

March 19, 2007

MEMORANDUM TO: Stephanie M. Coffin, Branch Chief
AP1000 Projects Branch
Division of New Reactor Licensing
Office of New Reactors

FROM: Christian Araguas, Project Manager */RA/*
AP1000 Projects Branch
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: SOUTHERN NUCLEAR OPERATING COMPANY (SNC) EARLY SITE
PERMIT (ESP) APPLICATION FOR THE VOGTLE ESP SITE-
SUMMARY OF TELEPHONE CALL HELD ON FEBRUARY 8, 2007

This memorandum documents a telephone conference between the U.S. Nuclear Regulatory Commission staff and Southern Nuclear Operating Company on February 8, 2007.

A summary of the call and the draft requests for additional information pertaining to the site safety analysis report discussed during the teleconference are enclosed.

Docket No. 52-011

Enclosure:
As stated

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Telephone Call Summary

Subject: Request for Additional Information (RAI) Letter No. 3

Date of Call: February 8, 2007

Participants

NRC

Christian Araguas
Rao Tammara
Bruce Musico
Daniel Barss

SNC

Jim Davis

Bechtel

Bob Prunty
Bob Kannor
Dan Patton

Referenced documents

Accession Number	Title	Date
ML063210516	Vogtle Electric Generating Plant Units 3 & 4 Early Site Permit Application	Revision 1 - November 2006

Actions

<u>Topic</u>	<u>NRC</u>	<u>Applicant</u>
RAI Letter on SSAR Sections 2.1, 2.2, 3, 15, and ER sections 5.4, 6.2	Update draft RAIs based on discussions and issue final RAI letter on February 14, 2007	Provide timely response to NRC staff's request for additional information.

