

8. Annual radiation emergency medical drill to include preparation of accident scenarios. A drill observer will be provided, who will furnish drill evaluation reports related to observations made at the plant, ambulance and hospital.

9. Annual inventories of support hospital radiation emergency medical supplies and equipment.

10. Performance of an annual telephone number verification as well as a review of the hospital procedure manual; revise and distribute changes to the manual under controlled document distribution system.

11. Accident Response: Consultation and laboratory services under RMC's employment and control are at no extra charge, except for travel, lodging and meals.

12. Preparation of incident/accident reports for NRC and other regulatory bodies at no additional charge.

13. Legal and medical appearances as required and requested by Southern Nuclear Operating Company/Vogtle Plant personnel.

RADIATION MANAGEMENT CONSULTANTS, INC.

Roger E. Linnemann, MD
President

RMC:jb

RMC
Radiation Management Consultants

March 26, 2007

Lawrence E. Mayo
Emergency Preparedness Coordinator
Southern Nuclear Operating Company
Vogtle Electric Generating Plant
P. O. Box 1600
Waynesboro, GA 30830

RE: Emergency Medical Assistance Program for 2007

Dear Mr. Mayo:

This confirms an agreement between Radiation Management Consultants (RMC) and Southern Nuclear Operating Company, Inc., wherein RMC agrees to furnish certain services to Vogtle Electric Generating Plant. These services comprise a program that is identified by RMC as an Emergency Medical Assistance Program (EMAP). This agreement remains in effect from January 1, 2007 through December 31, 2007. The EMAP program contains the following provisions:

1. Twenty-four hour per day availability of expert medical consultation on the evaluation of radiation injuries.

2. Twenty-four hour per day availability of RMC's Radiation Emergency Medical Team (REM-Team) comprised of physicians, Certified Health Physicists and a technician with portable instrumentation to travel the emergency site and assist hospital personnel, attending physicians and/or plant personnel in the initial evaluation of radiation injuries.

3. Availability of and assistance with transfer of patients to Definitive Care Centers established and maintained at Loyola University Medical Center, Chicago, IL (or any other qualified medical center at the client's discretion) for the treatment of radiation injuries.

4. Twenty-four hour per day availability of RMC's dose assessment capabilities including:

   A. Access to a bioassay laboratory for urine, fecal, sputum and tissue analysis.
   B. Mobile Whole Body Counting Facilities
   C. Experienced Certified Health Physicists and Physician Team for evaluation of radiation exposures.

3019 Darnell Road, Philadelphia, PA 19154-3201 • Tel: (215) 824-1300 • Fax: (215) 824-1371

5. Annual training for the plant personnel in the handling and treatment of injured/contaminated patient(s).

6. Annual training for EMS personnel in the rescue and transport of injured/contaminated patient(s).

7. Annual training for hospital personnel in the handling, treatment and evaluation of injured/contaminated patient(s).

8. Annual radiation emergency medical drill to include preparation of accident scenarios. A drill observer will be provided, who will furnish drill evaluation reports related to observations made at the plant, ambulance and hospital.

9. Annual inventories of support hospital radiation emergency medical supplies and equipment.

10. Performance of an annual telephone number verification.

11. Accident Response: Consultation and laboratory services under RMC's employment and control are at no extra charge, except for travel, lodging and meals.

12. Preparation of incident/accident reports for NRC and other regulatory bodies at no additional charge.

13. Legal and medical appearances as required and requested by Southern Nuclear Operating Company/Vogtle Plant personnel.

RADIATION MANAGEMENT CONSULTANTS, INC.

Roger E. Linnemann, MD
President

RMC:jb

Southern Nuclear Operating Company

AR-07-1773

Enclosure 5

Revised Burke County Emergency Plan

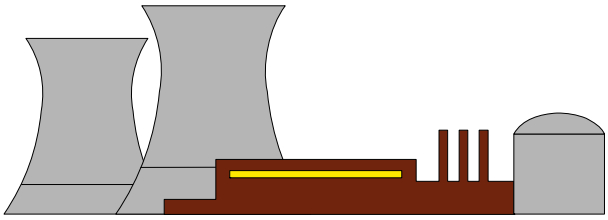
NOTE: This enclosure contains the 98-page Burke County Emergency Plan (April 2007).

ANNEX D

PLANT VOGTLE

BURKE COUNTY EMERGENCY MANAGEMENT RADIOLOGICAL PLAN

April 2007



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PREFACE

This plan has been developed to supplement the existing Emergency Operations Plan for the Burke County Emergency Management Agency. The plan is keyed to the functions that must be performed to protect the population in the event of a nuclear incident at the Vogtle Electric Generating Plant located in Burke County. The plan establishes the department s and agencies that have primary and support functions and outlines the concept of operations and direction and control necessary to support emergency response operations.

Timely warning of a nuclear incident and possible release of radioactive materials within the plant is assured. Officials from the nuclear power plant will be working closely with officials from the responsible departments and agencies of local, state and federal governments in overall emergency planning and operations and will provide notification in the event of a nuclear incident occurs.

Attachments to the plan identify the organizational structure of local government, plan implementation, key personnel roster, Plum Exposure Pathway Emergency Planning Zone (EPZ), equipment resources, communications, notification and warning procedures, evacuation, reception and care service areas, emergency information and training and exercises requirements.

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RECORD OF CHANGE

Change Number	Subject	Date	Entered By
1	Review and update	4/20/02	gwg
2	Review and Update Pg. 34, 39, 42 & 43	10/01/03	mrr
3	Review and update Pg. 7, 15, 16, 17, 19, 20, 22, 34, 59, 63, 69, & 72.	2/27/04	mrr
4	Review and update	5/30/05	mrr
5	Review with no new updates to County Plan	5/30/06	mrr
6	Review and update pages 56, 66, 71, & 76	4/24/07	mrr

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BURKE COUNTY EMERGENCY MANAGEMENT AGENCY RADIOLOGICAL EMERGENCY PLAN FOR NUCLEAR INCIDENTS

I. INTRODUCTION

The Burke County Radiological Emergency Plan has been developed to provide responsibility, concept of operations and direction and control for a coordinated response to an emergency situation occurring from a nuclear incident at the Vogtle Electric Generating Plant. The plant is located on the southwestern bank of the Savannah River in Burke County and is approximately fifteen miles east-northeast of Waynesboro. The small township of Girard is approximately seven miles south with the nearest population center being the City of Sardis about twelve miles to the south.

The possibility of a nuclear incident occurring that would release radioactive material outside the plant site and present a health hazard is extremely remote and highly unlikely; however, the possibility exists. In the event such as incident should occur, the release of radioactive materials could constitute a health hazard for a radius up to fifty miles from the plant site. All persons living within the ten mile radius known as the Plume Exposure Pathway Emergency Planning Zone (EPZ) adjacent to the plant may have to be evacuated to a safe area, and the intake of food and water may be restricted within a 50-mile radius (reference State of Georgia Radiological Emergency Plan, Annex F, Ingestion Pathway). This plan is applicable to a nuclear incident occurring at Plant Vogtle that affects the portion of Burke County adjacent to the plant and extending ten miles outward. This area of the county is depicted on the map in Attachment D. For ease of operations and to facilitate accountability during evacuation, the Plume Exposure Pathway Emergency Planning Zone (EPZ) in Burke County has been divided into 11 zones, with each zone lettered and having readily identifiable geographical boundaries. In the event an incident occurs at the plant, evacuation or restrictive measures will be directed only for the population living in the zones within the affected area. Zone boundaries and population distribution for each sector are listed in Tables D-1 and D-2 of Attachment D.

This plan establishes a course of action for key local governmental authorities to exercise direction and control to evacuate the residents from the affected area to a place of safety and/or initiate action to provide in-place protection. In the event of evacuation, the evacuees will move along designated road nets leading to the reception center at the Burke County Comprehensive High School located on Perimeter Road in Waynesboro. Upon arrival at the reception center, all evacuees will be monitored and decontaminated if necessary, registered, and provided shelter, health and social service care within the designated shelter area of the high school.

II. PURPOSE

This plan is designed to provide effective response which will assure the safety of the population in Burke County living within the ten mile radius adjacent to the Vogtle Electric Generating Plant. It has been developed upon the premise that, upon official notification that a nuclear incident has occurred at the plant, portions of, or perhaps the entire area, may have to be evacuated as quickly as possible, and/or other protective action such as in-place sheltering initiated. The plan establishes a system for the expeditious movement of people from the area of danger to a place of safety with minimum confusion and hardship to the evacuees. The plan outlines the activities and functions of city and county officials, departments/agencies heads and personnel and other agencies involved in support of this plan (reference Attachment B). The emergency actions outlined in the plan can be implemented quickly upon proper notification that a nuclear incident has occurred at the Vogtle Electric Generating Plant.

III. AUTHORITY – LEGAL BASIS

A. Federal Civil Defense Act of 1950 (P.L. 920), as amended.

B. Georgia Emergency Management Act of 1981, as amended.

C. State of Georgia Emergency Operations Plan, as revised.

D. Burke County Resolution

E. Burke County Emergency Operations Plan

F. Radiation Control Act, Official Code of Georgia Annotated, Chapter 31-13-1-et seq.

IV. CONCEPT OF OPERATIONS

A. Coordination among all responsible departments and agencies will be performed to ensure emergency operational readiness.

1. Burke County Emergency Management Agency will maintain coordination with officials from the Vogtle Electric Generating Plant and representatives from all local and state departments and agencies that are involved in emergency planning and operations relative to an incident at the nuclear power plant. Upon official receipt of notification that a nuclear incident has occurred at the plant, the Emergency Management Director will notify local governmental officials and initiate action consistent with this plan. Attachment B illustrates the operational structure of the county

response effort, Attachment F contains information pertaining to Communications and Attachment G provides information pertaining to Notification and Warning.

2. The Georgia Department of Natural Resources, Environmental Protection Division, will monitor the situation at Plant Vogtle and be responsible for keeping the State Disaster Coordinator (Director, Georgia Emergency Management Agency) and pertinent federal agencies informed on planning, training and operational requirements related to environmental health and safety matters.

3. The Georgia Emergency Management Agency (GEMA) will maintain liaison with the Environmental Protection Division, all other state response agencies, officials from Plant Vogtle, Burke County Emergency Management Agency and appropriate federal agencies relative to environmental health and safety factors in the event of a nuclear incident at the plant. Upon official receipt of notification that a nuclear incident has occurred at the plant, GEMA will notify the Georgia Department of Natural Resources, Environmental Protection Division, Burke County Emergency Management Agency and all state response agencies and will be responsible for overall coordination of emergency response operations.

4. Officials at Vogtle Electric Generating Plant will maintain liaison with the GEMA, Burke County Emergency Management Agency and responsible federal agencies. Plant officials will be responsible for keeping appropriate officials from these local, state and federal agencies informed on emergency plans and will report any emergency situation resulting from a nuclear incident or accident. Incidents will be reported by class as defined in NUREG-0654/FEMA-REP-1, Rev. 1.

   a. <u>Notification of Unusual Event</u>

      This condition is declared when unusual events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs. Plant officials will notify state and local authorities who will stand by until the situation is verbally closed out or escalated to a more severe class.

   b. <u>Alert</u>

An Alert condition exists when events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to a small fraction of the EPA Protective Action Guideline (PAG) exposure levels. State and local authorities will be notified of the alert condition, emergency response centers will be activated as a precautionary measure and emergency staff will be placed on an alert status. The alert status will be maintained until verbal closeout or escalation of emergency class.

c. Site Area Emergency

A Site Area Emergency is declared when events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any releases are not expected to exceed PAG exposure levels, except near the site boundary. State and local authorities will be notified of the condition. State and local Emergency Operations Centers (EOCs) will be fully activated and staffed, and appropriate protective action measures will be initiated as deemed necessary. The Site Area Emergency status will be maintained until verbal closeout or redirection/escalation of emergency class.

d. General Emergency

A General Emergency exists when events are in process or have occurred that involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed PAG exposure levels off-site for more than the immediate site area. State and local authorities will be notified of the condition, and plant officials will keep authorities assessed on release and dose projections based on available plant condition and foreseeable contingencies. State and local emergency response plans will be fully implemented and appropriate protective action will be taken to care for the population residing within the affected area. The General Emergency status will be maintained until verbal closeout or reduction of emergency class.

B. Operations necessary to cope with a nuclear incident at Plant Vogtle include, but are not limited to, the following:

1. The nuclear plant operating staff will ascertain that an incident involving nuclear materials has occurred at the plant, and the operating staff will determine the class of the incident. In accordance with Plant Vogtle's call list, the following departments and agencies will be notified:

   a. Burke County Emergency Management Agency

   b. Georgia Emergency Management Agency

   c. United States Nuclear Regulatory Commission

2. The Georgia Department of Natural Resources, Environmental Protection Division is assigned primary responsibility by Executive Order for implementation and administration of the state radiological emergency response function.

3. The Georgia Emergency Management Agency serves as the overall states-coordinating agency and will coordinate the Department of Natural Resources emergency response activities with state, county and municipal department and agencies as stated in the Georgia Emergency Operations Plan.

4. The emergency plan at the nuclear power plant will be put into effect immediately, and officials and personnel from the plant will advise and assist local and state agencies in coping with the emergency consistent with available resources and the nature of the incident. Plant personnel and employees that may be released to go home will be processed and evacuated as outlined in Attachment H (Evacuation and Sheltering), Paragraph B.

5. Upon receipt of notification that a nuclear incident has occurred at Plant Vogtle, the Burke County Emergency Management Agency Director, or his representative, will place this plan into effect and will initiate emergency operations in accordance with the classification of the incident as shown below (reference Attachment A, Implementation, Paragraph B).

   Response activities by Burke County Emergency Management Agency (EMA) will be determined by the assessed severity of the incident as follows:

   a. Notification of Unusual Event

(1) Provide fire, medical and security assistance, if requested;

(2) Escalate to a more severe class, if appropriate; or

(3) Stand by until verbal closeout.

b. Alert

(1) If deemed necessary provide fire, medical and security assistance. Emergency service personnel will report to the EOC or designated distribution point for Dosimetry at this time.

