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Date: 3/20/2007 11:06:25 AM
Subject: Request for Additional Information Letter No. 5 - Southern Nuclear Operating
Company Early Site

Permit (ESP) Application for the Vogtle ESP Site.

To: J. A. Miller
From: Christian Araguas
Date: March 20, 2007
Accession No.: ML070650577

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March 15, 2007

Mr. J. A. "Buzz" Miller, Senior Vice President
Nuclear Development
Southern Nuclear Operating Company, Inc.
40 Inverness Center Parkway
P.O. Box 1295
Birmingham, AL 35201

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 5 - SOUTHERN
NUCLEAR OPERATING COMPANY EARLY SITE PERMIT (ESP)
APPLICATION FOR THE VOGTLE ESP SITE

Dear Mr. Miller:

By letter dated August 14, 2006, Southern Nuclear Operating Company, Inc. (SNC) submitted an application for an early site permit (ESP) for the Vogtle ESP site. Subsequently, SNC submitted changes to the Vogtle ESP application by a letter dated September 13, 2006, and on November 13, 2006, submitted Revision 1 to the application.

The U.S. Nuclear Regulatory Commission (NRC) staff is performing a detailed review of your ESP application and has determined that it needs additional information to continue portions of the safety review. Therefore, the NRC staff is requesting additional information with respect to the application. The topics covered in the requests for additional information (RAIs) contained in Enclosure 1 are related to Section 13.3, "Emergency Planning," of the site safety analysis report (SSAR), and Part 5, "Emergency Plan" of the ESP application.

The NRC staff sent the RAIs as a draft via electronic mail on March 2, 2007, and held follow up teleconferences on March 7, 2007, and March 8, 2007. During both teleconferences, the NRC staff addressed all clarification questions, and no substantive changes to the RAIs resulted from the discussions. In addition, the NRC staff shared with your staff a potential review issue. The staff noted that the ESP application proposes a technical support center change that affects the existing Vogtle Electric Generating Station Units 1 and 2. As stated during the teleconference, the staff cannot review this change to Units 1 and 2 on the ESP docket. Please be advised that any requested changes to Units 1 and 2 fall under the scope of the operating reactor dockets and must be considered as separate licensing actions.

Receipt of the requested information, within 30 days of the date of this letter, will support the NRC's efficient and timely review of the SNC ESP application. Please note that failure to respond in a timely fashion may delay the completion of the staff's safety evaluation report.

On March 1, 2007, you submitted Emergency Action Level (EAL) information in support of the staff's review of complete and integrated emergency plans proposed in your ESP application. Should the staff have a need for further information with respect to this EAL information, additional RAIs may be issued.

J. A. Miller

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If you have any questions or comments concerning this matter, you may contact me at (301) 415-3637 or cja2@nrc.gov.

Sincerely,

/RA/

Christian Araguas, Project Manager
AP1000 Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-011

Enclosure:
As stated

cc: See next page

J. A. Miller

-2-

If you have any questions or comments concerning this matter, you may contact me at (301) 415-3637 or cja2@nrc.gov.

Sincerely,

/RA/

Christian Araguas, Project Manager
AP1000 Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-011

Enclosure:
As stated

cc: See next page

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**Vogtle Electric Generating Plant (VEGP) – Early Site Permit (ESP) Application
Requests for Additional Information (RAIs)**

SSAR Section 13.3, Emergency Planning

RAI 13.3-1 (Regulatory Basis: 10 CFR 52.17(b)(3))

Enclosure 11 of the early site permit (ESP) application's State and local emergency plans (paper copy), entitled "Vogtle Electric Generating Plant Emergency Plan – Letters of Agreement with Local Agencies," includes a February 15, 2005, letter of agreement with Radiation Management Consultants (RMC), which appears to have expired on December 31, 2005. Specifically, it states in the first paragraph: "This agreement remains in effect from January 1, 2005 through December 31, 2005." Provide a letter of agreement or other certification, current at the time of the application, consistent with the requirements of 10 CFR 52.17(b)(3).

RAI 13.3-2 (Regulatory Basis: 10 CFR 52.17(b)(3))

Enclosure 11 of the ESP application's State and local emergency plans (paper copy), entitled "Vogtle Electric Generating Plant Emergency Plan – Letters of Agreement with Local Agencies," includes a one-page document, signed by Shayne George, CEO on December 10, 2005, that states: "The attached current letter of agreement with the Vogtle Electric Generating Plant is correct and needs no updating." The application did not include this referenced letter of agreement. Please provide this referenced letter of agreement, consistent with the requirements of 10 CFR 52.17(b)(3).

RAI 13.3-3¹ (Regulatory Bases: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(4), Sections IV.B and IV.C of Appendix E to 10 CFR Part 50)

ESP Plan Section D, "Emergency Classification System," states that the Southern Nuclear Operating Company (SNC) classification scheme is based on Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels," Revision 4, January 2003. The Executive Summary of NEI 99-01 (page v) states, in part, that (1) design differences will have a substantial effect on emergency action levels (EALs); (2) even among pressurized-water reactors (PWRs) there are substantial differences in design and in types of containment used; (3) there is enough commonality among plants that many initiating conditions (ICs) will be the same or very similar, however, others will have to match plant features and safety system designs that are unique to the plant type or even to the specific plant; and (4) this generic guidance is not considered to be applicable to advanced light-water reactor (LWR) designs. (Emphasis added.) The Executive Summary also states that "[i]t is important that the NEI EALs be treated as an integrated package. Selecting only portions of this guidance for use in developing site-specific EALs could lead to inconsistent or incomplete EALs unless explicitly allowed."

¹In the September 19, 2006, ESP application acceptance letter to Southern Nuclear Operating Company (ADAMS Accession No. ML062570460), NRC requested Emergency Action Level (EAL) information (required for review of a complete and integrated emergency plan) by March 1, 2007.

- a. Explain why NEI 99-01 may be used as the basis for the AP1000 EALs, given that the document states that its generic guidance is not considered applicable to advanced LWR designs.
- b. On March 1, 2007, the ESP applicant submitted "Supplemental Information Concerning Emergency Action Levels and Generic Communication." Enclosure 1 to the transmittal letter contained the proposed set of EALs and their associated bases for the VEGP Units 3 and 4, which were stated to be based on Nuclear Energy Institute Guideline NEI 07-01, "Methodology for Development of Emergency Action Levels Advanced Passive Light Water Reactors, Revision 0, dated February 28, 2007. Of note, NEI 07-01 was also submitted to the NRC by NEI for endorsement on March 1, 2007, and the staff is currently reviewing this document. Please explain how NEI 07-01 applies to the Vogtle ESP application; including the relationship of its use with NEI 99-01. If significant changes are made to NEI 07-01, as a result of NRC's review (as part of the endorsement process), how would such changes be incorporated into the EALs for Units 3 and 4?
- c. Pursuant to 10 CFR 50.47(b)(4) and Appendix E to 10 CFR Part 50, provide the emergency classification levels (ECLs) and a detailed EAL scheme applicable to the proposed AP1000 reactor technology, and include appropriate documentation that these initial EALs have been discussed with, and agreed on by, the relevant State and local governmental authorities. The EAL scheme should include the ICs, Operating Modes, and EAL Basis information.
- d. Identify those specific areas for which the EALs cannot be fully developed and submitted prior to construction of the plant, and therefore, must be addressed as Inspections, Test, Analyses and Acceptance Criteria (ITAAC). Provide the basis for this determination, and provide the proposed ITAAC, as appropriate.
- e. Provide a copy of the "Classification Emergency Plan Implementing Procedure," referenced in Section D.2, "Classification Process," of Part 5 (Emergency Plan) of the application. In addition, provide a copy of (1) emergency plan implementing procedure (EPIP) 91001-C, "Emergency Classification and Implementing Instructions," listed on Table V1A1-1, "Index of VEGP Units 1 and 2 Administrative, Nuclear Management and Emergency Plan Implementing Procedures Cross Referenced to Sections of the VEGP Emergency Plan," and (2) Emergency Operating Procedure 19200-C, relating to the Critical Safety Functions Status Trees (CSFSTs). Both of these are referenced in Section D.3, "Classification Process," of Vogtle Electric Generating Plant (VEGP) Emergency Plan, Revision 40 (see page D-5).

[Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria D.1 and D.2]

RAI 13.3-4 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(7))

ESP Plan Section G, "Public Education and Information" (subsection G.1, "Information for Transients") refers to a Vogtle emergency information brochure that will be made available to the public. Please provide a copy of the brochure, current at the time of the application.

[Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria G.1 and G.2]

RAI 13.3-5 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(16), Section IV.G of Appendix E to 10 CFR Part 50)

- a. ESP Plan Section P, "Responsibility for the Planning Effort," states that the "[t]he EP Supervisor, Emergency Planning Coordinator, Emergency Preparedness Coordinator, and other individuals with emergency planning responsibilities are trained by self-study and by attending industry seminars, short courses, and workshops." Describe how SNC determines that the planners are adequately trained. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion P.1]
- b. Section P (page P-2) states that several other formal emergency plans have been developed to support the overall emergency response effort, and that these supporting plans and their sources are listed in procedure NMP-EP-300, "SNC Corporate Emergency Planning Activities." Provide a list of the supporting plans and their sources. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion P.6]
- c. Section P (page P-1) states that the Emergency Plan and EIPs are revised in accordance with applicable site procedures. In addition, the application included a "VEGP Emergency Plan Correlation to NUREG 0654" (i.e., cross-reference), which identified (in the comments column for criteria P.10) emergency implementing procedure (EIP) 91701-C, "Preparation and Control of Emergency Preparedness Documents." Describe how telephone numbers in emergency procedures will be updated on at least a quarterly basis. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion P.10]
- d. Section P (page P-2) states that records of audits and exercise findings are maintained in accordance with plant procedures. Describe how these records, including recommendations for improvements, are made available to affected Federal, State and local organizations. Describe how these records are retained for a period of five years. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion P.9]
- e. Provide a list, by title, of procedures that will be required to implement the emergency plan, cross-referenced to the section(s) of the plan to be implemented by each procedure for proposed VEGP Units 3 and 4. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion P.7]

Such a list is provided in Annex V1, Appendix 1, "Index of Procedures," for VEGP Units 1 and 2. Annex V2, Appendix 1, "Index of Procedures," does not contain a comparable list applicable to the proposed VEGP Units 3 and 4, and states: "Reference ITAAC 9.0 Implementing Procedures." This referenced ITAAC pertains only to the development and submission of the detailed implementing procedures, and not to providing a list of the proposed procedures in the emergency plan.