Other Discussion

On February 2, 2007, the U.S. Nuclear Regulatory Commission (NRC) staff provided Southern Nuclear Operating Company (SNC) with an electronic copy of the proposed requests for additional information (RAI) to be issued on February 14, 2007. On February 8, 2007, the NRC staff conducted a teleconference call, per the request of SNC, to provide SNC with clarification on the RAIs to be issued. During the phone call SNC informed the staff that on eight separate RAIs located in Sections 2.1 and 2.2, SNC had already provided the requested information in different locations within the site safety analysis report portion of the Early Site Permit application. The staff was informed by SNC of the locations of the requested information in the application. The staff reviewed this information and then agreed that it was sufficient to address the staff's requests. As a result the staff agreed to remove these draft RAIs from the final RAI letter. SNC also requested clarification on several of the draft RAIs in order to facilitate a timely response. The staff reviewed each of the draft RAIs in section 2.1 and 2.2 with SNC and addressed any additional clarifications requested.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 2.1.1-1	R. Tammara, K. Pinkston	Please review and update Table 1-2, "Regulatory Compliance Matrix," to make all chapters and sections of SSAR consistent with all the complied regulatory requirements.	Table 1-2, "Regulatory Compliance Matrix" presents the NRC regulations that are applicable and covered in corresponding site safety analysis report (SSAR) chapters and sections of the Vogtle Early Site Permit Application. However, there are noticeable discrepancies between the regulations cited and the chapter or section covered. For example, Section 2.1.1 also complies with 10 CFR 50.34(a)(1) and 10 CFR 100.3, but these are not checked in Table 1-2. Please review and update Table 1-2, to make all chapters and sections of SSAR consistent with all the complied regulatory requirements.	Delete phrase "For example, section 2.1.1...". This is incorrect.
RAI 2.1.1-2	R. Tammara, K. Pinkston	Provide updated universal transverse mercator (UTM) coordinates and the latitude and longitude of the proposed units.	The planned location of the proposed Units 3 and 4 has been changed since the SSAR was submitted. Please provide updated UTM coordinates for the proposed units. Also provide the latitude and longitude of the proposed new reactor site.	No clarification required.
RAI 2.1.1-3	R. Tammara, K. Pinkston	Provide an expanded and legible map of the proposed units with scale.	SSAR Figure 1-4, "Site Layout - New Development", shows a map of the proposed units, the site boundary, and the exclusion area boundary (EAB) without a scale on the map. Please provide an expanded and legible figure with scale, clearly showing the site boundary, the EAB, and the revised location of proposed Units 3 and 4 along with the existing units.	Question updated to request only a scale on the map. The map is clear and expandable on electronic version.
RAI 2.1.1-4	R. Tammara, K. Pinkston	Provide the direction and distances to the EAB and low- population zone (LPZ) by sector, and provide the closest EAB distance and direction from the proposed units.	Please provide the direction and distances to the EAB and LPZ by sector. Also please provide the closest EAB distance and direction from the proposed Units 3 and 4 (revised location) for the early site permit (ESP) site.	Question deleted. SNC stated that this information is located in Section 2.3 on pg. 2.3-27.
RAI 2.1.1-5	R. Tammara, K. Pinkston	State the potential radioactive gaseous release points and liquid effluent release locations from the proposed ESP site.	Please clearly state the potential radioactive gaseous release points and liquid effluent release locations from the proposed ESP site.	Question deleted. SNC stated that a pointer to the location of this information is on pg 2.1-2.
RAI 2.1.1-6	R. Tammara, K. Pinkston	Provide the distance and direction from the proposed site to nearby roads.	Please provide the distance and direction from the proposed site to nearby roads, including Georgia Routes 23, 24, 25, 56, and 80.	Question deleted. SNC stated that this information is located on pg. 1-27.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 2.1.2-1	R. Tammara, K. Pinkston	Provide the number of people working at Plant Wilson and details about their working hours, and also provide the number of people working at the visitor center and the details of their working hours.	Please provide the number of people working at Plant Wilson and details about their working hours, such as how frequently they work and for how long. Please also provide the number of people working at the visitor center and the details of their working hours. This information will help in the determination of whether individuals can be evacuated prior to receiving doses that exceed the dose limits.	Question updated to reflect requirements of 10 CFR 50.34(a)(1).
RAI 2.1.2-2	R. Tammara, K. Pinkston	Provide more details regarding the location of the visitor center.	Provide more details regarding the location of the visitor center, including a site map that shows the location of it.	No clarification required
RAI 2.1.2-3	R. Tammara, K. Pinkston	Describe the procedure to be followed to ensure that the plant staff has general knowledge of the number and location of persons within the exclusion area engaged in activities unrelated to plant operation.	Describe the procedure to be followed to ensure that the plant staff has general knowledge of the number and location of persons within the exclusion area engaged in activities unrelated to plant operation at the visitor's center and at Plant Wilson.	Question deleted. SNC stated that the emergency plan provided as part of the ESP application addresses this issue and a pointer to the plan is located on pg 2.1-3