(2) Augment resources, partially activate EOC and bring other response centers and Emergency Alert Systems (EAS) (local radio station) to standby status.

(3) Alert to standby status key emergency personnel including monitoring teams and associated communications.

(4) Escalate to a more severe class, if appropriate or

(5) Maintain alert status until verbal closeout.

c. Site Area Emergency

(1) If deemed necessary provide fire, medical and security assistance. Emergency service personnel will report to the EOC or designated distribution point for Dosimetry at this time.

(2) If protective actions are required or the situation warrants, the GEMA will activate the Prompt Notification System (PNS) in accordance with GEMA SOP 3-5 and advise the population of actions required (reference Attachment A, Implementation).

(a) The notification system will be augmented by vehicles equipped with sirens and/or public address systems traveling the road net in the affected area to warn the population.

(b) If deemed necessary, personnel from the sheriff's, police and fire departments and Emergency Management Agency volunteer force will make door-to-door contact to assure that all residents in the affected area are alerted to the emergency.

(c) Boats from the Georgia Department of Natural Resources, Law Enforcement Section, and/or Burke County Emergency Management Agency will patrol the waterways within the affected area to warn sportsmen.

(3) After the Prompt Notification System has been activated, contact local radio and television stations to provide the public with periodic updates on the emergency situation in accordance with procedures set forth in Attachment J, Emergency Information.

(4) Fully activate the Emergency Operations Center (if not done previously).

(5) Dispatch the assigned Public Information Officer to the Joint Media Center located at the Burke County Office Park if not already directed by the EMA director.

(6) Dispatch monitoring teams and other key emergency personnel with associated equipment and communications to duty stations.

(7) Alert other emergency personnel (e.g., those needed for evacuation and reception/care service) and dispatch personnel to respective duty stations.

(8) If directed, relocate special needs personnel living within the Plume Exposure Pathway EPZ (reference Attachment H, Evacuation and Sheltering, Paragraph D).

(9) If directed activate reception and care facility to receive evacuees in the event evacuation of the public residing within the affected area (reference Attachment I) and set up decontamination sites for emergency workers, their vehicles and equipment.

(10) Continuously assess information from Plant Vogtle and GEMA regarding recommended protective actions for the public.

(11) Provide press briefings, as set forth in Attachment J, Emergency Information.

(12) Return any evacuated population to their homes when the affected area is safe for reentry in accordance with the procedures set forth in the GA REP, Section VI.H.2, and Reentry.

(13) Escalate to General Emergency class if appropriate or

(14) Maintain Site Area Emergency status until closeout or reduction of emergency class.

d. General Emergency

(1) If deemed necessary provide fire, medical and security assistance. Emergency service personnel will report to the EOC or designated distribution point for Dosimetry at this time.

(2) GEMA will activate the Prompt Notification System (PNS) in accordance with GEMA SOP 3-5 and inform the public of the emergency status and advise on recommended protective action (reference Attachment A, Implementation).

(a) Vehicles equipped with sirens and/or public address systems traveling the road net in the affected area to warn the population will augment the Prompt Notification System.

(b) If deemed necessary, personnel from the sheriff's, police and fire departments, and Emergency Management Agency will make door-to-door contact to assure that all residents in the affected area are alerted to the emergency.

(c) Boats from the Georgia Department of Natural Resources, Law Enforcement Section, and/or

Burke County Emergency Management Agency will patrol the waterways within the affected area to warn sportsmen.

(3) After the Prompt Notification System has been activated, activate EAS (local radio station) and provide the public with periodic updates on the emergency status in accordance with procedures set forth in Attachment J, Emergency Information.

(4) Activate the Emergency Operations Center and, if desirable, dispatch a representative to the Plant Vogtle near site Emergency Operations Facility (if not done previously).

(5) Dispatch monitoring teams and other personnel and associated equipment and communications equipment to duty stations.

(6) Alert other emergency personnel (e.g., those needed for evacuation and reception/care service) and dispatch personnel to respective duty stations.

(7) If directed, evacuate special needs personnel living within the Plume Exposure Pathway EPZ (reference Attachment H, Evacuation and Sheltering, Paragraph D).

(8) If not completed, activate reception and a care facility to receive evacuees in event evacuation of the public residing within the affected area is directed (reference Attachment I, Reception and Care).

(9) Coordinate activities with adjacent jurisdictions relative to support needs, e.g., establishing roadblocks at county line road nets and assistance at the reception center/shelter area.

(10) Continuously assess information from Plant Vogtle and GEMA regarding recommended protective actions for the public.

(11) If evacuation is directed, alert reception and care and law enforcement personnel.

(a) Initiate traffic control procedures and area security, and channel evacuees to the reception and care center.

(b) Coordinate the movement of school buses and other vehicles used to transport evacuees.

(c) If not completed, coordinate transportation for the evacuation of schools, other institutions and non-ambulatory persons form the affected area.

(d) Conduct check of evacuated area to assure that all persons have left (reference Attachment H, Evacuation and Sheltering, Paragraph E)

(12) Conduct reception and care service activities consistent with the Burke County Emergency Operations Plan as specified in this plan.

(a) If a release has occurred, monitor evacuees for radioactive contamination upon arrival at the Reception and Care Center. Contaminated personnel will proceed through the decontamination area at the center and vehicles will be moved to the designated vehicle parking area for monitoring and decontamination if necessary.

(b) Register all evacuees and assign to a shelter area. Provide health, welfare and social service support to care for the evacuees.

(13) Return the evacuated population to their homes when the affected area is safe for reentry in accordance with procedures set forth in the GA REP, Section VI, Reentry.

(a) Provide traffic control to assure an orderly return of the evacuees to their homes.

(b) Provide transportation to return non-ambulatory persons to their homes.

(c) Provide technical assistance for the decontamination of homes and property if necessary.

(d) Provide guidance on use of water and food supplies for personnel and livestock.

(14) During all phases of operations, provide press briefings in accordance with Attachment J, Emergency Information.

V. RESPONSIBILITIES

A. Responsibility for overall radiological emergency response planning, training and operations in Burke County rests with the Chairman, Burke County Board of Commissioners. It is their responsibility to initiate action and provide direction and control at the local level to conduct emergency operations to cope with the effects of a nuclear incident consistent with the incident classification.

B. The Burke County Emergency Management Director is responsible for actual plan development and updating this plan to keep it current with existing conditions and procedures. He will establish a training program and maintain coordination with the department and agency heads of local governments to make available appropriate personnel for training and participation in drills and exercises. The Director will be responsible for coordinating emergency operations at the local level and keeping local governmental officials advised on the status of the situation. He will maintain coordination with GEMA, the GEMA Area 3 Field Coordinator, state support agencies and officials from the nuclear power plant on overall emergency operations and support needs.

C. The Georgia State Department of Natural Resources, Environmental Protection Division is assigned primary responsibility for implementation of Emergency Support Function (ESF) 19 (Hazardous Materials), Georgia Emergency Operations Plan. The State Disaster Coordinator is responsible for coordinating the activities of the Department of Natural Resources, provided for in referenced annex, with overall state response efforts in an emergency or disaster situation.

D The Georgia Emergency Management Agency is responsible for state emergency planning and will exercise overall direction and control of emergency or disaster operations as assigned by Executive Order.

1. The State Disaster Coordinator, under direction of the Governor, will provide overall coordination between the state agencies supporting this plan and local government in conducting emergency operations.

2. In the event an emergency situation is beyond local control, or after the Governor has declared that a state of emergency exists, the State Disaster Coordinator, under direction of the Governor, may assume direct operational control over all or any necessary part of the emergency operations functions within the state.

3. The Director, GEMA, or other duly appointed GEMA staff member, will effect overall coordination between the above agencies and coordinate overall operations from the GEMA Forward EOC (FEOC) in the event a state response element is dispatched to the area.

E. The Georgia Department of Natural Resources EPD Representative may recommend administering a radioprotective drug (thyroid blocking agent) to emergency workers entering an affected area if release data from the facility indicates a potential for radiation exposure to the thyroid. (A Memorandum of Understanding [MOU] between the Environmental Protection Division of the Department of Natural Resources and the Division of Public Health of the Department of Human Resources is in effect. The MOU outlines the procedures that will be followed in distributing radioprotective drugs to emergency workers.) This recommendation will be made to the State Disaster Coordinator, who will assure that this directive is communicated to local agencies.

1. Radioprotective drugs in quantities sufficient for emergency workers are prepositioned at Burke County EOC. It is the responsibility of the Burke County EMA Director to maintain access to the radioprotective drug twenty-four (24) hours per day.

2. It is the responsibility of GEMA to maintain a current stock of this drug.

3. In the event the use of the radioprotective drug is authorized for emergency workers, it is the responsibility of the Burke County Emergency Management Director to distribute the drug to personnel under his jurisdiction who may enter the affected area (reference Annex D, Section F, Paragraph 5.b, for distribution to state emergency workers).

4. Emergency response personnel may only be allowed to incur radiation exposures up to the limits set forth in the Protective Action Guide for Emergency Response Personnel in the GA REP, Section VI.G.3 (Emergency Response Personnel). Exposures up to these limits may only be authorized by GEMA upon receipt of a recommendation from the DNR-EPD Radiation Emergency Coordinator.

F. Departments/Agencies, Roles and Notification:

1. Burke County Emergency Management Agency will:

a. Be notified by one or more of the following agencies:

(1) Operating staff from Vogtle Electric Generating Plant.

(2) Georgia Emergency Management Agency

(3) Burke County 911 (24 hour warning point)

b. Put this plan into effect immediately (reference Attachment A, Implementation) and, consistent with the incident classification, activate the Emergency Operations Center and notify all local governmental and non-governmental departments and agencies (reference Attachment C, Roster of Key Emergency Staff Personnel) supporting emergency operations to include:

(1) Burke County Emergency Management Agency emergency staff.

(2) Burke County Sheriff's Department.

(3) City and County public works departments.

(4) Burke County Board of Education.

(5) Burke County and City of Waynesboro Fire Departments (county-wide coverage).

(6) Burke County Health Department.

(7) Burke County Hospital Administrator

(8) Burke County Department of Family and Children Services.

(9) American Red Cross representative.

(10) Area Engineer, Georgia Department of Transportation.

(11) Georgia Forestry Commission, District 3 (Washington).

(12) District Office (Thompson), Georgia Department of Natural Resources, Law Enforcement Section.

(13) County Agency and Home Economist.

(14) Radio Station WYFA (FM 100.9) and WBBQ (AM 1340 and FM 104.3)

(15) Southern Baptist Disaster Relief

c. Notify all adjacent jurisdictions that are affected by the incident as well as those that can provide support and assistance.

d. Coordinate emergency operations of all local governmental and non-governmental departments and agencies assigned functional responsibilities in this plan and procure service support consistent with requirements and availability of resources.

e. Coordinate with GEMA, GEMA Area 3 Field Coordinator, the state department and agencies supporting this plan and adjacent jurisdictions on overall emergency operations and service support needs.

f. Prepare potassium iodide radio protective drugs for distribution to emergency personnel under local jurisdiction who may enter affected area.

g. In coordination with Plant Vogtle, GEMA and Georgia Department of Natural Resources (DNR-EPD), prepare news releases and information to be disseminated to the public by the news media.

h. Contact local radio and television stations in accordance with established procedures.

2. Burke County Sheriff's Department will:

a. Be notified by one or more of the following agencies:

(1) Burke County Emergency Management Agency.

(2) Georgia Emergency Management Agency

(3) Officials from Vogtle Nuclear Power Plant

b. Notify City of Waynesboro and Sardis Police Departments.

c. Provide security service support at Plant Vogtle if requested.

d. Consistent with protective action directed, effect operations to evacuate the population from the affected area to reception centers or assist with in-place sheltering by providing:

(1) Dissemination of warning and emergency information and communication support.

(2) Traffic control and law enforcement measures.

(3) Area security and control of ingress and egress within affected area and along evacuation routes.

(4) Surveillance in affected area to determine that all individuals have been evacuated (reference Attachment H, Evacuation and Sheltering, Paragraph E).

(5) Surveillance and security to safeguard homes in evacuated area.

e. If in-place sheltering of the population living in the affected area is directed, disseminate emergency information to the public on recommended action and procedures to follow.

f. Provide assistance to the Burke County Board of Education Police in maintaining area security and law enforcement within the reception and care center located in Waynesboro.

g. Provide traffic control and law enforcement measures to assist the evacuated population on returning to their homes upon departure from the reception and care center and facilities after emergency is over.

h. Maintain communications with the Emergency Operations Center on operations and support needs and coordinate with the following agencies on support services:

(1) Cities of Waynesboro and Sardis Police Departments.

(2) Sheriffs' Department from adjacent jurisdictions.

(3) City and County public works departments.

(4) Burke County Hospital.

(5) Georgia Department of Public Safety (GSP Post 21, Sylvania).

(6) Region 3 Office (Thomson), Georgia Department of Natural Resource Law Enforcement Section.

(7) Georgia Forestry Commission (County Ranger).

3. Cities of Waynesboro and Sardis Police Departments will:

a. Be notified by Burke County 911 (24 hour warning point).

b. Provide assistance to the Burke County Sheriff's Department in disseminating warning and emergency information, communications support, traffic control, law enforcement and area security as needed during evacuation of population from affected area.

c. Effect operations to move the evacuated population to the reception and care center located in Waynesboro.

(1) Provide traffic control and law enforcement measures.

(2) Provide and maintain area security within reception and care areas.

d. Provide traffic control and law enforcement measures to assist the evacuees on movement to traffic routes leading to their homes upon departure from the reception and care facility. Assist the Burke County Sheriff's Department in the return movement.

e. Maintain communications with the Emergency Operations Center on operations and support needs and coordinate with the following agencies on support services:

(1) Burke County Sheriff's Department.

(2) City Police Department from adjacent jurisdictions.

(3) City and County public works departments.

(4) Georgia Department of Public Safety (GSP Post 21, Sylvania).