RAI 13.3-6 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii))

The proposed complete and integrated emergency plan (i.e., ESP Plan) refers to various emergency planning features of the existing VEGP emergency plan for Units 1 and 2. For example, emergency implementing procedures (EIPs) for the corporate emergency response organization (see Section P, page P-1), and procedures associated with the Southern Nuclear Operating Company (SNC) common Emergency Operations Facility (EOF) (see ESP Plan

Appendix 7, "Emergency Operations Facility," pages A7-1, -2). In addition, Part 2 of the Site Safety Analysis Report (SSAR) states (in part) on page 13.3-1 that the (ESP) emergency plan was developed using the current VEGP Emergency Plan (SNC 2005), and the May 2005 Revision 40 of the VEGP Emergency Plan (SNC 2005) is listed in "Section 13.3 References" on page 13.3-15.

In the Preface of the ESP Plan, it states that the emergency plan will be applicable to existing VEGP Units 1 and 2, as well as the proposed Westinghouse AP1000 units (i.e., new VEGP Units 3 and 4), and to its environs as specified by the emergency planning zones (EPZs), as described in the ESP Plan. The supplemental letters of agreement (LOAs) also state that it is "SNC's intent to revise the existing VEGP Emergency Plan to include provisions for the addition of two new reactors at the VEGP site." Further, the proposed ESP site footprint consists of a portion of the existing VEGP site and is located immediately adjacent to VEGP Units 1 and 2, such that little distinction exists between the VEGP site and the ESP site for purposes of emergency planning. As such, the ESP Plan appears to account for, and take full advantage of, the emergency planning resources, capabilities, and organization that currently exist at the VEGP site.

The review of the application shows that the ESP Plan, to a great extent, repeats verbatim what is contained within the existing VEGP emergency plan for Units 1 and 2 (Revision 40). (The staff is also aware of a May 2006, Revision 43, version of the VEGP emergency plan for Units 1 and 2; and understands this to be the current effective plan for the VEGP site.) In regard to the relationship between the VEGP emergency plan for Units 1 and 2, and the ESP Plan, please address the following questions:

- a. Which revision of the VEGP emergency plan for Units 1 and 2 (e.g., 40, 43, other) is relevant for purposes of NRC's review of the ESP application and proposed complete and integrated emergency plan (i.e., the ESP Plan)?
- b. Clarify if the ESP Plan is intended to be a revision of the existing VEGP Emergency Plan, as stated in the supplemental LOAs. If so, an explicit statement should be made in the application to establish this connection of the existing VEGP Plan to the ESP Plan, as indicated in the supplemental LOAs.
- c. To what extent should the review of the ESP Plan rely on information in the existing VEGP emergency plan (addressed in question a, above)? If the proposed ESP Plan (which would be applicable to Units 1, 2, 3, and 4) should be reviewed without reference to, or consideration of, the existing VEGP emergency plan for Units 1 and 2 (i.e., self-standing), address how this would comport with the above discussion regarding, for example, use of the existing corporate EIPs and EOF procedures, consistent with the requirements of 10 CFR 52.17(b)(2)(ii).
- d. Describe the manner in which the ESP Plan – including Table B-1, "Minimum Staffing for Power Operation" (addressed in RAI 13.3-8), and TSC location (addressed in RAI 13.3-18) – will become effective for the VEGP site (i.e., transition plan), in regard to construction and operation of Units 3 and 4. Specifically, please address the proposed timing and applicability of the ESP Plan (including the construction period, and time between construction of proposed Unit 3 and Unit 4), transition from the current Units 1

and 2 emergency plan, transfer from the existing TSC to the proposed new TSC, and coordination with offsite agencies and organizations. (See also RAI 13.3-8, and RAI 13.3-37.)

- e. What is SNC's intended course of action to apply the ESP Plan to Units 1 and 2? (See also RAI 13.3-8.b.)

RAI 13.3-7 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(9))

Part 5, "Emergency Plan," of the ESP application states on page I-4 in section I.5, "Field Monitoring," that "[p]reselected radiological sampling and monitoring locations . . . are shown on Figure iii." In addition, the application states on page I-6 that "[f]ixed environmental sampling and monitoring locations . . . are shown on Figure iii." Figure iii, "VEGP 10-Mile EPZ," located on Preface page x of Part 5, does not show any sampling or monitoring locations. Please provide a figure that shows the preselected radiological and fixed environmental sampling and monitoring locations, consistent with above sited statements in the application. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion I.7]

RAI 13.3-8 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(2), 10 CFR 50.54(q))

There are differences between the existing Table B-1 for Units 1 and 2, and Table B-1 in the proposed ESP Plan for Units 1, 2, 3, and 4. In regard to ESP Plan Table B-1, please address the following questions:

- a. Table B-1, "Minimum Staffing for Power Operation," of the ESP Plan indicates in the last column: "Augmentation in 75 Minutes." The comparable Table B-1 in Revision 40 (and 43) of the VEGP emergency plan (VEGP Plan) indicates: "Augmentation in 60 min." For proposed VEGP Units 3 and 4, explain the basis for the 75-minute augmentation time, as compared to the guidance in Table B-1 of NUREG-0654/FEMA-REP-1.

ESP Plan Section H.3, "Activation and Staffing of Emergency Facilities," states that the TSC and OSC will be operational within about an hour of the initial notification. In addition, ESP Plan Section I.5, "Field Monitoring," states that teams will be in the field and performing monitoring tasks within about one hour of the determination of the need for fielding monitoring. Explain how these statements relate to the 75-minute augmentation time in Table B-1.

- b. Is the ESP application requesting approval to extend the augmentation times from 60 minutes to 75 minutes for Units 1 and 2 when the ESP Plan is put into effect?² (See also, RAI 13.3-6.e.)

²Any proposed changes related to VEGP Units 1 and 2 should be in accordance with 10 CFR 50.54(q) and submitted in accordance with applicable processes, as a licensing action associated with those units, including appropriate justification, as specified in the "Smart Application Template for Requesting Emergency Plan Changes Related to On-shift Staffing Levels and Augmentation Times," ADAMS Accession No. ML042530011. Additional guidance can be found in RIS 2005-002, "Clarifying the Process for Making Emergency Plan Changes," ADAMS Accession No. ML042580404.

- c. Table B-1, "Minimum Staffing for Power Operation," in the VEGP Plan, Revisions 40 and 43, indicates that the on-shift fire brigade is "per FSAR," and that "Local support" is available for augmentation in 60 minutes for fire-fighting, and rescue operations and first aid. Table B-1 of the ESP Plan, which is applicable to Units 1, 2, 3, and 4, does not include the designations "per FSAR" for the fire brigade or "Local support" for the 60-minute augmentation. Further, Table B-1 of the ESP Plan does not indicate any staff for the offsite dose assessment major task (HP/Chemistry Shared Foreman); while Revisions 40 and 43 of the VEGP emergency plan do. Explain the differences, as compared to the guidance in Table B-1 of NUREG-0654/FEMA-REP-1. If appropriate, provide an updated ESP Plan Table B-1.
- d. Footnote "a" of ESP Plan Table B-1 references "technical specifications for non-power operation." Clarify how this relates to proposed Units 3 and 4, and whether this should be addressed in ITAAC. Provide the referenced technical specification, and ITAAC (if appropriate). (See generic ITAAC 2.1 in DG-1145 Table C.II.2-B1.)
- e. ESP Plan Table B-1 shows one person for Plant system engineering, Technical support. An additional person to supplement the Core/Thermal Hydraulics capability within 30 minutes is not shown (see Table B-1 of NUREG-0654/FEMA-REP-1). Also, the Unit 1 /2 On Shift column totals 18, rather than 16; and the Unit 3 /4 On Shift column totals 21, rather than 20. Please clarify these apparent discrepancies.
- f. ESP Plan Table B-1 shows two persons for Shift Supervisor Senior Reactor Operator (SRO) and none for Shift Manager (SRO) under Unit 1 /2 On Shift. One person is shown for Shift Manager (SRO) under Site On Shift. The total number of 3 persons for these two positions differs from VEGP Plan (Rev. 40) Table B-1, which indicates 2 persons for these two positions. Please clarify these apparent discrepancies.
- g. ESP Plan Table B-1 does not indicate any staff for the Electrical engineer and Mechanical engineer positions. Please explain the absence of these positions.

(See also, RAI 13.3-6.) [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion B.5]

RAI 13.3-9 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(9), Sections III, IV.B, and IV.E of Appendix E to 10 CFR Part 50)

ESP Plan Table V2A3-1, "Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)," under Section 6.0, "Accident Assessment," appears to address/combine in ITAAC 6.5, two of the generic ITAAC (i.e., 8.5 and 8.7) from Table C.II.2-B1, "Emergency Planning—*Generic Inspections, Tests, Analyses, & Acceptance Criteria (EP ITAAC)*," in Section 13.3, "Emergency Planning," of the NRC Draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)," September 2006 (ADAMS Accession No. ML061800499).