RAI 2.1.2-4	R. Tammara, K. Pinkston	Please provide an estimate of time require to evacuate the people in the visitor center and Plant Wilson in the event of a radiological emergency.	What is the estimated evacuation time for the EAB which would include visitor center and Plant Wilson?	Clarification provided.
RAI 2.1.3-1	R. Tammara, K. Pinkston	Provide corrected citations for figure numbers in Section 2.1.3.2.	Section 2.1.3.2 (page 2.1-5), the citation of figure numbers in the text are wrong. The cited figure number in the second sentence should be Figure 2.1-9 instead of Figure 2.1-10, the cited figure number in first sentence of the second paragraph should be Figure 2.1-10 instead of Figure 2.1-9, and the cited figure number in the second sentence of the second paragraph should be Figure 2.1-11 instead of Figure 2.1-10.	Delete phrase "the cited figure number in first sentence of the second paragraph...". This is correct in the application.
RAI 2.1.3-2	R. Tammara, K. Pinkston	Please change the title of Figures 2.1-10 to 2.1-15 to represent the 10-50 mile Resident Population Distribution.	In Section 2.1.3, Figures 2.1-10 through 2.1-15 contain population distributions from 10-50 miles (population within 10 miles is not included), but the figures are labeled as 50-mile Resident Population Distribution, thereby implying that the population distribution presented is from 0-50 miles. Please change the title of the figures to represent the 10-50 miles Resident Population Distribution.	Clarification provided.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 2.1.3-3	R. Tammara, K. Pinkston	Please provide a discussion of the basis for the selection of the LPZ.	The SSAR states that the LPZ for VEGP Units 3 and 4 is the same as the LPZ for Units 1 and 2 and consists of the area within a 2-mi radius of the midpoint between the VEGP Unit 1 and Unit 2 containment buildings. Please provide a discussion of the basis for the selection of this area for the LPZ.	Question deleted. SNC stated that the information is provided in Section 2.3 on pg 2.3-27.
RAI 2.1.3-4	R. Tammara, K. Pinkston	Please describe appropriate protective measures that could be taken on behalf of the populace in the low population zone in the event of a radiological emergency.	Please describe appropriate protective measures that could be taken on behalf of the populace in the low population zone in the event of a radiological emergency.	Clarification provided.
RAI 2.1.3-5	R. Tammara, K. Pinkston	Provide a scaled map of the low population zone that includes topographic features, highways, railways, waterways, and any other transportation routes that may be used for evacuation purposes, and the location of all facilities within the LPZ.	Provide a scaled map of the low population zone that includes topographic features, highways, railways, waterways, and any other transportation routes that may be used for evacuation purposes, and the location of all facilities within the LPZ.	Clarification provided.
RAI 2.1.3-6	R. Tammara, K. Pinkston	Clarify if the distance to Augusta provided is to the border or to the center of Augusta, and if this distance is to the center, please provide the distance to the border of the population center.	The SSAR states that the nearest population center to the VEGP site is Augusta and that Augusta is located approximately 26 miles north-northwest of the VEGP site. Clarify if this distance is to the border of Augusta or to the center of Augusta. If this distance is to the center of Augusta, please provide the distance to the border of the population center. Also provide a description of the methodology used to establish the population center border.	Question deleted. Reviewer retracted based on intuitiveness of the population center distance and the actual distance of Augusta.
RAI 2.1.3-7	R. Tammara, K. Pinkston	Revise the sentence describing the estimated period of operations.	On page 2.1-7, it is stated that "Given an approved ESP period of 20 years, a conservative start up date of 2025, and an operational period of 40 years, operations could extend until 2065." This would have been correct if the ESP approval had been obtained in 2005. It may properly be accounted if modified to state "Given an ESP approval date of 2010, a conservative startup date of 2030 assuming startup at the end of an ESP approval period of 20 years, and an operational period of 40 years, the operations could extend until 2070."	Clarification provided.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 2.1.3-8	R. Tammara, K. Pinkston	Please include the 0-10 mile and 0-50 mile total populations for the base year 2000 in the tables on page 2.1-5 along with the total population projections.	Please include the 0-10 mile and 0-50 mile total populations for the base year 2000 in the tables on page 2.1-5 along with the total population projections for completeness.	Question updated. Deleted request for 0-10 mile because SNC provided this in the text of the application.
RAI 2.2.2-1	R. Tammara, K. Pinkston	Due to the revised location of proposed Units 3 and 4, the distances from the proposed units to Plant Wilson and to Units 1 and 2 may need to be revised in Section 2.2.2.1.4. Please provide the revision.	Due to the revised location of proposed Units 3 and 4, the distances from the proposed units to Plant Wilson and to Units 1 and 2 may need to be revised in Section 2.2.2.1.4. Please provide the revision.	Question deleted. A revision to the application was provided in 11/2006 which addressed this.