4. City and County Public Works Departments) will:

a. Be notified by the Burke County Emergency Management Agency.

b. Provide assistance to the Burke County Sheriff's Department in disseminating warning and emergency information, communications support, traffic control and area security for evacuation purposes.

c. Effect operations to provide the following services:

(1) Establish road blocks, provide and position route markers and traffic control signs to support evacuation.

(2) Equipment and manpower for maintenance and sanitation support at reception and care center.

(3) Garbage and waste pickup and disposal at reception and care center.

(4) Equipment and manpower for any decontamination measures needed in area affected by incident.

d. Maintain communications with the Emergency Operations Center on operations and support needs and coordinate with the following agencies on support services:

(1) Burke County Sheriff's Department.

(2) Cities of Waynesboro and Sardis Police Departments.

(3) Burke County Health Department.

(4) Burke County Board of Education.

(5) Burke County Department of Family and Children Services.

(6) Georgia Department of Transportation (Area Engineer).

(7) Georgia Department of Public Safety (State patrol personnel in area).

5. Burke County Board of Education will:

a. Be notified by the Burke County Emergency Management Agency.

b. Provide the following services to support emergency operations:

(1) Upon receipt of "Alert" notification from the Burke County Emergency Operations Center, contact all key emergency personnel to include school bus drivers and place them on standby status.

(2) Maintain communications with the principal (shelter manager) at the school designated as the reception and shelter center. Open center to receive evacuees when requested by the EMA Director or designee.

(3) Maintain communications with the Burke County Emergency Operations Center and dispatch representative to center when requested by the EMA Director or designee.

(4) Provide security at shelter/reception center.

c. Provide the following resources to support evacuation, reception and care and food service operations:

(1) School buses with drivers to assist in moving personnel from the area to be evacuated to reception and care center (Attachment E, EOC, Emergency Equipment and Service Support, paragraph E.2).

(2) School facility to provide reception center, shelter and feeding services for the evacuated population (Attachment I, Reception and Care, Table I-1).

(3) Manpower for shelter management and to augment the reception and care staff in registering the evacuees, assisting in shelter management and providing food service support.

d. Maintain communications with the Emergency Operations Center on operations and support needs and coordinate with the following agencies on support services:

(1) Burke County Department of Family and Children Services.

(2) Burke County Health Department.

(3) City and County public works departments.

(4) Burke County Sheriff's Department.

(5) Cities of Waynesboro, Sardis and Midville Police Departments.

(6) American Red Cross
.

(7) United States Department of Agriculture, Farm Services Agency, County Agent and Home Economist.

(8) State Department of Education.

6. Burke County Fire Department will:

a. Be notified by the Burke County Emergency Management Agency.

b. Provide the following services to support emergency operations:

(1) Provide fire service support at Plant Vogtle if requested (Burke County Fire Department only).

(2) Assist the Burke County Sheriff's Department in dissemination of warning and emergency information and provides communications support.

(3) Provide fire surveillance and suppression service in the reception and care service center area.

(4) Provide decontamination service in area affected by the incident and at vehicle decontamination point near Reception Center.

c. Maintain communications with the Emergency Operations Center on operations and support needs and coordinate with the following agencies on support services:

(1) Burke County Sheriff's Department.

(2) Cities of Waynesboro and Sardis Police Departments.

(3) Burke County Board of Education.

(4) Burke County Department of Family and Children Services.

(5) Burke County Health Department.

(6) Georgia Forestry Commission (County Ranger).

(7) Fire departments from adjacent jurisdictions.

7. Burke County Health Department will:

a. Be notified by one or more of the following agencies:

(1) Burke County Emergency Management Agency

(2) Georgia Department of Human Resources.

b. Provide the following services to support emergency operations in the reception and care center:

(1) Health service and disease prevention and control measures.

(2) Sanitation services, personal hygiene and waste disposal.

(3) Procurement of public health service support.

(4) Perform radiation surveys of evacuees for radioactive material contamination and record results.

(5) Decontamination of personnel utilizing proper techniques.

c. Coordinate with and assist the Georgia Department of Natural Resources on radiological protection procedures to include:

(1) Identifying health hazards resulting from intake of contaminated food and water (DNR-EPD) will coordinate with the Georgia Department of Agriculture on food products.

(2) Providing copies of the recorded radiation survey results.

d. Coordinate with the EMA Director or designee and the Department of Family and Children Services on assisting with the evacuation of special needs personnel living within the Plume Exposure Pathway EPZ.

e. Ensure necessary health orders, restrictions and emergency information to the evacuees housed in reception and care facility, as well as the general population of Burke County to include:

(1) Disease prevention and control measures.

(2) Sanitation and waste disposal.

(3) Safe food and water supply.

f. Maintain communications with the Emergency Operations Center on operations and support needs and coordinate with the following agencies on support services:

(1) Georgia Department of Human Resources

(2) Burke County Department of Family and Children Services.

(3) Burke County Hospital Administrator.

(4) Burke County Emergency Medical Service (includes personnel and vehicles).

(5) Burke County Board of Education.

(6) Burke County Sheriff's Department.

(7) United States Department of Agriculture, Farm Services Agency, County Agent and Home Economist.

(8) State and local Emergency Management Radiological Protection Officers (RPOs).

8. Burke County Hospital will:

a. Be notified by one or more of the following agencies:

(1) Burke County Emergency Management Agency.

(2) Burke County Health Department.

b. Provide the following services to support an emergency:

(1) Primary facility for the treatment of off-site victims of a radiological accident, including the contaminated injured (see Attachment A, Implementation, paragraphs C.2 and C.3).

(2) In-patient hospital care and hospital facility support.

(3) Coordination with emergency medical service support (personnel and vehicles).

(4) Professional medical service support in reception and care service facility.

(5) Procurement of additional medical practitioners and medical service support as necessary.

c. Maintain communications with the Emergency Operations Center on operations and support needs and coordinate with the following agencies on support services:

(1) Burke County Health Department

(2) Georgia Department of Human Resources.

(3) Burke County Department of Family and Children Services.

(4) Local medical professionals (MDs, RNs, LPNs).

(5) Hospitals from adjacent jurisdictions to include Doctor's Hospital in Augusta (secondary medical care facility for off-site victims of a radiological accident, including the contaminated injured).

(6) Emergency Medical Service Technicians.

(7) Burke County Sheriff's Department.

9. Burke County Emergency Medical Service will:

a. Be notified by one or more of the following agencies:

(1) Burke County Emergency Management Agency (911).

(2) Alvin W. Vogtle Electric Generating Plant.

b. Provide the following services to support emergency operations:

(1) Medical assistance at Plant Vogtle is requested.

(2) Assist in warning of the public as requested.

(3) Evacuate non-ambulatory persons from affected area.

(4) Respond as necessary to emergency calls within the 10-mile EPZ.

(5) Provide medical support at Reception Center and shelter area.

(6) Maintain emergency medical service support within the community.

c. Maintain communications with Emergency Operations Center on operations and support needs and coordinate with the following agencies on support services:

(1) Burke County Health Department.

(2) Burke County Sheriff's Department.

(3) Burke County Hospital.

(4) Doctor's Hospital in Augusta.

(5) Hospitals and Emergency Medical Service units from adjacent jurisdictions.

10. Burke County Department of Family and Children Services will:

a. Be notified by one or more of the following agencies:

(1) Burke County Emergency Management Agency.

(2) Burke County Health Department.

(3) Georgia Department of Human Resources.

b. Assist with reception and care operations and social service support for the evacuees in reception and care service facility (see Attachment H).

(1) Coordinate with the Burke County Board of Education to determine that the school designated as reception

center and/or reception and care facility has been opened.

(2) Coordinate with the Shelter Manager on overall operations and provide staff assistance at reception center to register evacuees upon arrival and further assign the evacuees to lodging sections. Maintain records of all assignments.

(3) Provide social and welfare services to support the evacuees housed in the reception and care facility.

(4) Coordinate with Burke County Health Department on health service, disease prevention and control and sanitation service support.

(5) Coordinate with the EMA Director or designee and the County Health Department on assisting with the evacuation of handicapped personnel living within the Plume Exposure Pathway EPZ.

(6) Coordinate with the County Agency and Home Economist, United States Department of Agriculture (USDA), Farm Services Agency (FSA), the Food Service Coordinator, Burke County Board of Education and the American Red Cross on procuring food and maintaining feeding services for the evacuees.

c. Maintain communications with the Emergency Operations Center on operations and support needs and coordinate with the following agencies on support services:

(1) Department of Family and Children Services Region Director (resource staff support).

(2) Burke County Board of Education.

(3) Burke County Health Department.

(4) County Agent, Home Economist, USDA and FSA.

(5) Burke County Hospital.

(6) American Red Cross.

(7) Local nursing homes.

11. American Red Cross will:

a. Be notified by Burke County Emergency Management Agency.

b. Provide shelter, welfare and feeding services for evacuees consistent with needs.

c. Maintain coordination with Emergency Operations Center on service support and operations.

12. Georgia State Department of Public Safety (GSP Post 21, Sylvania) will:

a. Be notified by one or more of the following agencies:

(1) Georgia State Department of Public Safety Headquarters.

(2) Georgia Emergency Management Agency.

(3) Burke County Emergency Management Agency.

(4) Burke County Sheriff's Department.

b. Provide the following services to support emergency operations:

(1) Traffic control, area security and control ingress and egress in area affected by the incident and along evacuation routes.

(2) Communication, warning and dissemination of emergency information.

c. Assist the Burke County Sheriff's Department in evacuating the affected areas, moving the evacuees to reception center and providing surveillance and security in evacuated area as well as reception and care areas.

d. Carry out emergency operations consistent with primary and support functional responsibilities assigned in the Georgia

Emergency Operations Plan in event the Governor declares that a state of emergency exists in the area and/or determines operational requirements exceed local capability.

e. Maintain coordination with the following agencies on emergency operation and service support:

(1) GEMA and GEMA Area 3 Field Coordinator.

(2) Various state law enforcement agencies providing support services.

(3) Burke County Sheriff's Department.

13. Georgia State Department of Transportation (Area Engineer) will:

a. Be notified by one or more of the following agencies:

(1) Georgia Department of Transportation Headquarters or Division Office.

(2) Georgia Emergency Management Agency.

(3) Georgia Department of Public Safety.

(4) Burke County Emergency Management Agency.

b. Provide the following services to support emergency operations:

(1) Establish road net and road use procedures.

(2) Position traffic control signs and route markers and establish road blocks/barricades to control ingress and egress in affected areas and to maintain effective evacuation and return.

(3) Communication, warning and dissemination of information.

c. Render assistance to city/county public works departments.

d. Provide heavy equipment and manpower resources as needed.

e. Carry out emergency operations consistent with primary and support functional responsibilities assigned in the Georgia Emergency Operations Plan in event the Governor declares a state of emergency in the area and/or determines operational requirements exceed local capability.

f. Maintain coordination with the following agencies on emergency operations and service support:

(1) GEMA and GEMA Area 3 Field Coordinator.

(2) Various state agencies providing support services.

(3) Burke County Emergency Operations Center.

(4) County and municipal engineering departments.

(5) Burke County Sheriff's Department.

14. Health District-6 will:

a. Be notified by one or more of the following agencies:

(1) Burke County Health Department.

(2) Burke County Emergency Management Agency.

(3) Georgia Department of Human Resources.

b. Provide support services to the Burke County Health Department, if requested, at reception and care facilities and in the community to include:

(1) Providing medical service support by public health nurses to assess the physical status of evacuees.

(2) Ensuring a safe food and water supply.

(3) Providing health services and disease prevention and control measures.

(4) Providing sanitation services, personal hygiene and waste disposal.

(5) Providing mental health services and professional counseling to evacuees.

c. Maintain communications with the GEMA State Operations Center (Atlanta) and the Forward Emergency Operating Center (near site).

15. Georgia Department of Human Resources will:

a. Be notified by one or more of the following agencies:

(1) Georgia Emergency Management Agency

(2) Georgia Department of Natural Resources, Environmental Protection Division.

b. Provide health and social services resources to Health District-6 consistent with the primary and support functional responsibilities assigned in the Georgia Emergency Operations Plan, Emergency Support Function (ESF) 8, Health and Medical, if the Governor declares a state of emergency exists and/or determines operational requirements exceed local capability.

c. Provide health services to support emergency operations to include:

(1) Responding with and manpower resources, as required, to incidents at the Plant Vogtle Nuclear Facility.

(2) Providing information, assistance and guidance in conjunction with DNR and Agriculture on health hazards and safety precautions relative to:

(a) Food and water quality in area affected by nuclear incident;

(b) Providing guidance and instructions to appropriate local and state officials on the issuance and use of Potassium Iodide for the emergency workers.

d. Provide representation at the State Operations Center (Atlanta) and the Georgia Forward Emergency Operations

Center (near site) to coordinate delivery of services listed in paragraphs b. and c. above and to provide status reports to appropriate governmental representatives at these operations centers.

16. Georgia Department of Natural Resources (Region 3 Office-Thomson) will:

a. Be notified by one or more of the following agencies:

(1) Georgia Department of Natural Resources Headquarters.

(2) Georgia Emergency Management Agency

(3) Burke County Emergency Management Agency.

b. Carry out emergency operations consistent with primary and support functional responsibilities assigned in the Georgia Emergency Operations Plan in the event the Governor declares a state of emergency and/or determines operational requirements exceed local capability.

c. Maintain coordination with the following agencies on emergency operations and service support:

(1) Georgia Emergency Management Agency

(2) Vogtle Electric Generating Plant.

(3) Various state agencies providing support services.

(4) Burke County Emergency Operations Center.

(5) Appropriate federal agencies.

The DNR Law Enforcement Section (District Office-Thompson) will:

a. Assist in traffic control, area security, communications, warning and dissemination of emergency information.

b. Conduct water patrol activities in affected area to evacuate fishermen, hunters, campers, etc. from the area.

c. Establish boundaries and place restrictions upon entry by water into the affected area.

d. Enforce all laws relative to conduct of effective operations.