That is, the entry for ESP Plan ITAAC 6.5 (*EP Program Elements* column), and the entries for the *Inspections, Tests, Analyses and Acceptance Criteria* columns, correspond to DG-1145 generic ITAAC 8.7 and 8.5, respectively. Further there is no ESP Plan ITAAC 6.6 in

Table V2A3-1. Please explain the apparent discrepancies, and provide a revised ITAAC table, if appropriate (see also, RAI 13.3-10, RAI 13.3-15, RAI 13.3-40, RAI 13.3-45, and RAI 13.3-46). [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria I.6 and I.8]

RAI 13.3-10 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(14), Section IV.F.2 of Appendix E to 10 CFR Part 50)

In ESP Plan Table V2A3-1, "Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)," under Section 8.0, "Exercises and Drills," acceptance criterion 8.1.1 states: "[t]he exercise is completed within the specified time periods of 10 CFR Part 50, Appendix E; onsite exercise objectives identified in the scenario have been met."

Table C.II.2-B1, "Emergency Planning—*Generic Inspections, Tests, Analyses, & Acceptance Criteria (EP ITAAC)*," in Section 13.3, "Emergency Planning," of the NRC Draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)," September 2006 (ADAMS Accession No. ML061800499), provides the comparable generic acceptance criterion 12.2.1, which includes the additional words: "and there are no uncorrected onsite exercise deficiencies." Please explain the absence of these additional words in Unit 3 ITAAC acceptance criterion 8.1.1, and provide a revised ITAAC table, if appropriate (see also, RAI 13.3-9, RAI 13.3-15, RAI 13.3-40, RAI 13.3-45, and RAI 13.3-46). [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion N.1]

RAI 13.3-11 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(13))

ESP Plan Section M.4, "Exposure Monitoring," states that "[b]y determining the affected population (see Appendix 6) and by performing dose assessment calculations, including determination of the quantity of radioactivity released and release rate, VEGP personnel can estimate the population exposure, if necessary."

Explain how ESP Plan Appendix 6, "Evacuation Time Estimates for the Vogtle Electric Generating Plant Plume Exposure Pathway Emergency Planning Zone," which references a new evacuation time estimate (ETE) for the VEGP plume exposure pathway (produced by Innovative Emergency Management, Inc. (IEM)), would be used to determine the affected population, for purposes of dose assessment and estimating the population exposure following a radioactive release. Further, describe the ESP Plan's method for periodically estimating total population exposure. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion M.4]

RAI 13.3-12 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(9))

ESP application Section I.4, "Dose Assessment System," states on page I-3 that "[d]ata from the primary meteorological monitoring system can be accessed directly from the control room, TSC, and EOF, and are also available to NRC personnel and State representatives at the VEGP site" (emphasis added). This appears to limit access to meteorological data (by the NRC and State representatives) only from the primary system, and only at the VEGP site.

Describe the provisions to make (primary and backup) meteorological information available to an offsite NRC center. In addition, describe the provisions to make (primary and backup)

meteorological information available to the State(s), in order to permit independent analysis by the State(s) using facility-generated data. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion I.5]

RAI 13.3-13 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10))

ESP Plan Appendix 3, "Means for Providing Prompt Alerting and Notification of the Public," states on pages A3-1 to A3-2 that "[t]he siren system consists of a network of 47 rotating electronic sirens The locations and design coverage contours of the sirens are shown on Figure A3-1." A count of the siren locations on Figure A3-1, "60 and 50 dBC Design Coverage Contours," yields 46 sirens (including siren "SC1"), and there is no siren "B10" location shown on Figure A3-1. An additional siren is, however, shown near the VEGP site location, and is designated "VG1?" (the significance of the question mark ("?") is unclear). Please clarify the correct number and locations of the sirens, and provide a revised figure, if appropriate. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion J.10.c]

RAI 13.3-14 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10))

ESP Plan Table J-5, "Reception Centers/Shelters;" ETE Table 9, "Reception Centers;" ETE Figure 13, "VEGP Evacuation Network;" and ETE Figure 14, "VEGP EPZ Boundary, Evacuation Zones, and Reception Centers," include different numbers, names, and addresses for the identified reception centers/shelters. Specifically, the South Aiken High School street address on Table J-5 is not the same as that listed on ETE Table 9. Further, the Burke County High School name includes the word "Comprehensive" only on Table J-5. The Kennedy Middle School is listed on Table J-5, but is neither listed on Table 9 nor shown on Figures 13 and 14. Finally, Table J-5 lists the Allendale Elementary School, while the Allendale-Fairfax High School is listed on Table 9 and shown on Figures 13 and 14. Please clarify the inconsistencies, and provide revised tables and figures, if appropriate. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.10.a and J.10.h]

RAI 13.3-15 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(8), Sections III, IV.E, and VI of Appendix E to 10 CFR Part 50)

In Annex V2, Appendix 3, Table V2A3-1, "Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)," under Section 5.0, "Emergency Facilities and Equipment," acceptance criterion 5.1.6 states that "[t]he ventilation system includes a high efficiency particulate air and charcoal filter and radiation monitored are installed." Please clarify whether acceptance criterion 5.1.6 applies to the TSC, Operations Supports Center (OSC), or both. Also, should the word "monitored" be "monitors"?

In addition, acceptance criterion 5.1.7 states that "[a] reliable and back-up electric power supply is available." Clarify whether acceptance criterion 5.1.7 applies to the TSC, OSC, or both. If appropriate, provide a revised Unit 3 ITAAC Table V2A3-1 (see also, RAI 13.3-9, RAI 13.3-10, RAI 13.3-40, RAI 13.3-45, and RAI 13.3-46). [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion H.1]

RAI 13.3-16 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii),

10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the "Evacuation Time Estimates for the Vogtle Electric Generating Plant," Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

- a. The Evacuation Time Estimate (ETE) analysis was complete for existing conditions (2006) and the construction phase (2010), but does not include a post-construction operational analysis. Provide the basis for the selection of years 2006 and 2010 for the ETE analysis, and how this justifies the proposed 20-year permit duration.
- b. In several places throughout the document, the authors make the statement that there will be no significant change in the land-use pattern in the next four years, but give no basis for the assumption. Substantiate the statement that "no changes in land uses are anticipated."
- c. Section 2.3, "Sources of Data," states that the authors contacted "individual facilities" for information regarding population estimates, but the document does not specify what facilities were contacted. Section 3.0, "Population and Vehicle Demand Estimation," states that school data was obtained from GIS data and through contact with "individual facilities."³ Provide information regarding the facilities that were contacted for the ETE analysis.
- d. A review of aerial photographs of the general vicinity of protective action zone (PAZ) G-10 reveals what appears to be buildings located at what would be the extension of Brown Road where it crosses railroad tracks. These buildings appear to be associated with the Cowden Plantation. The ETE states that the plantation has "no resident population." However, the Cowden Plantation has a hunting lodge. It is difficult to determine from the aerial photos whether or not the buildings are located within the 10-mile EPZ, but they appear to be close. The hunting lodge was not mentioned in the ETE.

Verify the location of the hunting lodge, relative to the EPZ, and clarify whether it is (or is not) included in the emergency plans. Verify the transient population associated with the hunting lodge, and whether or not there is a resident population.

- e. The estimates provided for the transient population are insufficient. In the discussion of the recreational population, no mention is made of the hunting lodge at the Cowden Plantation (see discussion above) nor is information provided for the Yuchi Wildlife Management Area (WMA). An NRC reviewer contacted the State of Georgia Department of Natural Resources (DNR) and found that during the fall deer hunting season, there could be approximately 30-40 hunters located with the WMA on any given day. The WMA also provides access to the Savannah River for fishing via two boat ramps, has a firearms range and camping facilities. The DNR also manages a boat launch at Brier Creek with parking capacity for 30 vehicles. There is trout fishing all year

³There is one (private) school within the 10-mile EPZ (Lord's House of Praise Christian School), which is located approximately 10 miles west of the VEGP site (reference: SSAR Part 2, Section 13.3.1.2, "Area Population").

on the Savannah River, Brier Creek, and Big Brier Creek. Both the Aiken and Barnwell County emergency plans claim to potentially have 200 transient hunters/fishermen within their area at a given time (i.e., PAZs G-10 and H-10, respectively). The ETE provides no clear accounting of the sportsmen, how their population numbers were derived, or how they are distributed throughout the EPZ.

Provide a more detailed description of how the transient population numbers were derived. Include in the discussion the specific areas taken into consideration and how this population was mapped for purposes of the analysis.

- f. According to a conversation between an NRC reviewer and the Lord's House of Praise Christian School administrator, the school has its own transportation which it would use for an evacuation. The school would not be evacuating by county buses as stated in the ETE. The school consists of two facilities: a daycare and a K-12 school. Between the two facilities, there are currently 55 children/students and 16 staff members. The school population numbers are consistent with the ETE, but using their own transportation for evacuation would appear to change the analysis.

Clarify the discrepancy between the ETE assumption that buses will mobilize and drive to the school, and the information provided by the School Administrator that the school will provide its own transportation. (See also, RAI 13.3-23.d, RAI 13.3-29.e, and RAI 13.3-38.)