RAI 2.2.2-2	R. Tammara, K. Pinkston	Please provide clarification as to what is meant by the pipelines not being used for storage.	Information pertaining to the three pipelines is presented in Section 2.2.2.7. Pipeline 1 and both lines of Pipeline 2 are addressed as not used for storage. Please provide clarification as to what is meant by not used for storage.	No clarification required.
RAI 2.2.2-3	R. Tammara, K. Pinkston	Provide the quantities of onsite chemicals used in Units 3 and 4 in Table 2.2-6.	The onsite chemicals for Units 3 and 4 (AP1000) presented in Table 2.2-6 do not have any quantities for chemicals listed. Please provide these details making Table 2.2-6 consistent with Table 2.2-5.	No clarification required.
RAI 2.2.2-4	R. Tammara, K. Pinkston	Clarify whether any chemicals are brought in using the railroad spur and their potential for any hazards.	A railroad spur onsite having the potential for transport of chemicals was observed to have a tank car on it during the site visit. Please clarify whether any chemicals are brought in using this railroad and their potential for any hazards.	No clarification required.
RAI 2.2.3-1	R. Tammara, K. Pinkston	Please provide updated distances from the revised location of Units 3 and 4 to Units 1 and 2 and Plant Wilson.	Please provide updated distances from the revised location of Units 3 and 4 to Units 1 and 2 and Plant Wilson on pages p. 2.2-10 and p. 2.2-14 of Revision 0-S1 of Section 2.2.3.	Question deleted. A revision to the application was provided in 11/2006 which addressed this.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 2.2.3-2	R. Tammara, K. Pinkston	Provide justification for the selection of chemicals for the truck-borne hazards analysis, and state whether any new chemicals will be addressed for the proposed Units 3 and 4.	SSAR Section 2.2.3.1.1 addressed truck-borne hazards from six chemicals. Please provide justification for the selection of these chemicals for the hazards analysis. In addition, state whether any new chemicals have been identified since the analysis for Units 1 and 2 was performed and whether any new chemicals will be addressed for the proposed Units 3 and 4. Please address these details with the analysis cited in item 1 of the letter AR-06-2720 dated December 15, 2006.	No clarification required.
RAI 2.2.3-3	R. Tammara, K. Pinkston	Provide the results of the analysis of the potential formation of flammable vapor clouds from a gasoline truck as well as a description of the input parameters and methodology used.	In response 3 in AR-06-2720, it is stated that an analysis of the potential formation of flammable vapor clouds from a gasoline truck is currently being performed. Please provide the results of this analysis as well as a description of the input parameters and methodology used.	No clarification required.
RAI 2.2.3-4	R. Tammara, K. Pinkston	Clarify whether a 8500 gallon gas truck with a TNT equivalent of 50,700 lbs is considered bounding for the truck traffic explosion and flammable vapor cloud analysis, and explain how the value of 1900 ft for the critical distance was obtained.	Please clarify whether a 8500 gallon gas truck with a TNT equivalent of 50,700 lbs is considered bounding/maximum for the truck traffic explosion and flammable vapor cloud analysis in SSAR Section 2.2.3.1.1. Additionally, the critical distance resulting in a peak over-pressure of 1 psi for a TNT equivalent of 50,700 lbs calculated based on the equation $kW^{1/3}$ from RG 1.91 is about 1700 ft rather than 1900 ft as reported. Please explain.	No clarification required.
RAI 2.2.3-5	R. Tammara, K. Pinkston	Provide the concentrations generated from the flammable vapor cloud analysis for potential accidents involving truck-borne substances.	The concentrations provided in response 4 of AR-06-2720 are the concentrations at the control room intake rather than the concentrations calculated for a flammable vapor cloud. Please provide the concentrations generated from the vapor cloud analysis to confirm the following conclusion presented in Section 2.2.3.1.1: "The analysis demonstrated that truck-borne substances transported within a 5-mile radius of the VEGP Units 1 and 2, as well as explosions and flammable vapor clouds induced by these chemicals, will not adversely affect safe operation of the units."	Clarification provided.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 2.2.3-6	R. Tammara, K. Pinkston	For the chemicals considered in SSAR Section 2.2.3.1.1, please provide the quantity of each chemical, the distance to the control room, wind speed, stability, and calculated concentration along with the compared limiting concentration in a tabular form.	For the chemicals considered in SSAR Section 2.2.3.1.1, please provide the quantity of each chemical, the distance to the control room, wind speed, stability, and calculated concentration along with the compared limiting concentration in a tabular form for clarity. A similar approach is suggested for other 2.2.3 sections.	No clarification required.
RAI 2.2.3-7	R. Tammara, K. Pinkston	Provide details of the analyses performed to determine that the concentration of fuel oil in the vapor space of tanks carrying fuel oil on a barge and in the Plant Wilson storage tanks is below the lower limit of flammability.	In Section 2.2.3.1.3 of Revision 0-S1 of the SSAR it is stated that an analysis for VEGP Units 1 and 2 determined that the concentration of flammable material in the vapor-space of the tanks carrying the fuel oil is below the lower limit of flammability. Additionally, in response 5 of AR-06-2720 it is stated that the concentration inside any of the three 3-million-gallon fuel tanks is lower than the lower flammability limit of #2 diesel fuel. Please provide details of the analyses performed to determine that the concentration of fuel oil in the vapor space of tanks carrying fuel oil on a barge and in the Plant Wilson storage tanks is below the lower limit of flammability.	No clarification required.