The Department of Natural Resources Environmental Protection Division (in Atlanta) will:

a. Respond with equipment and manpower resources, as required, to incidents at the Vogtle Electric Generating Plant.

b. Make technical assessments of radiological conditions and make recommendations pertaining to protective actions to include:

(1) Assessment of radiation levels in the area affected by the incident.

(2) Assessment of radioactive contamination of personnel, food and water supply.

(3) Establishment of decontamination procedures.

(4) Conducting radiological monitoring operations.

(5) Restriction on the use of contaminated water supplies.

17. Georgia Forestry Commission (District Office) will:

a. Be notified by one or more of the following agencies:

(1) Georgia Forestry Commission Headquarters.

(2) Georgia Emergency Management Agency

(3) Burke County Emergency Management Agency.

b. Provide the following services to support emergency operations:

(1) Assist in evacuation, area security, communications, warning and dissemination of emergency information.

(2) Fire surveillance and suppression service.

(3) Air and land transportation.

(4) Disposal equipment and personnel.

c. Carry out emergency operations consistent with primary and support functional responsibilities assigned in the Georgia Emergency Operations Plan in the event the Governor declares that a state of emergency exists and/or determines operational requirements exceed local capability.

d. Maintain coordination with the following agencies on emergency operations and service support:

(1) GEMA and GEMA Area 3 Field Coordinator.

(2) Various state agencies providing support services.

(3) Burke County Emergency Operations Center.

(4) Burke County Sheriff's Department.

(5) Cities of Waynesboro and Sardis Fire Departments.

18. Georgia Department of Agriculture (District Office, Thomson) will:

a. Be notified by one or more of the following agencies:

(1) Georgia Emergency Management Agency

(2) Burke County Emergency Management Agency.

b. Provide the following services to support emergency operations:

(1) Emergency provisions for petroleum and fuel.

(2) Food inspection.

c. In conjunction with the Georgia Departments of Human Resources and Natural Resources, issue necessary orders and restrictions to safeguard the health and well being of the population.

(1) Condemn and seize foods that are unwholesome or unsafe for human consumption.

(2) Restrict feeding certain foodstuff to farm animals to prevent contamination of food by-products.

(3) Restrict growing crops for human consumption and for animal feed in unsafe areas.

d. Maintain coordination with the County Agent, USDA and FSA offices.

e. Carry out emergency operations consistent with primary and support functional responsibilities assigned in Georgia Emergency Operations Plan in the event the Governor declares that a state of emergency exists and/or determines operational requirements exceed local capability.

f. Maintain coordination with the following agencies on emergency operations and service support:

(1) Georgia Emergency Management Agency.

(2) Various state agencies providing support services.

(3) Burke County Emergency Operations Center.

(4) Burke County Health Department.

(5) County Agent, USDA and FSA offices.

19. USDA and FSA offices in Burke County, to include County Agent will:

a. Be notified by one or more of the following agencies:

(1) Georgia Emergency Management Agency.

(2) Georgia Department of Agriculture.

(3) Burke County Emergency Management Agency.

b. Provide service support consistent with the emergency situation, assistance requested and guidelines relative to federal disaster assistance programs. General areas

administered by USDA and relative to a nuclear incident emergency situation include:

(1) Crop loss.

(2) Emergency conservation measures.

(3) Emergency livestock feed.

(4) General assistance information (County Agent, USDA).

(5) Emergency food stamps (USDA Food and Nutrition Service).

c. Maintain coordination with the following agencies:

(1) Georgia Emergency Management Agency.

(2) Burke County Emergency Management Agency.

(3) Georgia Department of Agriculture.

(4) Georgia Department of Natural Resources.

(5) Appropriate federal agencies.

20. Local broadcast media will:

a. Be notified by one or more of the following agencies:

(1) Burke County Emergency Management Agency.

(2) Georgia Emergency Management Agency

(3) Georgia Department of Natural Resources.

b. In coordination with local governmental officials, Burke County Emergency Management Agency, Georgia Emergency Management Agency, Department of Natural Resources, Environmental Protection Division and officials from Plant Vogtle, and in accordance with Attachment J, Emergency Information, provide the following services to support emergency operations:

(1) Broadcast all alert warnings, emergency information, instructions and pertinent information requiring timely and expeditious dissemination.

(2) Broadcast emergency information and instructions to the populace to ensure their support and assistance.

(3) Broadcast instructions and information relative to recovery operations.

c. Maintain communications with the Burke County Emergency Operations Center on operations and coordinate with the following agencies to provide service support and release information:

(1) Georgia Emergency Management Agency.

(2) Burke County Emergency Management Agency.

(3) Georgia Department of Natural Resources.

(4) Vogtle Electric Generating Plant.

In the event local Emergency Alert System (EAS) (local radio station) stations must be activated, the EMA Director or designee will activate the stations in accordance with procedures outlined in the jurisdiction's Emergency Alert System Plan.

VI. DIRECTION AND CONTROL

A. Direction and control to initiate action and conduct emergency operations necessary to protect the population of Burke County from the effects of a nuclear incident occurring at the Vogtle Electric Generating Plant will be exercised by the Chairman, Burke County Board of Commissioners. In his absence, the duly appointed representative from the elected county government will exercise direction and control.

B. When local resources are clearly not adequate to deal with the emergency created by the nuclear incident, or the incident is of such magnitude the Governor may declare a state of emergency or disaster and direct execution of the Georgia Emergency Operations Plan, whereby heads of state departments or agencies will execute emergency service functions assigned in the Governor's Executive Order and Exhibit D listed in the plan.

C. Direction and control of state emergency management operations will be exercised by the Governor through the Director, GEMA, in his role as Governor's Authorized Representative (GAR). All state department and agencies and local governmental emergency services mobilized pursuant to this plan will be coordinated by the State Disaster Coordinator to assure maximum response and efficient use of personnel and other resources. In the event the emergency situation is beyond local control, the State Disaster Coordinator (Director, GEMA), under the direction of the Governor, may assume direct operational control over all or any necessary part of the emergency operations functions.

D. This plan will be reviewed, updated or revised on an annual basis, or as otherwise required. All changes will be dated by page, added to plan and recorded on Record of Changes included in Annex D.

E. The various departments/agencies of local government supporting this plan will develop Standing Operating Procedures to support functional assignments.

VII. EFFECTIVE DATE

This plan is effective immediately and will be activated upon direction of the Chairman, Burke County Board of Commissioners.

Chairman
Burke County Board of Commissioners

4-25-07
Date

Director
Burke County Emergency Management Agency

4/24/07
Date

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Attachment A - Implementation

A. Activation of Radiological Emergency Plan

This plan will be activated by the Burke County Emergency Management Agency (EMA) Director or his designee upon receipt of notification from officials at Plant Vogtle and/or Office of GEMA that an incident has occurred at Plant Vogtle.

1. The EMA Director will initiate emergency operations in accordance with the incident classification.

2. If the situation dictates, the Director will fully activate the Burke County Emergency Operations Center (EOC) and contact members of the key emergency staff by telephone, radio or pagers and if necessary by personal contact.

3. The staff personnel will report to the EOC and initiate emergency response activities consistent with the incident classification and recommend protective measures for the health and safety of the population within the area affected by the incident.

4. The Public Information Officer assigned to the Joint Media Center located at Burke County Office Park will normally report to the center when a Site Area Emergency is declared or sooner if directed by the EMA Director.

5. The EMA Director will develop and maintain a twelve (12) hour shift roster for key staff personnel. Department/agency personnel will be assigned to shifts and/or operate on day-to-day shift schedules.

B. Notification of the Public

In the event an incident occurs at Plant Vogtle that poses a threat to the safety of people living in the Plume Exposure Pathway EPZ within Burke County, plant officials will notify the Burke County Emergency Management Agency and GEMA and recommend the necessary protective actions.

1. The Prompt Notification System (PNS) will be activated in accordance with GEMA SOP 3-5 (Parts A and B, NOAA Weather Radio with a tone alert and voice message, and the backup siren system), and the public will be provided emergency information and instructions in accordance with Attachment J, Emergency Information.

2. Consistent with an accident classification, the EMA Director will activate the Emergency Alert System (EAS) (local radio station) Plan and have

additional information and instructions broadcast to the public (reference Attachment J, Paragraph G).

3. In the event that officials from Burke County desire to initiate protective action measures, the Burke County EMA Director, acting upon direction from local elected officials, will initiate action to activate the Prompt Notification System in accordance with GEMA SOP 3-5. (See Attachment G, Notification and Warning.)

C. Response

Response will begin at the time the Radiological Emergency Plan and Emergency Operations Center are activated as described above in Section A of this attachment.

1. The primary medical facility for the care of off-site victims of an incident at Plant Vogtle, including the contaminated injured, will be Burke County Hospital in Waynesboro, Georgia. Should the capacity of this facility be exceeded, the secondary medical facility for the care of these victims will be Doctor's Hospital located on Wheeler Road in Augusta, Georgia (for procedures relative to use of primary and secondary medical facilities, see Annex D, Section F).

2. In the event a radiation accident victim requires more definitive care than can be provided at the primary or secondary facility, he may be transported to the Oak Ridge Institute for Science and Education Radiation Emergency Assistance Center Training Site, Oak Ridge, Tennessee (reference GEMA REP Resource Contacts SOP for telephone numbers).

3. If fire, emergency medical and security service support is needed at the plant site, plant officials will contact the Burke County EOC and request assistance.

4. The Burke County Emergency Management staff, all local governmental department/agency personnel and EMA volunteers assigned functional and support responsibilities in this plan will respond to the incident under direction and/or coordination of the Burke County EMA Director.

5. Overall direction and control to initiate action and conduct emergency operations will be exercised in accordance with this plan, the Burke County Emergency Operations Plan and Georgia Emergency Operations Plan.

D. Public Information

Dissemination of information to the public and the news media will be coordinated and controlled by the Public Affairs and Public Information Officers from Georgia Power, GEMA and Burke County Emergency Management Agency operating out of the designated Joint Media Center at the Burke County Office Park. These officials will obtain first hand information from the individuals in charge of the various response activities and disseminate the information to the press and public through regularly scheduled press releases or as otherwise required (reference Attachment J, Emergency Information).

E. Protective Actions

1. Evacuation

The decision to evacuate the population from an area affected by an incident at Plant Vogtle will originate from the Chairman, Burke County Board of Commissioners, if, upon recommendations from Plant Vogtle officials, he deems the situation to be an immediate threat to the citizens of Burke County. Otherwise, the Chairman will base his decision upon advice and guidance from the GEMA, consistent with recommendation from the Environmental Protection Division, Georgia Department of Natural Resources (reference GA REP, Section VI.G).

2. Sheltering

The decision to shelter the population in an area affected by an incident at Plant Vogtle will originate from the Chairman, Burke County Board of Commissioners in coordination with officials from Plant Vogtle, Georgia Emergency Management Agency and Environmental Protection Division, Georgia Department of Natural Resources (reference GA REP, Section VI.G).

3. Radioprotective Drugs

If the release data received from the facility indicated a potential for hazardous exposure to the thyroid, a recommendation to administer a radioprotective drug to all emergency workers entering the affected area may be given. This recommendation will be made to the State Disaster Coordinator by the Georgia Department of Natural Resources' EPD Representative. (See Section V, Responsibilities, E). The State Disaster Coordinator or his representative, acting in behalf of the Governor, will ensure that this directive is communicated to the state and local agencies involved.

4. Radiological Exposure Control

a. Field monitoring operations may initially be conducted by Burke County Emergency Management Agency until state agency monitoring support arrives. At that time, the local teams will join state agency teams for continuation of monitoring operations. Prior to arrival of state agency teams, the local monitoring teams may collect and report data to the Burke County EOC for relay to DNR-EPD.

b. Personnel engaged in emergency response activities that may lead to radiation exposures will be provided pocket dosimeters. Generally, these will be the self-reading, low range and high range dosimeters. TLDs will be used as well. Personnel engaged in field monitoring operations will use equipment designed for taking environmental direct radiation readings, soil and vegetation samples and air samples. Generally, only low range survey meter (0-50 mr/hr) will be used for monitoring personnel and vehicles.

c. All emergency personnel entering the affected area will carry "exposure control forms" to record exposure received while operating in this area. These forms will be returned to the Burke County EMA Radiation Officer upon return from the area. A continuous 24-hour per day capability will be maintained to determine doses received by emergency response personnel, including volunteers.

d. Exposure control and contamination guidelines will be in accordance with Protective Action Guides (PAGs) for emergency response personnel as listed in the GA REP.

e. Dosimetry kits developed for use by personnel entering the affected area will contain appropriate criteria and instructions for exposure control and reporting procedures, contamination, decontamination procedures and location of decontamination areas for personnel, equipment and vehicles.

F. Reentry and Recovery

Reentry and recovery operations will be initiated only when plant officials verify that the emergency situation has been eliminated and state officials, acting on their field data, ascertain that there is no longer a threat to the health and safety of persons living nearby. Local officials will maintain coordination with GEMA on the situation, and decisions will be made in accordance with Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs).

G. Supporting Plans and Documents

1. This plan will be implemented and executed in accordance with the authority of state laws as listed in the GA REP, Section II, and county and municipal laws as listed in Section III of this plan.

2. This plan will be executed within the organizational and functional parameters of the following supporting state and local plans:

   (a) Burke County Emergency Operations Plan.

   (b) State of Georgia Emergency Operations Plan.

   (c) State of Georgia Radiological Emergency Plan (GA REP).

   (d) State of Georgia Radiological Emergency Plan, Annex D (Plant Vogtle).

H. Distribution

The Burke County Emergency Management Agency office will maintain a list of all parties receiving a copy of this plan and will, as necessary, furnish all addresses with changes or revisions to the plan.