- g. Section 5.1.1 states that the alert and notification systems were evaluated based on descriptions found in the "emergency plans." The same section, page 42, states that the loading times for the Lord's House of Praise Christian School were modeled differently because they would have to await the arrival of county buses. Consistent with the resolution of the discrepancy discussed in 1.f, above, this should be corrected if the school will evacuate using its own transportation. State which emergency plans were used to evaluate the alert and notification systems. Clarify the expected response for the school, based on the method of alert.
- h. Section 6.1, "Summary of ETE Results," states that each PAZ had been assigned a set of evacuation routes by VEGP planners. Clarify whether the PAZ's have been confirmed, as presented in the ETE analysis. Clarify whether the counties provided input on the designation of evacuation routes, or if they only adopted the routes selected by VEGP planners. (See also, RAI 13.3-24.a.)
- i. A review of aerial photos of the site and surrounding area reveals numerous creeks and lakes or ponds in addition to the Savannah River. Based on the presence of an abundance of surface water in the area, one could assume that the ground water is relatively shallow. Provide details regarding the physical characteristics of the water system in the surrounding area, including a discussion of surface water features and flood-prone areas. Are there any known flood-prone areas? If so, discuss whether any such flood-prone areas could affect evacuation routes. If routes are affected, how was this considered in the analysis?
- j. There is no discussion regarding the presence of bridges on any of the evacuation routes. Provide the locations of bridges within the evacuation routes, and discuss any

potential impact that the bridges could have on traffic flow.

- k. It is difficult to follow which version of the VEGP Emergency Plan is referenced in the analysis. Several inconsistencies were noted regarding page numbers and appendices that are referenced. Clarify the version/revision of the emergency plan that was used as a reference for the ETE analysis. Also, identify any changes from the emergency plan version used for the ETE analysis, and revision 40 of the emergency plan, that was referenced, as applicable at the time of the ESP application, and that would impact the ETE. (See also RAI 13.3-6.a.)

RAI 13.3-17 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the "Evacuation Time Estimates for the Vogtle Electric Generating Plant," Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.1]

- a. A physical description of the site and surrounding land characteristics is not provided in the ETE analysis. There is no specific information provided as to the "physical characteristics" causing the egress problem cited in Section 6.2.1, "Evacuation Area 1: 0-2 Miles." The document does not consider the congestion "severe" even though the 2010 winter weekday, adverse weather scenario will increase the evacuation time for VEGP workers by 40%. (Section 7.1, "Confirmation of Evacuation," refers to the congestion as "substantial.") VEGP evacuation from the south route results in route "overload." Provide a general description of the site, surrounding land uses, and the physical characteristics causing evacuation congestion from the VEGP for both west and south routes.
- b. The VEGP SSAR, dated August 2006, states that "there are no physical characteristics, unique to the VEGP site, which poses a significant impediment to development of the revised emergency plans for the VEGP." However, the ETE analysis identifies two areas where traffic congestion is substantial, or results in evacuation route overload. The ETE does not specify the physical characteristics that cause the egress problems, other than noting that one of the south evacuation route roads is unpaved. Provide the reasoning used to determine that these impediments to evacuation are not significant.

RAI 13.3-18 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the "Evacuation Time Estimates for the Vogtle Electric Generating Plant," Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.1]

- a. There is no specific discussion regarding impediments to emergency planning and preparedness. In Section 8, the document draws the conclusion that based on data and results of the ETE analysis the existing evacuation strategy is functional "given the lack of severe congestion or very high ETEs." The document does not consider the

congestion at the VEGP identified in Section 6.2.1 “severe” even though the 2010 winter weekday, adverse weather scenario will increase the evacuation time for VEGP workers by 40%. Section 7.1 refers to this congestion as “substantial.” Evacuation from the south route in 2010 results in an “overload” of the route. This is evidently due to the fact that a portion of this route is unpaved. There is no discussion as to how the determination is made regarding the severity of congestion.

State the parameters used to make the determination regarding the severity of congestion. This discussion should ultimately be provided in Section 6.0, Analysis of Evacuation Times.

- b. Section 6.2.10 discusses the evacuation of VEGP using the south route. It gives the basis for using this route (wind direction), but does not indicate the probability of this occurrence based on wind direction patterns for the area. In the 2010 scenario, the ETE indicates that the evacuation route would be overloaded due to a portion of this evacuation route being unpaved. A specific type of adverse weather is not identified in the ETE analysis.

Provide information regarding the probability of using this route based on wind direction patterns, why the unpaved road is not considered an impediment, and the impacts that different weather conditions (e.g., torrential rain) would have on the usability of the unpaved road.

RAI 13.3-19 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the “Evacuation Time Estimates for the Vogtle Electric Generating Plant,” Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

Figure 1 provides a map showing the general location of the VEGP in Georgia in relation to the five surrounding states. Figure 2 provides a map depicting the EPZ boundary and associated protective action zones. In this figure, the transportation networks are hard to see and are not identified. The Savannah River is the only topographical feature identified. Counties are identified, although the two States (Georgia and South Carolina) are not. The Town of Girard is not identified.

Provide a map that includes the EPZ and associated PAZs, a clear depiction of the transportation networks with identification, significant waterways (large creeks, lakes, etc.), and identification of the States and the Town of Girard. Also, revise Figure 2, if appropriate.

RAI 13.3-20 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the “Evacuation Time Estimates for the Vogtle Electric Generating Plant,” Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

- a. Section 2.2 gives a brief description of the computer simulation model used to perform the ETEs (PTV Vision VISUM).⁴ Section 5.2 provides more detailed information regarding how the model uses data to project the ETEs. However, the underlying algorithms for VISUM, the parameters selected, or their sensitivity have not been provided or discussed.

Provide a discussion on the underlying algorithms used in the model, as well as the parameters used in the calculations and the sensitivity of the parameters. (See also, Section IV.B of Appendix 4 to NUREG-0654/FEMA-REP-1.)

- b. In reviewing literature received from a VISUM distributor, VISUM utilizes TRAFFIX,⁵ which calculates level of service at signalized and unsignalized intersections and on arterials using the 2000 Highway Capacity Manual (HCM) or one of the other 17 customizable methods supported. Section 2.3, Methodology, states that the roadway and intersection capacities were calculated using the HCM.

Clarify whether VISUM used the HCM application available in the TRAFFIX component of the model, and if HCM was used, clarify how it supports the evacuation analyses.

RAI 13.3-21 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the "Evacuation Time Estimates for the Vogtle Electric Generating Plant," Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

- a. The SSAR (submitted with the ESP application) population estimates are based on 1980 and 2000 census data. There is a 155-person difference between the 2010 estimates in the ETE and the SSAR. Though this represents just a 3.9 percent variance, the numbers in some of the sectors differ by as much as 74 percent. Large differences in population by sector can have an impact on loading of the different evacuation routes and change the ETEs. Even if these sectors were not actually used in the ETE model, which is not made clear, it is a discrepancy that should be addressed.

Review discrepancies between the SSAR and ETE with sector population numbers, and determine if the differences would impact the ETE analysis. Describe how the

⁴PTV Planning Transport Verkehr AG ("PTV" or "PTV AG") is a German company that provides technology for travel, traffic and transportation planning; including PTV Vision VISUM, which is an office package for transportation planning and office engineering (reference: <http://www.intertraffic.com>). PTV's wholly-owned subsidiary, PTV America, Inc., is a multi-disciplinary transportation software and consulting firm (reference: <http://www.ptvamerica.com>, visited 2/15/2007)

⁵TRAFFIX is an interactive computer program that enables planners and engineers to conduct traffic impact and forecast studies, and calculate level of service at critical signalized and unsignalized intersections and on arterials (reference: <http://www.traffixonline.com>, visited 2/15/2007).

population sectors relate to the evacuation areas.

- b. In Section 3.1.1, Auto-Owning Residents, it was assumed that one vehicle would evacuate from each permanent resident household. Based on population projections and estimates, 92 percent of the households within the EPZ have at least one vehicle per household. A vehicle occupancy rate of 3.0 was used. It is unclear which population projections and estimates were used to determine vehicle ownership or how that information was used to make the determination of 92 percent ownership versus 8 percent non-ownership.

Explain which population projections and estimates were used to determine vehicle ownership, and how that information was used to make the determinations of 92 percent ownership versus 8 percent non-ownership.

- c. Section 3.1.2, Non-Auto-Owning Residents, states, "The population projections and estimates indicate that 8 percent of the households within the EPZ do not own a vehicle." It is assumed that this population will evacuate with friends or relatives, or be evacuated through coordinated efforts by state and county emergency management officials. No data is provided on state and county emergency resources (i.e., personnel and vehicles) required to evacuate this population group. Further, no information is provided on the time required to mobilize the state and county resources to evacuate this population group.
Provide information regarding the State and local resources that will be used to evacuate non-auto-owning residents. Specify the time required to mobilize these resources. (See also RAI 13.3-29.c.)

(See also, RAI 13.3-42.)

RAI 13.3-22 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the "Evacuation Time Estimates for the Vogtle Electric Generating Plant," Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

- a. ETE section 3.2 states that the transient population is derived from "a combination of daytime populations, recreation populations, and employment data...the daytime populations incorporate employment and workforce information, such as county working-age population and unemployment statistics." The recreational population (hunting/fishing) was estimated "through conversations with the SNC emergency planning staff." The ETE states there are three public boat landings within the EPZ (though Figure 8-11 shows Grays Landing as outside the EPZ). A vehicle occupancy rate of 1.0 was used for the transient population. There is no source listed for the employment data. Without knowing the source and specificity of the data, it is difficult to ascertain if the workforce population is accurately represented as mapped. Section 3.3 (Special Facilities) of the ETE mentions inclusion of employment data. Discussions in the transient and special facilities populations sections both include information regarding workforce populations.