RAI 2.2.3-8	R. Tammara, K. Pinkston	Discuss why and how a 3 million gallon fuel tank at Plant Wilson is bounding for explosion hazard and flammable vapor formation but not for vapor cloud toxicity compared to a lower volume of fuel oil on a barge, provide details of these analyses, and provide a brief discussion of the release scenarios.	Response 5 of AR-06-2720 states that for fuel oil Plant Wilson is bounding for explosion and flammable vapor cloud formation and that for vapor cloud toxicity a fuel barge is limiting. Please discuss clearly why and how a 3 million gallon fuel tank at Plant Wilson is bounding for explosion hazard and flammable vapor formation but not for vapor cloud toxicity, compared to a lower volume of fuel oil on a barge. Please provide the details of the analysis, along with input parameters and assumptions pertaining to water way traffic addressed in SSAR Section 2.2.3.1.3. Provide a brief discussion of the release scenario (i.e., leak or spill) from the Plant Wilson storage tank and the barge and other parameters used in performing the vapor cloud toxicity analysis.	No clarification required.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 2.2.3-9	R. Tammara, K. Pinkston	Revise Section 2.2.3.1.3 to be consistent with what is stated in RG 1.91.	In Section 2.2.3.1.3 of Revision 0-S1 of the SSAR it is stated that "This substance is neither a solid explosive material, nor is it a hydrocarbon which has been liquefied under pressure. Therefore, in accordance with RG 1.91, this material is not required to be evaluated for explosion." However, this is inconsistent with what is stated in RG 1.91. In RG 1.91, it is stated that the regulatory guide is limited to solid explosives and hydrocarbons liquified under pressure and is not applicable to cryogenically liquified hydrocarbons such as liquefied natural gas (LNG). This regulatory guide does not state that hazardous materials other than solid explosives and hydrocarbons liquified under pressure do not need to be evaluated. Please clarify and revise as appropriate.	No clarification required.
RAI 2.2.3-10	R. Tammara, K. Pinkston	Provide a justification for the selection of chemicals for the railroad traffic analyses.	Please provide a justification for the selection of chemicals for the railroad traffic analyses in SSAR Section 2.2.3.1.4. In addition, there appears to be a wrong citation on pages 2.2-12 and 2.2-13 since toxic vapor concentrations are based on RG 1.78 rather than RG 1.91.	Clarification provided.
RAI 2.2.3-11	R. Tammara, K. Pinkston	Please provide in tabular form the amount of each chemical analyzed and the calculated concentration in SSAR Section 2.2.3.1.4 along with the input parameters used for the distance, stability, wind speed, and others.	Please provide in tabular form the amount of each chemical analyzed and the calculated concentration in SSAR Section 2.2.3.1.4 along with the input parameters used for the distance, stability, wind speed, and others. Please also discuss the methodology, including salient assumptions, used for the analyses.	No clarification required.
RAI 2.2.3-12	R. Tammara, K. Pinkston	Provide the basis for the calculation of the critical distance of 2250 ft, that would cause an over-pressure of 1 psi for railroad traffic in SSAR Section 2.2.3.1.4.	Provide the basis for the calculation of the critical distance of 2250 ft, that would cause an over-pressure of 1 psi for railroad traffic in SSAR Section 2.2.3.1.4.	Clarification provided.
RAI 2.2.3-13	R. Tammara, K. Pinkston	Please explain why a different approach was used for the calculation of the potential explosion hazard from cyclohexane than for the other chemicals analyzed.	In the analysis of the potential explosion hazard from a railcar containing cyclohexane in Section 2.2.3.1.4 the TNT equivalent mass is calculated based on the mass of cyclohexane that would be present in a railcar filled with cyclohexane vapor. However, in the analyses done for the potential explosion hazards from truck-borne hazards the TNT equivalent mass is calculated based on a truck filled with the total amount shipped. Please explain why a different approach was used for cyclohexane than for the other chemicals.	No clarification required.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 2.2.3-14	R. Tammara, K. Pinkston	In Section 2.2.3.1.4, the critical distance calculated for cyclohexane based on a TNT equivalent of 117.5 lbs is not consistent with the critical distance calculated using $kW^{1/3}$. Please clarify, check, and correct.	In the analysis of an explosion of a railcar containing cyclohexane presented in Section 2.2.3.1.4 of Revision 0-S1 of the SSAR, it is stated that a TNT equivalent mass of 117.5 lbs of cyclohexane would produce a peak over-pressure of 1 psi at a distance of 1026 ft from the railroad. This distance is not consistent with the critical distance calculated using $kW^{1/3}$. Please clarify, check, and correct.	Clarification provided.
RAI 2.2.3-15	R. Tammara, K. Pinkston	Clarify if any analyses were done to evaluate the potential hazards from an explosion or flammable vapor cloud formation due to accidents associated with onsite storage tanks and nearby storage facilities.	Please clarify if any analyses were done to evaluate the potential hazards from an explosion or flammable vapor cloud formation due to accidents associated with onsite storage tanks and nearby storage facilities, such as the fuel tanks at Plant Wilson. If these analyses were performed, please provide the details of these analyses, and if not, please provide an explanation for why these analyses were not performed.	No clarification required.