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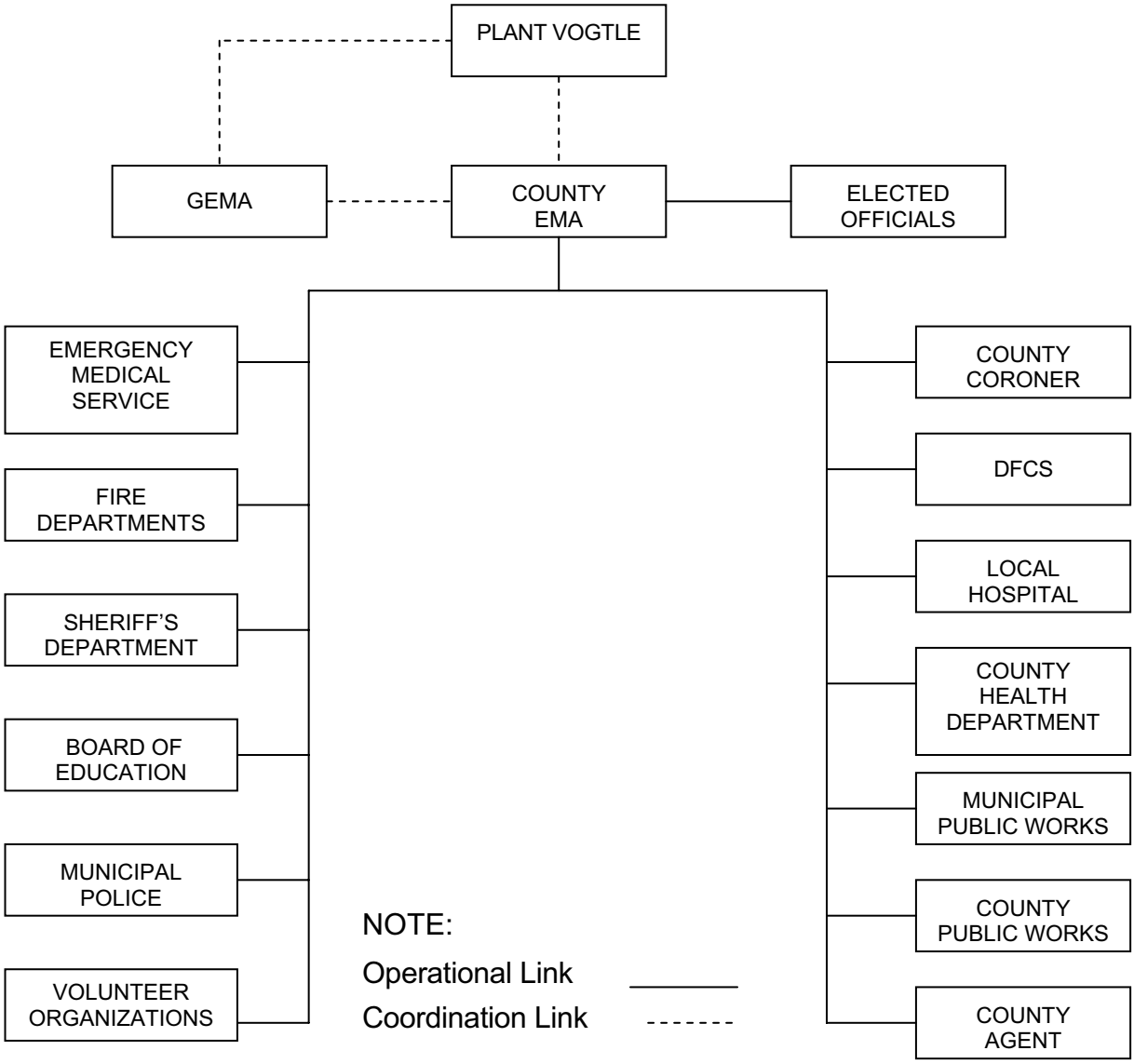
Attachment B - Organizational Chart
(Operational Relationships among County Response Organizations)



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Attachment C – Burke County Roster of Key Emergency Staff Personnel

Burke County EMA maintains a list of key personnel and a means of contact should the need arise. This includes state, county and municipal personnel as well as a cadre of volunteers.

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Attachment D - Affected Area

A. In the event that a major incident should occur at the Vogtle Electric Generating Plant, it is envisioned that an area 10 miles in radius from the plant site could possibly be affected. This area is known as the Plume Exposure Pathway Emergency Planning Zone (EPZ). Weather and wind conditions will play a major role in the direction, distance and lateral spread that a plume may extend when drifting from the plant site. Normally, the lateral pattern will spread wider as the down wind movement increases.

The total area of the Plume Exposure Pathway EPZ that extends into Burke County has been divided into zones having readily identifiable boundaries (highways, roads, rivers). Each zone is identified with a letter system. Protective action measures (sheltering or evacuation) will be based on this zone scheme and will be transmitted to local authorities and the general public accordingly. Radiation protection operations can readily determine which zones are affected by an incident at the plant, thus providing reliable information and instructions to the population living in the affected area. Evacuation and/or restrictions would normally be directed only within the boundaries of the zones determined to be affected by the incident.

B. The portion of Burke County that is in the Plume Exposure Pathway EPZ is depicted on Map 1. There are eleven zones located in the county. The approximate two-mile radius around the plant that extends into Burke County is included on Zone A. Zones B-5 through F-5 includes the approximate two to five mile radius and Zones B-10 through F-10 includes the approximate five to ten mile radius. Geographical boundaries of each zone are listed in Table D-1.

The Plume Exposure Pathway EPZ consists primarily of a rural farming area with no concentrated population centers, recreational areas (except fishing and hunting sites near and along the Savannah River), and hotel or tourists centers. Most of the traffic on the road nets within the area is local residents and Plant Vogtle personnel. Georgia Highway 23 is the major roadway through the area and is located beyond the five-mile radius. The Lord's House of Praise Transition Center is within the EPZ. Throughout the area are several commercial establishments (convenience stores). Population studies indicate that transient population is minimal within the area. Population distribution for general public, transient population and Plant Vogtle site work force are listed in Table D-2.

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Map 1, 10 Mile Emergency Planning Zone

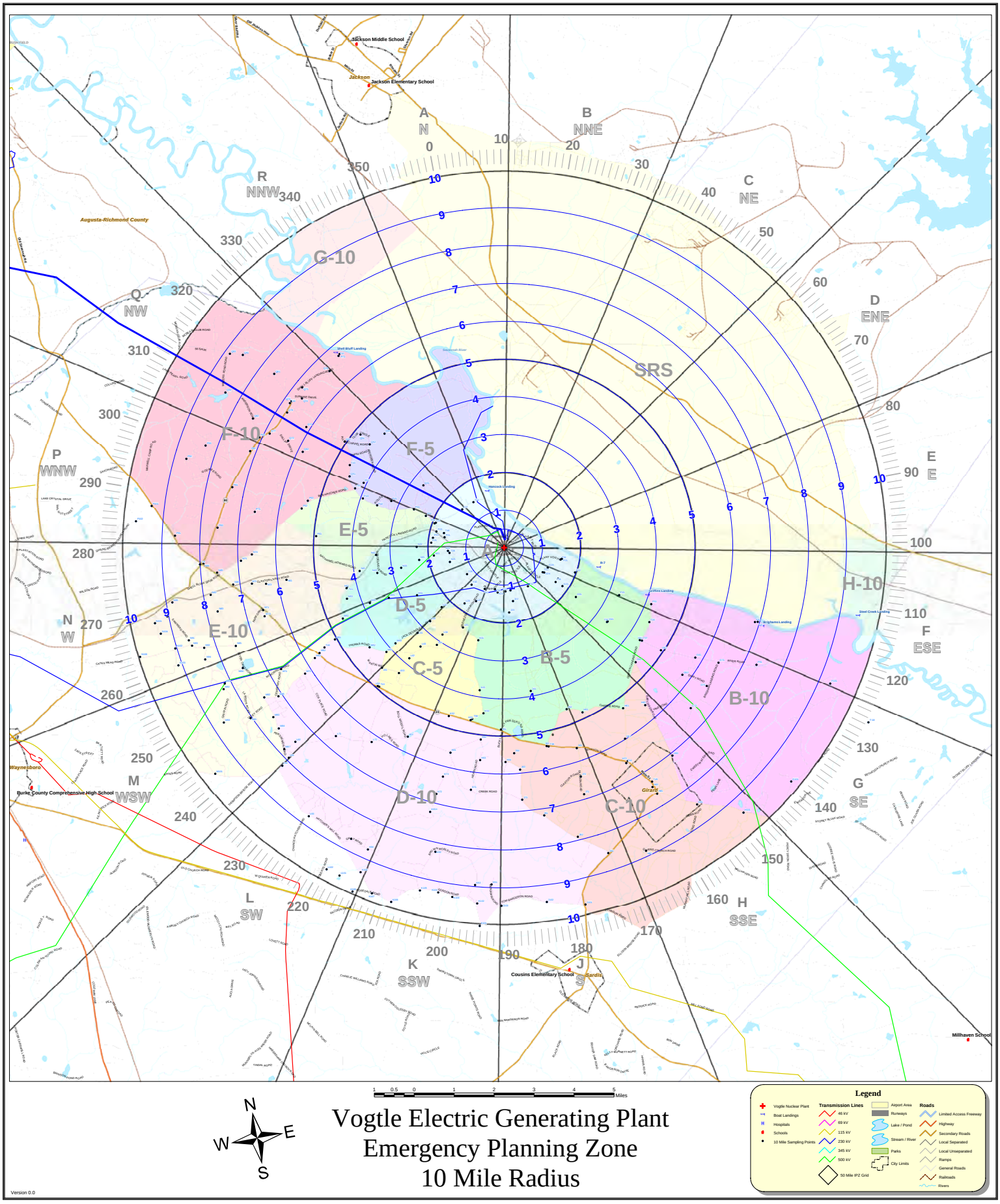

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Table D-1, Geographical Boundaries of Evacuation Zones

A

Northeast	Savannah River
Southeast, south/southwest and west-northwest	2-mile boundary

B-5

North	2-mile boundary
West	Ebenezer Church Road
Southwest	Georgia Highway 23
South	Chance Road
Southeast	Griffin's Landing Road
Northeast	Savannah River

B-10

Northwest	Griffin's Landing Road
West	Dixon Road and east boundary, City of Girard
Southwest	Stoney Bluff Road
Southeast	10-mile boundary, Royal Road and then 10-mile boundary
Northeast	Savannah River

(Includes Brigham and Griffin Landings)

C-5

Northwest	Jack DeLaigle Road
Southwest	Georgia Highway 23
East	Ebenezer Church Road and then 2-mile boundary

(Includes the Plant Vogtle Recreation Area)

C-10

North	Georgia Highway 23, Chance Road and then Griffin Landing Road
West	Buck Road, Briar Creek Road and Georgia Highway 23
South	Johnson Road, Ellison Bridge Road, Murray Hill Road and then 10-mile boundary
Northeast	Stoney Bluff Road
East	East boundary, City of Girard and Dixon Road

(Includes the Town of Girard)

D-5

North	Hancock Landing Road
West	Hancock Landing Road and Thomas Road
South	Thomas Road
Southeast	Jack DeLaigle Road
East	2-mile boundary

TABLE D-1 (continued)

D-10

North	Thomas Road, then Jack DeLaigle Road and Georgia Highway 23
Northwest	Hancock Landing Road and Botsford Church Road
West	Seven Oak Road, Thompson Bridge Road and Hatcher Mill Road
South	West Quaker Road, Gordon Road and Tom Bargereon Road
East	Georgia Highway 23, Briar Creek Road and Buck Road

(Includes the Boll Weevil Plantation)

E-5

North	Ben Hatcher Road and River Road
East	2-mile boundary
South	Hancock Landing Road
Southwest	Nathaniel Howard Road

(Includes the DeLaigle Trailer Park)

E-10

Northeast	Nathaniel Howard Road
North	Ben Hatcher Road, Georgia Highway 23 and Georgia Highway 80
West	10-mile boundary
South	Bates Road and Thompson Bridge Road
East	Seven oak Road
Southeast	Botsford Church Road and Hancock Landing Road

(Includes a portion of the Shell Bluff Community)

F-5

North	Savannah River
East	Savannah River
West	5-mile boundary and River Road
South	River Road and 2-mile boundary

F-10

Northeast	Savannah River
North	Richmond County Line
West	10-mile boundary and Georgia Highway 23
South	Ben Hatcher Road
East	River Road and 5-mile boundary

(Includes Shell Bluff Landing and a portion of the Shell Bluff Community)

Table D-2, Burke County Population Distribution within Plume Exposure Pathway EPZ

PERMANENT POPULATION	
ZONE	POPULATION
A	94
B-5	81
C-5	40
D-5	77
E-5	109
F-5	172
B-10	265
C-10	749
D-10	618
E-10	518
F-10	425
TOTAL	3148

EPZ MILES	POPULATION
0 to 2	94
2 to 5	479
5 to 10	2575
TOTAL	3148

* Population count in the Plume Exposure Pathway EPZ within Burke County is under continuous review by officials from the Southern Nuclear Operating Company as well as local authorities.

TRANSIENT POPULATION

The transient population in the Burke County portion of the Plume Exposure Pathway EPZ is comprised of non-resident (1) hunters, fishermen, other sportsmen. (Most of this activity is near the four public and private landings identified on Map 2. The roads that lead to the landings are the only means for access to the river due to existence of massive swamp areas elsewhere); (2) motorists passing through the areas; (3) employees working in the area (i.e., the Vogtle work force, farmers and forestry workers) and (4) individuals making occasional brief visits to attend church, the Plant Vogtle Visitors Center, commercial establishments or other such reasons.

TABLE D-2 (continued)

Landing	Population Estimate
R1 – Shell Bluff	50
R2 – Hancock	50
R3 – Griffin's	50
R4 – Brigham's	50
Total	200

The above population data is based on fall weekend periods during the hunting season (normally mid-September through early January). Law enforcement officials estimate that this figure would be one-half or less during the remainder of year.

WORK FORCE AT PLANT VOGTLE

The Plant Vogtle site employment is approximately 500 for normal daytime operations. There is a variance from time to time because of outages, etc. Plant Vogtle personnel will keep Burke County EMA apprised of employment figures during an emergency.

INSTITUTIONAL POPULATION

The Lord's House of Praise Transition Center has a fluid population of up to 192 maximum and is located with the Plume Exposure Pathway Emergency Planning Zone.