Provide information regarding the source of employment data and how the data was used in the analysis, including assignment of the employment numbers to sectors. In addition, discuss whether (and, if so, how) employment data was used for transient and/or special facility population estimates).

- b. The Burke County EMRP plan shows four (public and private) boat launches within the EPZ, as opposed to three, and associates 200 transients with these boat launches. Figures in the VEGP emergency plan (dated August 2006) show six boat launches within the EPZ. The Aiken and Barnwell emergency plans claim to potentially have 200 transient sportsmen in each of their areas (consistent with what is presented in the ETE). None of the documents specifies how these population numbers were derived. With the exception of zones G-10 and H-10, the total number of sportsmen or their distribution within the EPZ is not clear. There is no mention of the Cowden Plantation hunting lodge nor the Yuchi WMA. Comparing the boat launches in the ETE, the emergency plan, and the County plan, the names and locations of the boat launches do not all match. Using consistent terminology among all emergency planning documents is critical for clear communication during an emergency.

Reconcile the locations and names of boat launches. Specify how the number of sportsmen was determined, and ensure that the ETE provides an accurate portrayal of this population. Explain the two-person change in sectors NW and WSW between 2006 and 2010 as stated in Table 6 in section 3.2 of the ETE.

- c. No basis was given for the 1.0-person vehicle-occupancy rate. Provide the basis for the vehicle-occupancy rate of 1.0 for the transient population.

RAI 13.3-23 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

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- a. The ETE identifies two special facilities within the EPZ (VEGP and the Lord's House of Praise Christian School) but states that the "modeled population for the ETE estimates were not limited to these large facilities only. It included employment from all businesses for which Innovative Emergency Management, Inc. (IEM) had relevant information." The ETE classifies special facilities as "employers, schools, or other facilities with more than 50 employees or residents."

Provide information regarding the origin of the document's definition of special facilities. Provide information (name of business, number of employees, location) for the other businesses for which data was obtained, and explain how this information was used in the analysis. Clarify if these businesses were included in the transient count or in the special facility count (if they were considered in the special facility count, they do not appear to be represented in Table 8 or Figure 12). Identify if there are other large facilities/businesses (those with 50 employees or residents, by the document's

definition) within the EPZ, other than those “for which IEM had relevant information.”

- b. The 2006 employee population for VEGP is not stated, though it can be extrapolated from Table 8 and is listed in Figure 12 for year 2010. Based on Table 8, it appears that one must assume the VEGP population remains the same with the exception of the addition of construction workers. Provide within the text, the VEGP employee population for both 2006 and 2010, and provide the basis for the future employee projections.
- c. The ETE makes the distinction of the 94 temporary workers living within the EPZ, but they are not listed in Table 8 as part of the special facility population. Clarify whether the 94 temporary workers were included in the ETE analysis, as part of the special facility population. Clarify whether there will be times when some of the 94 are at the VEGP, rather than their temporary home. Clarify the vehicle occupancy rate for these workers (from their temporary homes).
- d. According to the ETE analysis, the Lord’s House of Praise Christian School consists of approximately 50 students and 20 teachers and staff. Students are assumed to evacuate via two buses, with the remaining school population evacuating in their own cars with an occupancy rate of 1.0.

Provide modeling information (or results) for evacuation of the school, based on the assumption that the school will use its own vehicles for transportation. (See also, RAI 13.3-29.e, RAI 13.3-16.f, and RAI 13.3-38.)

RAI 13.3-24 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the “Evacuation Time Estimates for the Vogtle Electric Generating Plant,” Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

There is no specific statement that the inner adjacent sectors would evacuate simultaneously with the outer sectors. However, text within the discussion of results leads to the conclusion that it was assumed in the analysis. The sub-areas are further divided by political boundaries and physical features into 13 PAZs, consistent with the VEGP EP, 2006 public outreach calendar, and the Burke County EMRP. ETEs for these areas, as well as the entire EPZ, are provided in Table 11, “ETEs in Minutes,” and discussed in Section 6.2. The majority of scenarios analyzed in the document are based on a wind direction of 325° range between 55° to 20°. An alternative south route evacuation for VEGP would be implemented if the wind direction were within the remaining 35° range from 20° to 55°. There are no maps within the document specifically related to the differing wind direction scenarios. There is no map that depicts the sub-areas, though they are described in Table 2. Since these sub-areas (called evacuation areas within the ETE) were used for the analysis, they should be depicted on a map. The special facilities are located on a separate map which also includes the PAZs, but not sub-areas. There are no roads identified on this map. Therefore, the facilities are identified only as to their approximate physical location relative to VEGP. Populations by sector (each 22.5°) are depicted in Figures 4, 5, 8, and 9. Information is provided separately for permanent and

transient populations for the years 2006 and 2010 (not provided by sector for special facilities). Figures 6, 7, 10, and 11 present population numbers by PAZ for permanent and transient populations for the years 2006 and 2010. Figure 12 presents population numbers for special facilities for the year 2010. The population by sector figures all include a table providing population totals by ring miles and the cumulative population. Provide a map depicting wind directions, as applicable to the analysis. Provide a map that depicts the sub-areas. Figure 12 should also include the sub-areas.

RAI 13.3-25 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the "Evacuation Time Estimates for the Vogtle Electric Generating Plant," Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.l.]

- a. The addresses and associated evacuation routes of the three reception centers are presented in Table 9, "Reception Centers," and their locations are shown in Figure 13, "VEGP Evacuation Network." Each facility is identified as a high school in the table. There is no information presented regarding each facility's capacity or its distance outside of the EPZ (other than "well beyond the 10-mile EPZ"). Provide information regarding each of the evacuation facilities (reception centers). This should include the facility name, location, type, and capacity. Provide the distance each facility is located outside of the EPZ.
- b. The evacuation road network is discussed in Sections 4.0-4.3 of the ETE analysis. The document states that IEM drove the evacuation routes to ensure the accuracy of information regarding the physical state of the roads. Differences between information in the calendar, NAVTEQ data,⁶ and existing field conditions were noted and incorporated into the analyses, as appropriate. The document does not provide specific travel times listed by corridor. In addition, it does not state if any observations were made regarding whether there are potential locations for serious congestion. Provide a physical description of congestion areas, including the cause of the congestion.
- c. Section 4.0, "The Evacuation Roadway Network," states that specific network attributes (including pavement width, road constraints, shoulder type/width, bridge locations, intersection lane channelization, intersection queuing capacities, specific locations of traffic signals and controls, locations of stop signs and turns, surrounding land use patterns, and changes in highway geometry) were reviewed during a field trip, or by using a Global Positioning System. Provide the results of these reviews, which address the specific network attributes identified in Section 4.0.

RAI 13.3-26 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

⁶NAVTEQ is a company that provides digital map data (i.e., NAVTEQ data), which are highly accurate representations of detailed road networks; available onboard most navigation-enhanced vehicles (i.e., in-vehicle navigation systems) produced in North America and Europe (reference: www.navteq.com).

Please provide the following information regarding the “Evacuation Time Estimates for the Vogtle Electric Generating Plant,” Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

A map of the VEGP evacuation network is provided in Figure 13. However, segments of the network are not numbered, and all roads and evacuation sectors/areas are not identified. Provide a map (or revise Figure 13) to include identification of all roads, numbered segments, and sectors/areas. This revision may necessitate a larger-scale map than the one provided in Figure 13.

RAI 13.3-27 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the “Evacuation Time Estimates for the Vogtle Electric Generating Plant,” Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

- a. Provide information regarding the capacity of each roadway segment and the narrowest section of each roadway. Discuss any special conditions that may affect roadway capacity, and address whether the roads are uniform. In addition, identify the “type” of each roadway, such as freeways, expressways, urban streets, or rural highways. Discuss how this information was used in the ETE analysis.
- b. Appendix C, “Evacuation Network Links (Detailed Information),” appears to present the lane numbers for one direction only. According to Table 1, “Example of Roadways Characteristics,” of Appendix 4 to NUREG-0654/FEMA-REP-1, the number of lanes should represent the “total number of through lanes in both directions.” Provide information related to the “total number of through lanes in both directions.”

RAI 13.3-28 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the “Evacuation Time Estimates for the Vogtle Electric Generating Plant,” Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

- a. Table 11, “ETEs in minutes,” presents results of the analysis according to evacuation area and PAZs impacted. Evacuation times are presented for the years 2006 and 2010, and are analyzed according to day, night, and weekend time periods, and fair and adverse weather conditions (per evacuation area). Table 11 does not present the information, as depicted in Table 2 of Appendix 4, with the exception of segregating the data by 2-, 5-, and 10-mile radii, and providing data for normal and adverse weather conditions. Results are not differentiated by population group (e.g., permanent or transient). Table 11 does not present information regarding evacuation capacity. The characteristics for the “adverse” weather are not specified. Since the adverse weather

conditions are not specified, no adverse weather frequency is identified. Section 2.1 identifies the speed limit reduction and road capacity reduction factors, which appear to be reasonable for most adverse weather. However, the type of adverse weather (e.g., ice storms, severe rain, etc.) is not mentioned; such that the reduction capacities cannot be verified.

Provide specific information regarding the type of adverse weather condition that was used in the analysis, and the reasoning behind the selection of that weather condition (so that reduction capacities can be verified). Discuss the weather condition's characteristics, and how its severity relates to the sensitivity of the analysis. Provide the frequency of the adverse weather, as used in the ETE, and discuss whether it differs for each scenario.