RAI 2.2.3-16	R. Tammara, K. Pinkston	Please identify and evaluate potential hazards, if any, associated with the existing Vogtle Units 1 and 2 that may affect the proposed Units 3 and 4 to be located at the ESP site.	Please identify and evaluate potential hazards, if any, associated with the existing Vogtle Units 1 and 2 (excluding severe accidents) that may affect the proposed Units 3 and 4 to be located at the ESP site.	No clarification required.
RAI 2.2.3-17	R. Tammara, K. Pinkston	Explain why ammonia was not analyzed in responses 16 and 17 in AR-06-2720 like hydrazine, methoxypropylamine, and phosphoric acid were and clarify if the potential hazard from onsite storage ammonia is still going to be addressed at the COL stage.	In Section 2.2.3.2.3, it is stated that the potential hazard due to ammonia and hydrazine from onsite storage tanks is planned to be addressed at the COL stage. In responses 16 and 17 in AR-06-2720, analyses for the potential hazard due to onsite storage of hydrazine, methoxypropylamine, and phosphoric acid are discussed. Please explain why ammonia was not analyzed in these responses like the other chemicals were, and clarify if the potential hazard from onsite storage ammonia is still going to be addressed at the COL stage.	Clarification provided.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 3.5.1.6-1	R. Tammara, K. Pinkston	Please provide the bases and methodology used in determining the effective areas and assumed fractions for the general aviation, air taxi and commercial, air carrier, and military air crafts addressed in SSAR Section 3.5.1.6.2 (page 3.5-3), which were used to calculate the weighted effective plant area.	Please provide the bases and methodology used in determining the effective areas and assumed fractions for the general aviation, air taxi and commercial, air carrier, and military air crafts addressed in SSAR Section 3.5.1.6.2 (page 3.5-3), which were used to calculate the weighted effective plant area.	Clarification provided.
RAI 11-1	J. Dehmel	Assessment of doses to members of the public	<p>Section 5.4 of the ER presents an assessment of radiation exposures and doses due to liquid and gaseous effluents based on models, assumptions, and site-specific data described in two key documents. They are:</p> <ul style="list-style-type: none"> • Southern Nuclear Operating Company, Offsite Dose Calculation Manual for Southern Nuclear Operating Company, Vogtle Electric Generating Plant, Ver. 22, June 25, 2004. (ODCM) • Southern Nuclear Operating Company, Vogtle Electric Generating Plant - Units 1 and 2, Annual Radioactive Effluent Release Report for January 1, 2003 to December 31, 2003. <p>A review of ER Section 5.4 and cited references indicates that Section 5.4 does not provide information used to model exposure pathways and does not include a listing of all input parameters in deriving dose estimates to members of the public. In its evaluation, NRC Staff will be using the GASPAR II and LADTAP II computer codes and will not rely on the ODCM method described in the application for the purpose of assessing doses to members of the public from liquid and gaseous effluents.</p> <p>Accordingly, update ER Section 5.4 to include descriptions of all required model assumptions and include input parameters necessary to run the GASPAR II and LADTAP II computer codes. Without this information, the staff cannot perform an independent evaluation and conclude, with reasonable assurance, that the application demonstrates compliance with 10 CFR Part 50, Appendix I dose objectives.</p>	No clarification required.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 11-2	J. Dehmel	Exposure pathways considered in the dose assessment	<p>A review of ER Section 5.4 indicates that the dose assessment excludes potential exposure pathways (for liquid and gaseous effluents), with no basis provided for their omissions. For example, ER Tables 5.4-2 and 5.4-4 exclude boating, shoreline activity, crop and pasture irrigation, livestock watering, and goat milk production. Given that the assessment relies on information presented in the 2004 ODCM and 1988 results of the land-use census (see Ref. 14 in the ODCM, p.ix), confirm that the results of the most current land-use census will be used in determining whether all potential exposure pathways have been considered in assessing doses to members of the public.</p> <p>Similarly, a review of the Vogtle Electric Generating Plant Annual Radiological Environmental Operating Report for 2005 indicates that for gaseous effluent releases, there are several other nearby residences that are closer to the plant than the one considered in the ER analysis (as described in Section 5.4, Table 5.4-5). For example, ER Section 5.4 assumes that the maximally exposed individual is located 4.7 miles away in the SSW sector. However, a review of the land-use census results presented in the 2005 operating report (Table 4.1-1, p.4-5) indicates that there are residences that are located in closer proximity to the plant, ranging from 1.2 to 4.6 miles. ER Section 5.4 does not acknowledge this fact and does not provide justifications in excluding residences that are nearer to the plant.</p> <p>Accordingly, update ER Section 5.4 to identify and justify the selection of the most appropriate location of the nearest residence and maximally exposed individual, include all applicable exposure pathways using the results of the most current land-use census, and provide the rationale for excluding specific ones. Identify and provide full citations for all applicable references forming the basis of all updated assumptions. Without this information, the staff cannot perform an independent evaluation and conclude, with reasonable assurance, that the application demonstrates compliance with 10 CFR Part 50, Appendix I dose objectives.</p>	No clarification required.