Attachment E - Emergency Operations Center Equipment and Service Support

A. The Burke County EOC located on Perimeter Road in Waynesboro provides adequate space, communications and supporting equipment to allow local governments and the GEMA FEOC, co-located with the EOC, to conduct sustained operations during an emergency situation.

B. An annual inventory of equipment, vehicles and communication support systems housed in or located at the EOC is maintained by the Burke County EMA. In addition, all governmental and volunteer agencies maintain an inventory list of equipment and supplies necessary for the day to day activities and sustained emergency operations.

C. Additional radiological monitoring and protective equipment for support is available from various state agencies.

D. Locally held radiological monitoring equipment is exchanged for refurbishment on an annual basis.

E. General Inventory, Local Governments (Municipal and County)

F. Maintenance of Equipment and Vehicles

1. All locally held and owned equipment and vehicles are employed daily in routine performance of assigned responsibilities and, therefore, kept operationally ready. Those items of equipment used on an infrequent basis are checked for operational readiness quarterly.

2. The Burke County Public Works Department maintains equipment and vehicles owned by Burke County. Special repair needs are done on contract basis.

3. The Burke County Board of Education maintains all buses and equipment at the bus maintenance shop.

4. The municipal governments maintain respective vehicles and equipment at local maintenance shops or on contract basis.

G. Mutual Aid Support From Adjacent Jurisdictions

1. Burke County Sheriff's Department.

a. Richmond County Police Department.

b. Jefferson County Sheriff's Department.

c. Emanuel County Sheriff's Department.

d. Jenkins County Sheriff's Department.

e. Screven County Sheriff's Department.

2. Burke County Emergency Management Agency

a. Richmond County Emergency Management Agency.

b. Jefferson County Emergency Management Agency.

c. Emanuel County Emergency Management Agency.

d. Screven County Emergency Management Agency.

3. Hospital and emergency medical service support is available from all above jurisdictions. Common communications on statewide hospital/emergency medical service is available.

4. As appropriate, training will be conducted for personnel providing support service within the Plume Exposure Pathway EPZ. Otherwise, use of support service personnel will be limited to normal day-to-day functional assignments.

H. Wrecker Service

1. Service is available from the private sector on 24-hour basis. Listings are maintained in the Burke County EOC.

2. Burke County Public Works Department will provide equipment to maintain roadway clearance as needed. The Georgia Department of Transportation will provide assistance when requested.

Attachment F - Communications

A. The Burke County Emergency Management Agency can be contacted 24 hours daily through either regular telephone , GEMA statewide radio network, Burke County Sheriff's Department/ICC radio network, (ENN) by GEMA, Plant Vogtle and SRS officials (dedicated circuit), Burke County EMA radio network and the State Fire Mutual Aid Radio Network or State HEAR (EMS).

B. The primary means of communication among local governments and respective department/agency personnel within the Plume Exposure Pathway EPZ are telephone and each department/agency radio network link with the EMA EOC. If the primary communications links are unavailable for use, the GEMA statewide radio network and/or the Sheriff's/ICC radio network are available for backup communications.

1. The Burke County Emergency Management Agency and Sheriff's Department are linked to the GEMA SOC by above channels.

2. When the GEMA FEOC is activated, Burke County EMA will be linked with the FEOC by all above channels. The FEOC will be linked to DNR Radiological Field Team radio networks.

C. To ensure rapid notification of an incident, Plant Vogtle officials will use the ENN installed between the site and the GEMA SOC and the Burke County EOC. Burke County EMA radio network will serve as a backup channel between Plant Vogtle EOF and Burke County EOC.

D. The Burke County EMA's emergency workers and other emergency response personnel will be notified by a "fan out" call list utilizing the telephone, the above radio network channels and pagers. Reference Section V, Paragraph F and Attachment C of this plan for notification procedures.

E. In accordance with the GEOP, GEMA will assume operational control and coordinate the response activities of all state and federal agencies. This eliminates any requirement for direct contact between Burke County EMA and federal response agencies.

F. The authenticity of messages received by dedicated circuits, through GEMA radio network, Burke County EMA radio network, or Sheriff's/ICC radio network, will be accepted without challenge. Messages received via commercial telep hone line will be verified by calling back to authenticated telephone numbers held by Burke County EMA and Sheriff's offices.

G. The requirement for testing the Emergency Management Agency radio networks and Sheriff's/ICC radio networks are minimal because the systems are in daily use. For this reason, malfunctions are detected immediately and systems are repaired. The same applies for all other radio networks utilized by Burke County EMA, i.e., municipal police, fire departments, hospital/emergency medical service and city/county public works departments.

The backup radio frequencies are used daily; however, a test on Burke County EMA radio network is conducted on a monthly basis between Plant Vogtle EOF and Burke County EOC.

Attachment G - Notification and Warning

A. Prompt Notification System (PNS)

Plant Vogtle officials have installed emergency notification system in Plume Exposure Pathway Emergency Planning Zone (EPZ) by placing tone alert radio receivers in each household and business and outdoor sirens throughout the area (reference GEMA SOP 3-5, Parts A and B). The total system meets the performance specifications for notification as required by NUREG-0654/FEMA-REP-1. The system will be used to alert the population living in the Plume Exposure Pathway EPZ that a problem exists at the power plant and advise them to turn on their radios/television sets for emergency information and instructions.

B. Supplementary Notification System

As a backup system and for use as deemed necessary, the population living in the Plume Exposure Pathway EPZ may be notified of an emergency situation at the plant by means of the following local area resources:

1. Law enforcement vehicles equipped with sirens or public address systems traveling the road network throughout the affected area.

2. Burke County Emergency Management Agency and Department of Natural Resources Law Enforcement Section vehicles will move through wooded areas near boat landings, and boats will travel portions of the Savannah River in the affected area of EPZ to warn sportsmen. The United States Coast Guard will close or authorize the state to close the river to water traffic at points outside the Plume Exposure Pathway EPZ. Reference Map 2, Evacuation, for location of control points and boat landings.

3. Emergency Management Agency workers and volunteers traveling the road network area in EPZ for door-to-door canvass.

4. Locally based state agency personnel from Departments of Transportation, Natural Resources Law Enforcement Section, Public Safety and Forestry Commission traveling road network in affected area to assist in warning the public, transients, farm workers and timber personnel.

5. Activation of local EAS (local radio station) by designated officials of local government and broadcasting information and instructions to the public.

Utilization of local radio station(s) and, if required, activation of the Emergency Alert System by designated local officials in order to broadcast information and instructions to the public.

C. Notification Time

1. Employment of the Prompt Notification System described above in Paragraph A will provide both an alert signal and an informational or instructional message to the population within the Plume Exposure Pathway EPZ within 15 minutes after GEMA (or Burke County EMA) has decided an incident at Plant Vogtle warrants activation of the system.

2. Notification to hunters, fishermen and other sportsmen will be performed on an area wide basis and will be completed within 45 minutes. The Burke County Sheriff's Department and Emergency Management Agency will maintain close coordination with hunting clubs that use the area for necessary assistance.

3. Notification and evacuation procedures for handicapped persons living in Plume Exposure Pathway EPZ are addressed in Standing Operating Procedures maintained by Burke County Emergency Management Agency, Health Department and Department of Family and Children Services.

D. Notification Procedures

In the event of a radiological emergency at plant Vogtle, the Georgia Power Company official designated as Emergency Director will be responsible for notifying state and local authorities utilizing the Emergency Notification Network (ENN) in accordance with Section E, Vogtle Electric Generating Plant Emergency Plan, Volume 1.

1. Should the ENN become inoperable, Burke County Emergency Operations Center will be notified at the 24 hours a day telephone number.

2. The Burke County EMA radio network will serve as a backup channel between Plant Vogtle EOF and Burke County EOC.

3. In the event the above procedures are not successful, the Burke County Sheriff's Department will be notified at their 24 hours a day telephone number.

4. As specified in the Burke County EMA Central Dispatcher's procedure, the Central Dispatcher will contact the most senior EMA official available, in

accordance with the following line of succession: EMA Director/Chief, Assistant Chief, Battalion Chief and Chief of Operations.

5. The Burke County Emergency Management Agency's key staff, emergency workers and other emergency response personnel will be notified in accordance with procedures outlined in Section V, paragraph F and Attachment C of this plan.

6. Burke County EMA will initiate request through GEMA for assistance from DOE Savannah River Site and/or State of South Carolina relative to notification and warning of transient population along Savannah River.

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Attachment H - Evacuation and Sheltering

A. Evacuation routes, traffic control points, boat landing areas on river, reception center, hospital and EOC locations are depicted on Map 2 and maps located in EOC. Table H-1 depicts GPS Locations of Key Facilities, H-2 further expands the evacuation routes and Table H-3 provides vehicle totals and evacuation time estimates. The selected evacuation routes are adequate to move the population from any part of or the entire Plume Exposure Pathway EPZ and channel the evacuees to the Reception Center at the Burke County Comprehensive High School located at 1057 Perimeter Road in Waynesboro. Georgia Highways 24 and 56 serve as main routes with Highway 24 channeling evacuees northwest to Perimeter Road and Highway 56 channeling evacuees southwest to Perimeter Road.

Movement of evacuees along the predetermined routes could be affected by one or more of the following factors related to the incident at the nuclear power plant:

1. A General Emergency resulting in a major release which affects a large area could dictate rerouting the evacuation traffic.

2. A light wind causing the plume containing radioactive materials to drift slowly over all or a portion of an evacuation route would require rerouting the evacuation route.

3. A temperature inversion, i.e., a reversal of the normal atmospheric temperature gradient, causing releases of radioactive materials to remain near the ground surface could result in rerouting of the evacuation traffic.

B. There are no physical barriers to the movement of evacuation traffic within the Plume Exposure Pathway EPZ. Adequate traffic control points, road blocks and route markers will be manned and set up to keep the traffic flow moving out of the affected area and deny access into area (reference Table H-1). The principal routes have the capacity to carry approximately 550 vehicles per lane per hour in one direction at a safe, constant flow where weather and darkness are not factors. Under nighttime and poor weather conditions, this rate of traffic flow could be reduced up to thirty (30) percent. (The vehicle rate and percentage reduction are based on a study of the road system designated for evacuation routes. Reference Annex D, Section E, paragraph 1.g).

In the event an incident should occur at Plant Vogtle that would require evacuation, approximately 95 percent of the total plant work force would be processed and released in accordance with procedures set forth in Section J of the Vogtle Electric Generating Plant Emergency Plan. Plant personnel and employees that may be released to go home will move along designated

evacuation routes leading to the Reception Center in Waynesboro if a release has occurred and their homes are in the affected area. If their homes are outside of the affected area, they will move along designated routes that will clear them to routes leading to their homes.

C. Actual and/or projected releases of radioactive material for the Plant Vogtle facility in conjunction with meteorological conditions and/or field samples will be the basis for determining which zones to evacuate. (See Map 1, Attachment D)

D. Privately owned vehicles will be the primary mode of transportation if evacuation is directed. County school buses, traveling their regular routes will provide transportation to those individuals lacking personal transportation. Standing Operating Procedures (SOP) for special needs individuals is maintained in the Burke County EOC. A roster of the individuals residing within the Plume Exposure Pathway EPZ is included in the SOP. Special equipped vehicles will be dispatched directly to the homes of special needs individuals requiring special transportation means. The EMA Director will coordinate with the Burke County Health Department and Burke County Department of Family and Children Services on implementation of the SOP to assure that the special needs personnel are safely evacuated from the area and proper care provided.

There is one institutional facility within the Plume Exposure Pathway EPZ that will require special consideration in an evacuation. The Burke County EMA Director will dispatch County busses to the Lord's House of Praise Transition Center at 162 Daybreak Road, Waynesboro if needed.

E. Evacuation confirmation process determines whether the evacuation has been completed. Specifically, confirmation of the evacuation is performed to assure that the entire population has left the affected area and to assist those persons having difficulties in evacuating.

Evacuation confirmation will be accomplished by the Burke County Sheriff's Department and supporting law enforcement agency personnel that will traverse roadways throughout the affected area to ensure that the residential population has evacuated their homes. Personnel from Burke County EMA and Georgia Department of Natural Resources, Law Enforcement section, will move along the Savannah River and tributaries in boats to ensure that hunters and fishermen have evacuated the area. Additional assistance is available from other state agencies, i.e., Georgia Forestry Commission and Department of Transportation (reference Attachment G, Paragraph B). Officials from Plant Vogtle will advise Burke County EOC when evacuation is confirmed at the plant site.

F. Sheltering of the population residing in an affected area within the Plume Exposure Pathway EPZ will be based upon existing conditions and

recommendations from officials at Plant Vogtle, GEMA and Department of Natural Resources Environmental Protection Division and:

1. May be desirable within at least two miles of Plant Vogtle if a Site Area Emergency is declared.

2. Should be recommended for area within two miles of plant site boundary and five miles downwind when a General Emergency is declared and evacuation has not been recommended at that time.

3. Will be necessary when evacuation of affected area cannot be accomplished in ample time due to:

   a. Sudden airborne release of radioactive materials during an incident at Plant Vogtle that covers a large area.

   b. Projected whole body and/or thyroid doses would exceed Protective Action Guides (PAGs) before evacuation could be completed.

4. The population within affected area will be provided guidance on what to do if sheltering or evacuation is directed (reference Attachment J, Sections F.9 and F.10).

G. Evacuation planning measures and protection afforded by sheltering are addressed in the GA REP, Section VI.G. Further references are in Annex D, Section E. Attachment A, Section E of this plan provides for implementation of protective actions.