- b. The ETE includes development of time estimates for winter weekday, winter weeknight, and fall weekend scenarios. There is no discussion regarding the basis for not assessing a summer scenario when children are not in school, which may present some unique considerations. Explain why a summer scenario was not included in the analysis.
- c. Section 2.4 (winter weekday scenario) states that residents will evacuate from their place of residence. This assumption does not capture the working public who may be at work and return home to evacuate as a family unit, or those members of the public who are not at home (possibly shopping, etc.) at the time of the warning. Additional information should be considered regarding the trip generation times required to get from work to home (evacuating as a family unit is assumed in the fifth assumption in Section 2.1). Provide additional information regarding trip generation time for people at work, who would go home and evacuate as a family unit.
- d. An estimate is necessary for the number of households that have one vehicle at work, and would need the vehicle to return home to evacuate the family unit. This will affect the total evacuation time estimate. Provide an estimate of the number of households having one vehicle and also provide the basis for this estimate.
- e. For the winter weekday scenario, it is assumed that school is in session. There is no discussion on the number of students living within the EPZ, and whether these students attend school outside of the EPZ. For example, there are 50 students identified for the Lord's House of Praise Christian School, but no discussion on whether these students live within the EPZ. More information is necessary to assess the ETE for the winter weekday scenario where school is in session.

Provide information on the number of students who reside within the EPZ, and whether or not they attend school within the EPZ.

- f. Based on the questions provided in RAI 13.3.28(c)-(e), please provide the information on the trip generation time which is necessary to assess the ETE for the winter weekday scenario where school is in session, people are at work or out of the house, and may need to return home to pack up, secure the home, and then evacuate.
- g. It is difficult to discern if the total population was analyzed using (in total) residents, special facilities, transients, and the construction crew. There is no table referencing the

total population assessed, and no related table that identifies the total number of vehicles required for the population. Provide a table that references the total population assessed in the ETE. Provide data on the total number of vehicles that are modeled for the ETE.

RAI 13.3-29 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the "Evacuation Time Estimates for the Vogtle Electric Generating Plant," Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.l]

- a. Section 5.2.1 discusses vehicle demand, but does not mention if the roadways are assumed to have vehicles on them when the evacuation begins (background traffic). Background traffic refers to vehicular traffic within the network that is not included in the traffic demand from the evacuating EPZ. Traffic congestion (backup) was identified for the VEGP in two scenarios, but neither point of congestion was indicated on a map.

Provide the input values used for the background traffic in the ETE analysis. Provide a map that depicts the two points of congestion (backup) identified by the ETE analysis. Include an estimate of delay times.

- b. No specific ETE is provided for the non-car-owning population. Since they share a vehicle occupancy rate with the car-owning population, it is assumed the evacuation time for the permanent resident population represents both groups. However, the text does not state that assumption. Clarify that the non-car-owning population is considered in the ETE.

- c. The Burke County EMRP states that County school buses will be available for those lacking personal transportation. The county EMRP also makes provisions for handicapped/non-ambulatory persons requiring special modes of transportation. This population is not discussed in the ETE. The County maintains a roster of individuals living within the EPZ and information on special needs persons. Section 3.1.2 of the ETE states that 8 percent of households within the EPZ do not own a vehicle.

Provide the basis for the 8 percent non-car-owning households, and specify the number of people associated with the 8 percent value. Specify the time required to mobilize the State and county emergency resources required to evacuate the non-car-owning population. (See also, RAI 13.3-21.c.)

- d. Attachment H of the Burke County EMRP states that special vehicles will be dispatched to the homes of handicapped individuals. No data is provided on the number of these individuals, nor on the time required to mobilize these resources and evacuate the individuals. No data is provided to determine if enough vehicles are available, such that this evacuation could be conducted in one trip, or if specialized vehicles require return trips.

Provide data on the number of non-ambulatory individuals requiring special transportation, and the time required to mobilize emergency resources and evacuate the

individuals. Determine how many trips would be required to evacuate the non-ambulatory population.

- e. Evacuation times for the two special facilities (i.e., VEGP and Lord's House of Praise School) are discussed in Section 6.2 of the document. VEGP ETEs are discussed in each of the evacuation scenarios because the plant is located within the center of the 10-mile radius and, therefore, will evacuate under all scenarios. ETEs for the two facilities are not presented individually. ETEs for VEGP include other populations living and working within the 2-mile radius. There is no discussion regarding persons delaying their evacuation to "shut down" or otherwise stabilize the VEGP.

Regarding the Lord's House of Praise Christian School, the assumption was made that the student evacuation would require the use of County buses, and that they would have to wait 40 minutes for the buses to arrive and be loaded. The teachers would leave in their own vehicles once the buses depart. Because of the delay in evacuation, the school's loading times were modeled differently (Section 5.1.1). In Section 6.2.6, the document states "the school is located just inside the 10-mile boundary, so its evacuees reached the EPZ boundary before some of those from other areas, which had no impact on the ETEs."

An NRC reviewer called the school administrator, and was told that the school has its own transportation, and that in the case of a "catastrophic event" the school would evacuate the students using school transportation. The school administrator also stated that the school has its own emergency evacuation plan. The Burke County EMRP does not recognize the school's existence, and states that there are no schools within the 10-mile radius.

Clarify how the evacuation time for the special facilities relates to the total evacuation time. (See also, RAI 13.3-16.f, RAI 13.3-23.d, and RAI 13.3-38.)

RAI 13.3-30 (Regulatory Basis: 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(10), Section IV of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the "Evacuation Time Estimates for the Vogtle Electric Generating Plant," Enclosure 10 to the Vogtle ESP application (AR-06-1721), dated April 2006. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

- a. In Section 7.1, the document assumes that the confirmation process will be completed concurrently, with the evacuation process for the year 2006 analysis. However, due to "substantial" congestion in 2010, it is recommended that confirmation be conducted after the evacuation is complete. As stated in the ETE, the Burke County EMRP states that the "Burke County Sheriffs Department and supporting law enforcement agency personnel" will travel the roadways and use boats along the river and its tributaries, in order to ensure that all affected populations have evacuated. There is no time estimate for confirmation. Section 7.1 states that the actual time for confirmation would be dependent on personnel and equipment available at the time, and that the resources "may change significantly" under various conditions. Though the document indicates that Burke County will be responsible for confirming evacuation, the Burke County

EMRP states that “officials from Plant Vogtle will advise Burke County Emergency Operation Coordinator (EOC) when evacuation is confirmed at the plant site.” Therefore, VEGP is responsible for confirming evacuation of the plant itself.

Provide a time estimate for confirmation of evacuation. Provide a statement that the VEGP is responsible for confirmation of plant evacuation, and how VEGP will notify Burke County.

- b. Discuss whether State and local agencies have reviewed the draft ETE, and have provided comments.

RAI 13.3-31 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v), 10 CFR 50.47(a), 10 CFR 50.47(b), Section III of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the offsite radiological emergency response plans. (The docketed application must include the complete offsite plans, in support of the findings and determinations made by the Federal Emergency Management Agency.⁷)

Identify whether any additional areas within the 10-mile plume exposure pathway EPZ have become incorporated since the 2000 census. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.I, and J.10.m]

RAI 13.3-32 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v), 10 CFR 50.47(a), 10 CFR 50.47(b), Section III of Appendix E to 10 CFR Part 50)

Please provide the following information regarding the offsite radiological emergency response plans.

The 2005 version of the Georgia radiological emergency preparedness plan excludes response to a terrorist event. Provide plans for response to a terrorist event at the VEGP. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion J.9]

RAI 13.3-33 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v), 10 CFR 50.47(a), 10 CFR 50.47(b), Section III of Appendix E to 10 CFR Part 50)

In regard to the offsite radiological emergency response plans, provide the following reference material, which is cited in the Georgia Radiological Emergency Plan:

- a. DNR-EPD procedures and maps
- b. OHS-GEMA REP resource contacts SOP
- c. SOP 3-5

⁷The Federal Emergency Management Agency (FEMA) is an agency within the Department of Homeland Security (DHS).

d. Georgia State Communications Plan

RAI 13.3-34 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v), 10 CFR 50.47(a), 10 CFR 50.47(b), Section III of Appendix E to 10 CFR Part 50)

In regard to the offsite radiological emergency response plans, provide the expected arrival times of FRMAC assets and other Federal support. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria A.2.a and C.1.a]

RAI 13.3-35 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v), 10 CFR 50.47(a), 10 CFR 50.47(b), Section III of Appendix E to 10 CFR Part 50)

In regard to the offsite radiological emergency response plans, provide the following information referenced in the South Carolina Operational Radiological Emergency Response Plan (SCORERP) and/or the South Carolina Technical Radiological Emergency Response Plan (SCTRERP):

- a. provide copies of maps that are referenced in the SCTRERP;
- b. describe the plan for distribution of potassium iodide (KI) to the public;
- c. provide printed copies of charts, attachments, and appendices that are referenced in the South Carolina county plans;
- d. provide the South Carolina State Communications Plan;
- e. clarify how observations and comments are evaluated by State and local agencies, and how emergency preparedness changes are implemented (i.e., corrective action methodology);
- f. identify the designated persons (by title) responsible within each organization for overall emergency preparedness planning, and for coordinating the development and updates for the radiological emergency preparedness (REP) plans;
- g. describe the procedure used to periodically estimate total population exposure, in the event of a radiological release from a reactor site; and
- h. provide letters of agreement (including signature pages), current at the time of the application, between offsite response organizations and other organizations referenced in the plans.