RAI Number	Reviewer	Question Summary	Full Text	Discussion During Teleconference
RAI 11-3	J. Dehmel	Compliance with radiological effluent characterizations under 10 CFR Part 52 and 10 CFR Part 100	<p>Under 10 CFR Part 52.18, applications are reviewed against the applicable standards of 10 CFR Part 50 and its appendices and 10 CFR Part 100. A review of SSAR Part 1, Chapter 2, (Section 2.1) and SSAR Part 2, Chapter 1 (Section 1.8) indicates that there is no information in the SSAR demonstrating compliance with the following:</p> <ul style="list-style-type: none"> a. 10 CFR Part 52.17(a)(1) as it relates to a characterization of liquid radiological effluents associated with normal plant operations and demonstration of compliance with Section II.A of Appendix I to Part 10 CFR Part 50 as part of the description and assessment of the site on which the facility is to be located. b. 10 CFR Part 100.21(c)(1) as it relates to a characterization of gaseous radiological effluents associated with normal plant operations and demonstration of compliance with Sections II.B and II.C of Appendix I to Part 10 CFR Part 50 for any individual located offsite. <p>Accordingly, update the appropriate section(s) of the SSAR to include the information specified by the above NRC regulations. Without this information, the staff cannot complete its evaluation and conclude, with reasonable assurance, that the application demonstrates compliance the applicable requirements of 10 CFR Part 52 and 10 CFR Part 100.</p>	No clarification required.
RAI 11-4	J. Dehmel	Use of radiological source terms from the AP1000 design control document (DCD) in the ESP application	<p>A review of ER Sections 3.5 and 5.4 indicates the radiological effluent source terms is based on the AP1000 Design Control Document (Rev. 15, November 2005). A comparison of radionuclides and associated liquid and gaseous effluent source terms was made between the data presented in ER Section 3.5 and AP1000 DCD (Table 11.2-7). The review indicates that for one nuclide, a different isotope (Na-24 vs Na-22) was used in ER Table 3.5-1 for liquid effluents. It is recommended that the data presented in ER Tables 3.5-1 be reviewed against that of the AP1000 DCD and be updated accordingly.</p>	No clarification required.