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MAP 2
KEY LOCATIONS

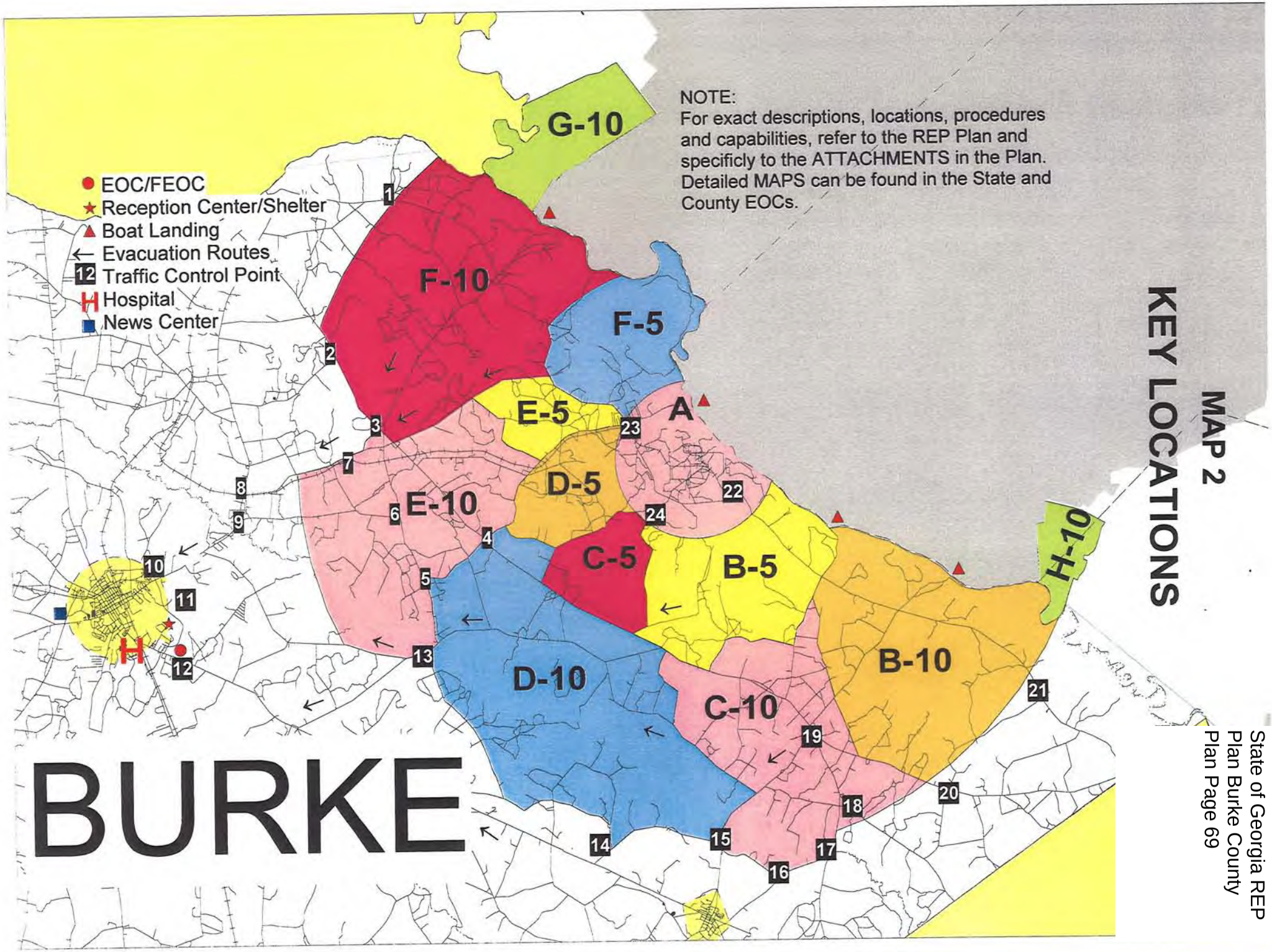

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Table H-1, Key Global Positioning System (GPS) Locations

Following is a list of key locations in Burke County as identified by the Global Positioning System (GPS).

LOCATION	LATTITUDE/LONGITUDE
Burke County Emergency Operations Center and State Forward Emergency Operations Center	33.04.26N 81.59.42W
SCHOOLS	
Burke County Comprehensive High School (Reception Center/Shelter)	33.05.11N 81.59.30W
Burke County Alternative School	33.04.52N 82.01.21W
Waynesboro Elementary	33.05.36N 82.01.15W
Blakney Elementary/Junior High	33.05.00N 81.00.48W
Lord's House of Praise Transition Center	33.07.36N 81.55.11W
TRAFFIC CONTROL POINTS	
1. Georgia Highway 56 (River Road) at McBean Club Road	33.14.17N/81.53.35W
2. Georgia Highway 23 at Spring Branch Church Road	33.10.48N/81.55.04W
3. Georgia Highway 80 at Georgia Highway 23	33.09.18N/81.53.59W
4. Georgia Highway 23 at Botsford Church Road/Hancock Landing Road	33.06.49N/81.51.15W
5. Botsford Church Road at Seven Oaks Road	33.06.01N/81.52.52W
6. Cates Mead Road at Seven Oaks Road	33.07.19N/81.53.26W
7. Georgia Highway 80 at Shell Bluff Spur	33.08.45N/81.54.27W
8. Georgia Highway 56 at Georgia Highway 80	33.07.50N/81.57.22W
9. Georgia Highway 56 at Cates Mead Road	33.07.16N/81.57.40W
10. Georgia Highway 56 at Perimeter Road	33.05.59N/81.59.51W
11. Reception Center at Perimeter Road	33.04.26N/81.59.42W
12. Georgia Highway 24 at Perimeter Road	33.04.26N/81.59.42W
13. Thompson Bridge Road at Hatches Mill Road	33.04.21N/81.52.50W
14. Georgia Highway 24 at Tom Bargereon Road	32.59.44N/81.48.30W
15. Georgia Highway 23 at Tom Bargareon Road	33.00.05N/81.45.12W
16. Ellison Bridge Road at Johnson Road	32.59.20N/81.43.41W
17. Ellison Bridge Road at Murray Hill Road	32.59.57N/81.42.21W
18. Millhaven Road at Bethlehem Church	33.00.47N/81.41.41W
19. Millhaven Road at Stoney Bluff Road, Georgia Highway 23	33.02.26N/81.42.43W
20. Stoney Bluff Road at Oak Grove Road	33.01.14N/81.39.11W
21. Royal Road at River Road	33.03.12N/81.36.47W
22. VEGP main access road at River Road	33.07.40N/81.46.27W

TABLE H-1 (continued)

23. River Road at Hancock Landing Road	33.09.21N/81.47.31W
24. Jack DeLaigle Road at Ebenezer Church Road	33.07.23N/81.46.45W

BOAT LANDINGS	LATTITUDE/LONGITUDE
Shell Bluff	33.13.34N/81.49.22W
Hancock Landing	33.09.40N/81.46.01W
Griffin's Landing	33.06.53N/81.42.13W
Brigham's Landing	33.05.51N/81.39.10W

HOSPITAL	
Burke County Hospital	33.05.00N/81.00.48W

Table H-2, Primary Evacuation Routes

Georgia Highway 56, Southwest to Waynesboro (Major Access Routes)

- Ben Hatcher Road to Georgia Highway 80 and Georgia Highway 80 to Georgia Highway 56
- Hancock Landing Road to Botsford Church Road to Seven Oaks Road to Cates Mead Road to Georgia Highway 56

Georgia Highway 24, Northwest to Waynesboro (Major Access Routes)

- Brigham's Landing Road to Georgia Highway 23 to Tom Bargereon Road to Georgia Highway 24
- Royal Road to Stoney Bluff Road to Georgia Highway 23 to Tom Bargereon Road to Georgia Highway 24
- Briar Creek Road to Thompson Bridge Road to Georgia Highway 24
- Georgia Highway 23 to Thompson Bridge Road to Georgia Highway 24

TRAFFIC CONTROL POINTS

EOC Map Number	Location
1	Georgia Highway 56 SP (River Road) at McBean Club Road
2	Georgia Highway 23 at Spring Branch Church Road
3	Georgia Highway 80 at Georgia Highway 23
4	Georgia Highway 23 at Botsford Church Road/Hancock Landing Road
5	Botsford Church Road at Seven Oaks Road
6	Cates Mead Road at Seven Oaks Road
7	Georgia Highway 80 at Shell Bluff Spur
8	Georgia Highway 56 at Georgia Highway 80
9	Georgia Highway 56 at Cates Mead Road
10	Georgia Highway 56 at Perimeter Road
11	Entrance to Reception Center, Perimeter Road
12	Georgia Highway 24 at Perimeter Road
13	Thompson Bridge Road at Hatcher's Mill Road
14	Georgia Highway 24 at Tom Bargereon Road
15	Georgia Highway 23 at Tom Bargereon Road
16	Ellison Bridge Road at Johnson Road
17	Ellison Bridge Road at Murray Hill Road
18	Millhaven Road at Bethlehem Church
19	Millhaven Road, Stoney Bluff Road, Georgia Highway 23 Intersection in Girard
20	Stoney Bluff Road at Intersection of Oak Grove Church

Traffic Control Points (continued)

EOC Map Number	Location
21	Royal Road at River Road
22	VEGP main access road at River Road
23	River Road at Hancock Landing Road
24	Intersection at Jack DeLaigle Road and Ebenezer Church Road

Each traffic control point will be manned and/or roadblocks will be employed to channel the evacuees out of the affected area and to deny access into the area. Route markers will be placed along the evacuation routes at critical intersections and at roadblock locations to assist the traffic flow and increase movement time.

Table H-3, EPZ Vehicle Totals

Vehicle totals are included for all population groups. Totals for permanent residential population are based on three persons per household traveling in one vehicle, while the transient population and Plant Vogtle work force vehicle totals are based on one person per vehicle. Approximately 80 percent of the work force would evacuate the plant site in event of a severe incident at the plant (i.e. declaration of Site Area/General Emergency).

VEHICLE TOTALS			
Zone	Residential Population	Transient Population	Vogtle Work Force
0 to 2 miles	94	0	*500
0 to 5 miles	573	100	0
5 to 10 miles	2575	100	0
0 to 10 miles	3148	200	500

Resident Population (3146) 3 persons per vehicle - 1050
Transient Population (200) 1 person per vehicle - 200
*Work Force, (80% of 500) 1 person per vehicle - 400

EVACUATION TIME ESTIMATE SUMMARY

Time estimates include movement of the entire residential and transient population plus approximately 80 percent of the plant work force. Estimates include both fair and adverse weather conditions during weekday, weeknight and weekend time frames. Severe weather conditions, i.e., snowstorm, winter freeze or heavy rains, could increase time estimates by 30 percent.

Time estimates will vary among the population groups evacuating the area. The transient group, including hunters and fishermen, will require a longer evacuation time period due to time involved in notifying the personnel and moving to their vehicles. All estimates include time periods for response after notification and travel time required to move out of affected areas. An average preparation time of 30 minutes is included for the residential population and Plant Vogtle work force. Estimates for the transient population include 15 to 45 minutes to receive notification and 15 to 60 minutes required for personnel to reach their vehicles and be ready to evacuate area.

The evacuation time estimates listed reflect the entire 0-2 mile, 0-5 mile and 0-10 mile radius within the Plume Exposure Pathway EPZ. There will be little difference in estimates if all zones within each radius should be evacuated and/or designated zones within each radius should be evacuated.

EVACUATION TIME ESTIMATES (MINUTES)

RESIDENTIAL POPULATION AND PLANT WORK FORCE						
Radius	Weekday		Weeknight		Weekend	
	Fair – Adverse		Fair – Adverse		Fair - Adverse	
0-2 mile	90	120	75	100	80	105
0-5 mile	100	130	85	115	90	120
0-10 mile	110	145	100	130	100	130

TRANSIENT POPULATION (NONE INCLUDED IN 0-2 MILE)						
Radius	Weekday		Weeknight		Weekend	
	Fair – Adverse		Fair – Adverse		Fair - Adverse	
0-5 mile	150	225	180	270	150	225
0-10 mile	150	225	180	270	150	225

Schools and Institutions

There is currently only one institution within the Plume Exposure Pathway EPZ. The Lord's House of Praise Transition Center at 162 Daybreak Road, Waynesboro, GA. There are currently 93 attendees and staff at the facility that will be evacuated by County buses should the need arise.

Attachment I - Reception and Care

A. Reception Center and Shelter Facility

The Burke County Comprehensive High School located at 1057 Perimeter Road, Waynesboro, Georgia 30830 is the only facility designated to serve as the Reception Center and Shelter Area to receive, process and house evacuees. (See Map 2) Adequate space and suitable accommodations are available within the facility to care for the population located within the Plume Exposure Pathway EPZ of Burke County. The facility is approximately 15 miles from Plant Vogtle.

If the entire population within the Plume Exposure Pathway EPZ of Burke County should have to be evacuated, the facility listed above would provide more than adequate space and accommodations to process and care for the entire population within the Plume Exposure Pathway EPZ. (See Table I-1) It is anticipated that many of the individuals and families that are evacuated will move into the homes of friends and relatives after they have been processed at the Reception Center. Regardless of where evacuees are eventually lodged, it is imperative that all evacuees report to the Reception Center for:

- Screening for contamination, if necessary.
- Decontamination, if necessary.
- Registration and accountability.
- Emergency information and instructions.
- Assignment to lodging space, if requested.

The facility designated for Reception and Care Services will provide the following accommodations:

- Reception Center will have adequate shower space (gymnasium) for personnel decontamination.
- The facility has a kitchen and dining areas suitable to prepare food and feed the housed personnel.
- Adequate lavatories and toilet facilities are available.
- Adequate space is available for sleeping quarters.
- First aid stations.

B. Reception and Care Services

Reception and care services will be conducted in accordance with this plan and the Burke County Emergency Operations Plan. Specific primary and support functional responsibilities for local and state governmental departments and agencies are outlined in Paragraph V, Responsibilities, of this plan. Checklists have been developed for all local governmental and local based state governmental departments/agencies providing service support.

1. Monitoring equipment and trained monitoring personnel from local and state agencies will be assigned to the Reception Center to monitor evacuees arriving from the Plume Exposure Pathway EPZ. The personnel should be capable of monitoring all potentially contaminated residents and transients from the EPZ within 10 to 12 hours after their arrival at the center.