RAI 13.3-36 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v), 10 CFR 50.47(a), 10 CFR 50.47(b), Section III of Appendix E to 10 CFR Part 50)

In regard to the offsite radiological emergency response plans, provide the following information regarding the Georgia Radiological Emergency Plan:

- a. describe the testing of communications systems (i.e., methods and procedures);
- b. describe field monitoring capabilities, organic to the State of Georgia;
- c. describe the methods and procedures for dealing with potential (or actual) impediments to the use of designated evacuation routes (e.g., seasonal impassability of roads); including contingency measures;
- d. identify the designated person (by title) responsible for training, including scheduling and conducting medical drills in support of the VEGP site;

- e. clarify how observations and comments are evaluated by State and local agencies, and how emergency preparedness changes are implemented (i.e., corrective action methodology);
- f. identify the designated persons (by title) responsible within each organization (including Georgia Emergency Management Agency (GEMA), DNR, Burke County, etc.) for overall responsibility for emergency preparedness planning, and for coordinating the development and updates for the REP plans;
- g. describe the procedure used to periodically estimate total population exposure, in the event of a radiological release from a reactor site; and
- h. provide letters of agreement (including signature pages), current at the time of the application, between offsite response organizations and other organizations referenced in the plans.

RAI 13.3-37 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.34(b)(6)(v), 10 CFR 50.47(b)(8), 10 CFR 50.54(q), Sections III, IV.E, and VI of Appendix E to 10 CFR Part 50)

In Part 5 ("Emergency Plan") of the Vogtle ESP application, Section H.1.1, "Technical Support Center," states that the TSC will be located in the lower level of an administration building sited between the Unit 2 and 3 power blocks within the VEGP Site protected area, as shown on Figure ii, "Vogtle Electric Generating Plant Site Plan," and will be common to all four VEGP units. In addition, in SSAR Part 2, section 1.1, "Introduction," the applicant states that SNC has selected the Westinghouse AP1000 certified reactor design for the VEGP ESP application.

Explain the intended role that the TSC will provide in regard to mitigation strategies for events that could potentially result in the loss of large areas of the plant due to explosions or fire for the planned new units. For example, do mitigating strategies for the new Units 3 and 4 have any reliance on the TSC?

(See also, RAI 13.3-6.d.) [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion H.1.]

RAI 13.3-38 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v), 10 CFR 50.47(a), 10 CFR 50.47(b)(10), Sections III, IV.B and IV.C of Appendix E to 10 CFR Part 50)

In regard to the ETE, RAI 13.3-16.14.e addressed special facilities, including the Lord's House of Praise Christian School, and stated the following:

Regarding the Lord's House of Praise Christian School, the assumption was made that the student evacuation would require the use of County buses, and that they would have to wait 40 minutes for the buses to arrive and be loaded. The teachers would leave in their own vehicles once the buses depart. Because of the delay in evacuation, the school's loading times were modeled differently ([ETE] Section 5.1.1). In [ETE] Section 6.2.6, the document states "the school is located just inside the 10-mile boundary, so its evacuees reached the EPZ boundary before some of those from other areas, which had no impact on the ETes."

An NRC reviewer called the school administrator, and was told that the school has its own transportation, and that in the case of a "catastrophic event" the

school would evacuate the students using school transportation. The school administrator also stated that the school has its own emergency evacuation plan. The Burke County EMRP does not recognize the school's existence, and states that there are no schools within the 10-mile radius.

Please explain and resolve these apparent discrepancies, including the school's location. Also, address the need for changes/corrections to the existing State and county emergency plans – as well as the school's emergency evacuation plan – in support of emergency preparedness and response associated with the VEGP site. (See also, RAI 13.3-16.f, RAI 13.3-23.d, and RAI 13.3-29.e.) [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.d, J.10.g, and J.10.i.]

RAI 13.3-39 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(1), Sections III and IV.A of Appendix E to 10 CFR Part 50)

Part 5 of ESP Plan, Section A.10, "Concept of Operations," states that "[t]he Federal agencies which may be requested by the VEGP Site to provide assistance can be notified by contacting the NRC on a dedicated communication link, the Emergency Notification System line." In contrast, ESP Plan Section C.2, "Federal Government Support," states that "[r]equests for Federal assistance will be directed, as needed, by the emergency director, and usually these request will be channeled through the GEMA." Please clarify these apparent inconsistent statements. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria A.2.a, C.1.a]

RAI 13.3-40 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(6), Sections III, IV.D, and IV.E of Appendix E to 10 CFR Part 50)

ESP Plan Table V2A3-1, "Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)," under Section 3.0, "Emergency Communications," does not provide for direct communications between the control room and principal State and local EOCs, and radiological field assessment teams (see DG-1145 Table C.II.2-B1, generic acceptance criterion 5.1). Please explain why such direct control room communications are not included in the application ITAAC acceptance criterion 3.1.

Further, will the proposed new reactors have separate control rooms for Unit 3 and Unit 4, or will the two units share a common control room? If there are two separate control rooms for the two units, explain how all of the control room related generic ITAAC in DG-1145 Table C.II.2-B1, as reflected in the application's Unit 3 ITAAC in Table V2A3-1 and Unit 4 ITAAC in Table V2A4-1, are satisfied. For example, explain why Unit 3 ITAAC acceptance criterion 3.1 includes communications with various offsite agencies, while Unit 4 ITAAC acceptance criterion 3.1 does not.

Explain why Unit 3 ITAAC acceptance criterion 3.1 provides offsite agency and radiological monitoring team communications with the TSC, but does not provide for such communications with the control room, OSC, or EOF? Also, explain why Unit 3 ITAAC acceptance criterion 3.2 includes an access port for the emergency response data system, while Unit 4 ITAAC acceptance criterion 3.2 does not. Please address any additional ITAAC in the application that have such variances between Unit 3 and Unit 4, relating to separate control rooms.

(See also, RAI 13.3-9, RAI 13.3-10, RAI 13.3-15, RAI 13.3-45, and RAI 13.3-46.) [Reference:

NUREG-0654/FEMA-REP-1 Evaluation Criterion F.1]

RAI 13.3-41 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(6), Sections III, IV.D, and IV.E of Appendix E to 10 CFR Part 50)

ESP Plan Section F.8, "Communications Systems Tests," does not address the communication systems associated with the Operations Support Center (OSC). Please explain. [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criterion F.3]

RAI 13.3-42 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(10), Section IV of Appendix E to 10 CFR Part 50)

The Executive Summary of the IEM April 2006 evacuation time estimate (ETE) states the following (emphasis added):

The total permanent resident populations within the 10-mile EPZ for VEGP are estimated to be 3,017 for 2006 and 3,224 for 2010. This population is broken down by protective action zone (PAZ) and by sector and ring within the report. There is not a major change in the permanent population figures because the power station is located in a densely-wooded rural area, and no significant change in the land-use pattern is expected around the plant in the next four years.

ETE Section 3.0, "Population and Vehicle Demand Estimation," states that "Synergos Technologies^[8] provided general estimates for 2010 population projections," and that "[t]he population projections and estimates indicate that 92% [percent] of the households within the EPZ have at least one vehicle-per-household." Further, "[t]he transient population for the VEGP EPZ area is derived from a combination of daytime populations, recreation populations, and employment data," and "[f]or the 2010 VEGP workplace estimates, IEM worked closely with the SNC emergency planners to get workforce and construction workers estimates. By 2010, the SNC emergency planning staff estimates that 3,045 construction workers will be onsite." In Table 8, "2006 and 2010 Special Facility Population," the Lords House of Praise Christian School population for both 2006 and 2010 is 70 (reflecting 50 students and 20 teachers and staff). Finally, ETE Figure 9, "2010 VEGP Sector and Ring Transient Population Map," indicates a cumulative population total of 753 for the 2010 transient population within the 10-mile EPZ.

The ETE, therefore, indicates that the 2010 projected total resident population (3,224) and transient population (753) for the 10-mile EPZ is 3,977 (i.e., 3224 + 753 = 3977). In comparison, SSAR Part 2, Section 2.1.3, "Population Distribution," indicates in a table in subsection 2.1.3.1, "Resident Population Within 10 Mi," that the 2010 projected resident and transient population for the 10-mile EPZ for the year 2010 is 3,822. Please clarify this apparent discrepancy in projected population numbers. In addition, SSAR 13.3.1.2, "Area Population," states that the total peak transient population is estimated to be 750 (IEM 2006). ETE Figure 8,

⁸Synergos Technologies, Inc. is a desktop mapping software and data (products) innovator, service provider, consultant and developer (reference: <http://www.synergos-tech.com>, visited 2/19/07).

“2006 VEGP Sector and Ring Transient Populations Map,” indicates a cumulative transient population total of 751. Please clarify.

The sources of information and methodology used to project future populations within the 10-mile EPZ are unclear. For example, ETE Section 2.3, “Sources of Data,” states that “[p]opulation estimates were based on data obtained from Synergos Technologies, contact with individual facilities, and discussions with the SNC emergency planning staff.” Further, ETE Section 3.0 states that Synergos Technologies provided general estimates for 2010 population projections, and that the same calculations and assumptions used in calculating 2006 population figures were applied to derive the 2010 population figures.

In comparison, SSAR Part 2, Section 2.1.3 states the following:

The population projections for 2010, 2020, 2030, 2040, and 2070 have been estimated by calculating an annualized growth rate using the 1980 and 2000 census data (by county) as the base (USCB 1990a, 2000a). . . . The 1980 and 2000 population distributions for each county considered in Georgia and South Carolina were obtained from the U.S. Census Bureau and used to calculate a growth rate over 20 years (USCB 1990a, 2000a). Each county growth rate was annualized and used to project future populations within each sector, taking into account the percentage of each sector that each county occupied.

Please clarify the sources of information and methodology used to estimate growth predictions for the 10-mile EPZ.