2. Trained Shelter Managers and staff will be assigned to the Reception Center and Shelter Area to conduct operations necessary to receive, process, shelter and care for evacuees assigned to this facility.

3. Upon activation of the Burke County EOC, the Shelter Manager (normally the school principal) will establish and maintain coordination and communications with the EOC; school officials; and local, state and private departments, agencies and organizations supporting Reception and Care Service operations. Promptly after a decision is reached that evacuation of people from the EPZ is likely or is mandated, the Shelter Manager will maintain close coordination with school officials on opening the facility as needed.

4. School system personnel will be available at the facility to maintain coordination with the Shelter Manager and staff on support needs and facility maintenance.

5. Schematic drawings of the Reception and Care Service Area have been prepared and placed in the center and attached to specific checklists to illustrate the following:

   a. Vehicle entrance to area.

   b. Evacuee unloading and monitoring point.

   c. Path for contaminated personnel to decontamination area, to registration area and to shelter area.

d. Path for non-contaminated personnel to registration and shelter areas.

e. Registration and shelter assignment areas.

6. All evacuees' vehicles will be parked in a designated area in close proximity to the reception center complex.

C. Decontamination Areas

1. Contaminated evacuees will be processed through decontamination area located in gymnasium at Burke County Comprehensive High School (shower area).

2. Evacuees' vehicles will be surveyed for contamination consistent with available manpower, and those found to be contaminated will be decontaminated at a designated site.

3. All local and state emergency workers returning from the affected area will report to the vehicle decontamination point in the field area near the Burke County Comprehensive High School recreation area off Perimeter Road. Personnel and vehicles will be monitored, and contaminated personnel will move to the decontamination area (gymnasium) in the Burke County Comprehensive High School for decontamination. Vehicles will be decontaminated at water point on field.

4. Ambulances used to transport off-site patients, upon completion of their mission, will be directed to the vehicle decontamination area for vehicle and personnel decontamination.

D. Checklists further expand reception and care services such as health, medical, welfare and social service. Support will be provided by the American Red Cross and local parochial groups. Consistent with needs, additional service support is available from state and federal agencies through the State Disaster Coordinator (Director, Georgia Emergency Management Agency).

Table I-1 - Reception and Care Facility

Facility	Processing Capability	
	Students Present	Students Not Present
Burke Co Comprehensive High School 1057 Perimeter Road Waynesboro, GA 30830	4,675	5,980

* For cross reference of total evacuees in the EPZ, see Attachment D.

Attachment J - Emergency Information

A. Emergency information is classified into two broad categories. The first is pre-emergency information which is used to educate the citizens about Plant Vogtle and, in general, what protective actions should be taken should there be a health threatening accident at the plant. The second category is actual emergency information issued in response to a confirmed incident and provides the public with specific information regarding what protective actions should be taken.

B. Working jointly, the public information officers for the utility and public affairs officers for GEMA and Burke County EMA will coordinate the preparation of emergency information material to be distributed, at least annually, to residents in the Plume Exposure Pathway Emergency Planning Zone (EPZ). This emergency information material will address such topics as the nature of radiation, where to obtain more detailed information, notification procedures, and protective actions, identification of evacuation zones and routes and location of reception and care centers. The material will be mailed and/or delivered by Southern Nuclear Operating Company personnel to each household, to include handicapped personnel that have been issued tone activated radios.

Information will be provided to transients in the Burke County portion of the EPZ as follows:

1. Posted signs at strategic locations in the Plume Exposure Pathway EPZ, such as commercial establishments, gas stations, churches, the Vogtle Visitors Center and public recreational areas, and in the Augusta Office of the Agricultural Stabilization and Conservation Service.

2. The Vogtle emergency public brochure will be made available within the EPZ to transients at commercial establishments, churches, the motel, hunting clubs and the Vogtle Visitors Center and through residents whose land is used by non-residents (e.g., the occasional non-resident hunter). The brochure will also be provided to timber company offices outside of the Plume Exposure Pathway EPZ for distribution to employees who enter the EPZ to visit company land holdings and to the Augusta Office of the Agricultural Stabilization and Conservation Service for distribution to farmers who farm, but do not reside, in the EPZ.

C. Public Affairs and Public Information Officers from the utility, GEMA and Burke County will develop fill-in-the-blank news releases dealing with various aspects of the Plant Vogtle operation and emergency procedures. These news releases will be available for adaptation to the current emergency situation.

D. The news media will be invited to participate in Plant Vogtle's emergency exercises to acquaint them with emergency planning, organization and execution of

emergency response operations. A training and orientation program will be conducted annually to keep media personnel informed of their roles during an actual emergency.

E. In the event of an incident at the plant which threatens the off-site population, the designated point of contact for the news media is the Joint Media Center, located at Burke County Office Park. From this location, the public affairs and public information officers from state, local EMA and the utility will carefully coordinate, approve and disseminate information regarding the incident through regularly scheduled press conferences releases. Prior to dissemination, these news releases will be generated by a Public Information Officer located in the FEOC. Technical content and emergency instructions from local and state input will be approved for release by signature from the FEOC Chief and the Radiation Emergency Coordinator. Coordination with the county PIO representative and/or EMA Director and the utility will also occur prior to release. Should the incident occur prior to ENC activation, this sequence of events will take place from the SOC in Atlanta.

F. During an actual emergency, the population in the affected area will be kept informed by local radio and television broadcasts of information coordinated through the public affairs and public information officers of the state, local EMA and utility. The public will be kept informed of the following:

1. Whether a nuclear incident poses a threat or has occurred at the Vogtle Electric Generating Plant.

2. Identification of government and utility agencies authorized to disseminate information.

3. Type of emergency and nature of the hazard.

4. Potential risk to the population or absence of any risk.

5. Area affected if a risk exists.

6. Protective measures to be taken by residents in the affected area.

7. Official communication channels over which additional information will be given.

8. Emergency response organizations, departments and agencies involved in conduct of operations and recovery.

9. The following are general instructions to be given the population residing in the affected area if evacuation is directed:

a. Begin evacuation upon receipt of information released through official broadcast; Prompt Notification System, tone alert radio receivers; outdoor siren system; sound of sirens from official vehicles; or, when advised, through door-to-door notification by official personnel.

b. Follow instructions given over radio station WYFA (100.9) in Waynesboro or WBBQ (AM 1340 and FM 104.3) in Augusta; over Augusta television stations, Channels WJBF- 6, WRDW-12 or WAGT-26; or by official personnel entering the affected area.

c. Plan to take the following items:

(1) Change of clothing.

(2) Important papers.

(3) Special medications and non-food supplies for infants.

(4) Do not carry food, pets, firearms or alcoholic beverages.

(5) Prior to departure, close all windows and doors in the home and turn off gas and electricity.

(6) After securing the home, tie a white cloth or towel on the front door of the home or mailbox to notify law enforcement and Emergency Management Agency officials or other emergency personnel of departure.

d. Follow local road nets that lead to the evacuation routes prescribed by local officials. Pick up pedestrians along the routes. Do not move against the flow of traffic or through roadblocks or any restricted area.

e. If transportation is not available, coordinate a ride with neighbors or remain at your home. Transportation will be furnished for individuals and families. School buses and other official vehicles will move through the affected area to pick up anyone requiring transportation. Special equipped vehicles will be dispatched to pick up handicapped and non-ambulatory individuals.

f. Notify the Burke County Emergency Management Office or Burke County Sheriff's Department of emergency transportation needs for persons requiring special care.

g. Go directly to the designated reception center. Each individual and family evacuating the affected area must report to the reception center for registration, processing and further instructions. If families are separated, the reception center will have a record of location and will be able to coordinate and affect contact with members of family that are separated. Upon completion of registration at “in-processing,” each individual and/or family will be assigned to lodging facilities or permitted to relocate to relative's or friend's homes.

h. For additional information, contact the Burke County Emergency Management Office.

i. Remember, follow instructions. Time is important – move out of area quickly but safely. Go directly to the Reception Center.

G. The following are general instructions to be given to the population residing in the area affected if evacuation is not necessary and sheltering is required:

1. Move inside home or shelter area upon receipt of official information.

2. Follow instructions given over radio station WYFA (100.9) in Waynesboro and WBBQ (AM 1340 and FM 104.3) in Augusta; over Augusta television stations, Channels WJBF-6, WRDW-12 or WAGT- 26; over tone alert radio receivers; or by official personnel entering the affected area on:

a. Protective measures to be taken:

(1) Remain inside the home.

(2) Close all windows and doors.

(3) Seek best-protected area in home.

(4) Improvise ventilation controls as respiratory protection.

b. Restrictive measures on:

1. Consumption of food and water.

2. Use of crops and animal by-products for food.

3. Other restrictions placed by Departments of Agriculture, Human Resources and Natural Resources.

c. Contamination and decontamination procedures.

H. To facilitate dissemination of accurate information to the public, written messages keyed to specific types of incidents will be prepared in advance of an actual emergency. These "prescript" messages will include instructions pertaining to sheltering, evacuation and other protective actions.

Copies of the messages will be included in a package for the Emergency Management
Director and Public Information Officers and will be disseminated to the public through EAS (local radio station) broadcast when appropriate. All EAS (local radio station) messages will be coordinated with the state and utility prior to release.

I. Rumor control measures will be initiated through a coordinated effort by officials and public affairs and public information officers from state, local EMA and the utility located at the Joint Media Center. A telephone number will be provided for public use that will enable concerned citizens to receive accurate and reliable information. Coordination will be maintained with the broadcast media on supportive assistance to keep the public advised and aware of the emergency situation.

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Attachment K - Training and Exercises

A. Training

Burke County Emergency Management personnel as well as other governmental department/agency personnel and emergency workers train regularly through state and locally sponsored programs. The GEMA Training Office assists and monitors local training activities.

1. Training in radiological monitoring and decontamination is provided by the GEMA Radiological Programs and the Georgia Department of Natural Resources, Environmental Protection Division as needed to local emergency management organizations and other response organizations, such as police, fire, EMS and public works.

2. The Radiological Programs Section of GEMA coordinates training as needed to reception and care center, shelter and decontamination center staffs.

3. Specialized initial training and periodic retraining programs are conducted for the personnel involved in conducting radiological emergency response operations. Training modules have been developed and are used by qualified instructors who conduct the training courses. Each module provides objectives and scope related to the particular course of instruction (reference GEMA 4-2, Radiological Emergency Series Instructor Guide).

4. The training program is designed for local officials; EMA Director and staff; personnel involved in accident assessment, radiological monitoring, law enforcement, security and fire fighting operations; and first aid and rescue, medical, communications and mutual aid support.

5. The local Emergency Management Director and staff, other local officials and department/agency personnel are provided emergency preparedness training through GEMA sponsored Professional Development Series courses. This program enhances the capabilities of these officials to carry out their responsibilities in administration, planning and response.

6. Refresher training for local rescue specialist and other emergency workers is provided in conjunction with GEMA rules and regulations certification requirements as follows:

   a. Rescue Specialist - every 3 years.

   b. First Aid - every 3 years.

c. Emergency Medical Technician - every 2 years.

d. Fire Fighting - every 2 years.

e. Hazardous Materials - as requested.

f. Radiological Protection - every 2 years.

g. Crash Victim Extrication - as requested.

7. See the GA REP, Section VII.B, and the Plant Vogtle Plan, Annex D, Section G, for additional training programs for the enhancement of local emergency preparedness.

B. Exercises and Drills

To ensure that county emergency preparedness is kept at a high level of readiness, periodic local exercises and drills will be conducted to test plans and personnel and to identify any organizational or operational deficiencies.

Procedures and guidelines will be established to assist in evaluating the formal critique. The Emergency Management Director or designated Planning Coordinator will be responsible for revising this plan to reflect the findings of the critique.

1. Plant Vogtle will conduct an exercise on an annual basis, and Burke County will conduct at least one full-scale exercise every two years. An exercise involving full state participation will be held at least every six years.

2. Communication drills between Burke County EMA and GEMA will be conducted monthly. Drills between the plant and Burke County EMA will be held at least once a year.

3. Scenarios for exercises and drills will be developed locally and in cooperation with plant officials and state agencies. Each scenario will address the following elements:

- Basic objectives and appropriate evaluation criteria.

- Date, time period, place and participating organizations.

- Simulated events.

- Time schedules of real and simulated initiating events.

- Narrative summary describing the conduct of the drill or exercise.

- Participation of qualified observers.

4. Each scenario will contain timed messages and actions scripted in a real time sequence to simulate events as they would unfold in an actual emergency. The exercise and drill scripts will address, as appropriate, simulated casualties; fire, police, rescue and other support personnel; use of specialized equipment; radiological monitoring teams; communications; and public information (see the Vogtle Electric Generating Plant Emergency Plan, Volume 1, Section N, Exercises and Drills). The EMA Director will coordinate with GEMA on use of state and federal agencies as observers or evaluators. GEMA will provide advance notification to federal agencies if they become involved.

C. Checklists

To enhance the training program and further ensure emergency operational readiness, checklists have been prepared for local officials and department/agency personnel. Each checklist has been developed to correspond with the Emergency Action Level guidelines in reference to an incident at the nuclear power plant. Each checklist expands the functional responsibilities of local governmental departments/agencies as outlined in Section V of this plan. Checklists have been prepared for the following:

1. Emergency Management Agency Director

2. Local Elected Officials

3. Public Information Officer

4. Sheriff's Department

5. City Police Departments

6. City and County Fire Departments

7. Emergency Medical Service

8. County Department of Family and Children Services

9. County Health Department

10. Board of Education (County School Superintendent)

11. County and Municipal Engineering Department (Public Works)

12. Hospital Administrator

13. County Ranger, Georgia Forestry Commission

14. County Ranger, DNR, Law Enforcement

15. County Agent, USDA

16. Radiation Protection Officer

17. Shelter Manager

D. Operational Procedures

1. Decontamination Procedures – Personnel, Vehicles and Equipment

2. Use of Radiological Drugs (Emergency Workers Only)

3. Radiation Exposure Control Criteria

4. Standing Operating Procedures for Communication Center Dispatchers

5. Standing Operating Procedures for Care of Handicapped Personnel