The Section 2.1.3 statement (above): “taking into account the percentage of each sector that each county occupied,” implies that the populations were considered uniformly distributed throughout each of the counties that impact the 10-mile EPZ. Please provide the percentage of each of the counties that fall within the 10-mile EPZ. For these counties, justify the assumption of a uniform population within each county for estimating growth – including how this comports with the statement in the ETE Executive Summary (above) that “the power station is located in a densely-wooded rural area, and no significant change in the land-use pattern is expected around the plant in the next four years” (i.e., 2006 to 2010).

Using a uniform distribution approach, the future growth in towns within the counties would increase the average population within those portions of the counties within the 10-mile EPZ. In contrast, the statement that “no significant change in the land-use pattern is expected around the plant,” would keep the average population relatively constant. Finally, how does this apparent conflicting approach to population projections affect the results of the ETE?

(See also, RAI 13.3-16 through RAI 13.3-30.) [Reference: NUREG-0654/FEMA-REP-1 Evaluation Criteria J.8, J.10.I, and J.10.m]

RAI 13.3-43 (Regulatory Basis: 10 CFR 52.17(b)(3))

SSAR Part 2, Section 13.3.5, "Contacts and Agreements," states the following:

Table 13.3-3 identifies the agencies in which SNC maintains current letters of agreements or contracts with, including the point of contact for each agency, with the exception of communication agencies. Agreements with communication agencies will be transferred to the respective State and/or local emergency plans.

Please explain what this means, in regard to the exceptions of communication agencies, and agreements being transferred to the respective State and/or local emergency plans.

RAI 13.3-44 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(5), Sections III and IV.D of Appendix E to 10 CFR Part 50)

Part 5 of the ESP Plan states in Section E.2, "Notification of State and Local Response Personnel," that Figure E-1, "Example of Initial Emergency Message for [State] and Local Response Agencies," presents the sample initial message form for making notifications to [the] response centers, and that this form has been developed in conjunction with appropriate offsite agencies.

Figure E-1 does not reflect the proposed Units 3 and 4, and the application does not contain information relating to offsite agencies' participation in the form's development. Please provide a revised Figure E-1, if appropriate, and evidence of offsite agencies' participation in its development. Further, identify on Figure E-1 and Figure E-2, "Example of NRC Event Notification Worksheet," those aspects of the forms that relate to the unique design characteristics of the Units 3 and 4 reactors, if appropriate; e.g., EALs.

RAI 13.3-45 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(8), 10 CFR 50.54(q), Sections III, IV.E, and VI of Appendix E to 10 CFR Part 50)

Part 5 of the ESP Plan, Appendix 7, "Emergency Operations Facility," states in subsection A7D, "Emergency Facilities and Equipment," that "[p]lant systems information, radiological data, and meteorological data are provided via the SNC integrated data display system to EOF personnel" The application does not address such information display systems relevant to the proposed Units 3 and 4. In addition, the application does not address EOF communications equipment specific to Units 3 and 4.

In DG-1145 Table C.II.2-B1, generic ITAAC acceptance criteria 7.2.3 and 7.2.4 would serve to address this type of required information. The application's proposed ITAAC in Table V2A3-1 and Table V2A4-1 (for Units 3 and 4, respectively) do not include comparable unit-specific ITAAC. Please clarify the absence of this information, and provide revised proposed ITAAC tables, if appropriate.

(See also, RAI 13.3-9, RAI 13.3-10, RAI 13.3-15, RAI 13.3-26, and RAI 13.3-46.)

RAI 13.3-46 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(8),

10 CFR 50.47(b)(9), Sections III, IV.B, IV.E, and VI of Appendix E to
10 CFR Part 50)

The staff reviewed ESP Plan Table V2A3-1 and Table V2A4-1, which provide the application's proposed Unit 3 and Unit 4 ITAAC, respectively, against DG-1145 Table C.II.2-B1, and has the following questions:

- a. Unit 3 acceptance criterion 5.1.3: It appears that the reference to "Table Annex V2-1, Post Accident Monitoring Values," should be to Table Annex V2H-1, "Post Accident Monitoring Variables. Please clarify.
- b. Unit 3 acceptance criterion 6.1 states, in part, that "simulated degraded plant conditions are assessed and protective actions are initiated as outlined in the drill scenario." (Emphasis added.) Should "protective actions" be "protective action recommendations"? Please clarify.

The comparable generic acceptance criterion 8.1 in DG-1145 Table C.II.2-B1 states that "[t]he means exists to provide initial and continuing radiological assessment throughout the course of an accident. [The COL applicant will identify specific capabilities.]" (This COL applicant action also applies to an ESP applicant that proposes complete and integrated emergency plans; as is the case for the Vogtle ESP application.)

Acceptance criteria are objective criteria that can be demonstrated to have been met prior to fuel load. The acceptance criteria must be specific and sufficiently objective, in order to clearly identify what the requirements are, and to provide the ability to determine whether they have been met. The comparable generic acceptance criterion 6.1 calls for "specific capabilities," and the applicant is given flexibility to determine what they are. In this case, the proposed ITAAC acceptance criterion statement "as outlined in the drill scenario" is not sufficient in that it does not "identify specific capabilities." As currently written, the proposed acceptance criterion identifies an undefined drill scenario, which would "outline" an assessment of simulated degraded plant conditions and initiated protective actions. Please provide a revised acceptance criterion 6.1, which identifies specific capabilities to perform accident assessment.

- c. Unit 3 acceptance criterion 1.1 includes the TSC and EOF, while Unit 4 acceptance criterion 1.1 does not. In addition, Unit 3 acceptance criterion states that "[t]he ranges encompass the values specified in the EAL scheme," while Unit 4 acceptance criterion states that "[t]he ranges encompass the values specified in the emergency classification and EAL scheme." (Emphasis added.) Please clarify this apparent discrepancy. (See also, DG-1145 Table C.II.2-B1, generic ITAAC acceptance criterion 3.1.)
- d. Unit 3 acceptance criterion 3.1 includes communications with the State, counties, and radiological monitoring teams, while Unit 4 acceptance criterion 3.1 does not. Please clarify this apparent discrepancy.
- e. Explain why there are no Unit 4 ITAAC comparable to Unit 3 ITAAC 5.1 (for the Unit 4 OSC); Unit 3 ITAAC 6.1 through 6.7; Unit 3 ITAAC 8.1; and Unit 3 ITAAC 9.1.
- f. Unit 3 acceptance criterion 6.4 states that "[t]he test will be successful upon meeting the

acceptance criteria listed in the test procedure.” A reference to acceptance criteria located somewhere else (e.g., in a yet-to-be written test procedure) is not sufficient. The purpose of the ITAAC acceptance criteria column is to provide the specific acceptance criteria; not an undefined reference elsewhere. See RAI 13.3-47.b, above, and provide a revised acceptance criterion 6.4 that identifies specific capabilities.

- g. Unit 3 acceptance criterion 7.1 states that “[t]he organization will correctly implement the EIPs as described in the drill acceptance criteria.” A reference to acceptance criteria, located in a yet-to-be written drill, is not sufficient. See RAI 13.3-47.b, above, and provide a revised acceptance criterion 7.1 that identifies specific capabilities. Further, Unit 3 acceptance criterion 7.1 states that the organization will “correctly implement the EIPs,” while Unit 4 acceptance criterion 7.1 states that the organization will “implement” the EIPs.” Please clarify the apparent discrepancy.
- h. Unit 3 acceptance criterion 8.1.1 states that “onsite exercise objectives identified in the scenario have been met.” A reference to exercise objective, located in a yet-to-be written exercise, is not sufficient. See RAI 13.3-47.b, above, and provide a revised acceptance criterion 8.1.1 that identifies specific exercise objectives and associated acceptance criteria.
- i. Unit 3 acceptance criterion 8.1.2 states that “onsite emergency response personnel . . . successfully perform their assigned responsibilities, as outlined in the exercise scenario.” A reference to the yet-to-be written exercise scenario is not sufficient. See RAI 13.3-47.b, above, and provide a revised acceptance criterion 8.1.2 that identifies specific responsibilities and associated acceptance criteria.

(See also, RAI 13.3-9, RAI 13.3-10, RAI 13.3-15, RAI 13.3-40, and RAI 13.3-45.)

RAI 13.3-47 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(9))

- a. Part 5 of the ESP Plan states in Section K.3, “Decontamination,” that decontamination procedures will be applicable to removal of “radioiodine” from the skin. Should the word “radioiodine” be “radioisotopes”? Please clarify.
- b. In addition, Section I.4, “Dose Assessment System,” states that computer dose calculation systems will be located in both the TSC and EOF for offsite dose assessment purposes. Please explain whether these system capabilities will also be available in the control room(s), for use by on-shift personnel. Also, explain how on-shift dose assessment capability is met.

RAI 13.3-48 (Regulatory Basis: 10 CFR 52.17(b)(2)(ii), 10 CFR 50.47(b)(8), Sections III and IV.E of Appendix E to 10 CFR Part 50)

Part 5 (“Emergency Plan”) of the application, Appendix 7, “Emergency Operations Facility,” state in subsections A7A.3 and A7D.1 that the common EOF is located in a secure building, located in Birmingham, Alabama, and serves as the EOF for all SNC sites. In contrast, Section C.3, “VEGP Site Support,” states that the site will provide space, telephone communications, and administrative services for NRC and FEMA personnel at the TSC and EOF (emphasis added). Further, Attachment A of the Georgia REP Plan - Burke County Plan states in

paragraph A.4, that “[w]hen deemed necessary, the EMA Director will dispatch a representative to Plant Vogtle’s near site Emergency Operations Facility (EOF) to coordinate initial off-site response activities and serve in liaison capacity” (emphasis added). Please clarify the apparent discrepancies associated with the location of the EOF; i.e., whether it is onsite, near site, or at a common EOF in Birmingham; and how this comports with the descriptions in the application and Burke County Plan.

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