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RAI 11-5	J. Dehmel	Miscellaneous observations	<p>A review of ER Section 5.4 and supporting sections of the ER and SSAR identified a number of internal inconsistencies in referencing information and parameters used in calculating doses to members of the public. It is recommended that the following items be reviewed and corrected or clarified, as needed. They are:</p> <ul style="list-style-type: none"> a. Basis for the dilution factor applied to liquid effluents - A review of ER Section 5.4.1.1 and Table 5.4-1 indicates that the stated dilution factor is not qualified as to the location of the receptor. In addition, Table 5.4-1 characterizes the effluent discharge rate of 1.3 gpm being diluted in a cooling tower blowdown flow rate of 6,000 gpm (assumed to be for one plant), as compared to ER Table 3.0-1 which lists a dilution flow rate of 4,650 gpm (one plant). Also, ER Table 3.1-1 cites a dilution flow rate of 9,300 gpm and a discharge rate of 3 gpm, but ER Figure 3.3-1 gives a dilution flow rate of 9,605 gpm and a discharge rate of 3 gpm, taken to be for two plants. b. Basis for atmospheric dispersion data - A review indicates that the basis of the atmospheric dispersion factors between SSAR Section 2.3.5 and ER Section 2.7.6 are different than that cited in ER Section 5.4. ER Section 5.4.1.2 and ER Tables 5.4-3 and 5.4-5 are based on ODCM data for the existing plants, while SSAR Section 2.3.5 presents atmospheric dispersion data derived from the XOQDOQ computer code. c. Designations of wind sectors and distances for the maximally exposed individual and nearest site boundary - A review of ER Section 5.4.1.2 and ER Tables 5.4-3 and 5.4-5 indicates that designations of wind sectors and distances for the maximally exposed individual and nearest site boundary for gaseous effluents are different between ER Section 2.7.6 and SSAR Section 2.3.5. ER Tables 5.4-3 and 5.4-5 are based on ODCM data for existing plants, while SSAR Section 2.3.5 presents atmospheric dispersion data derived anew for the application. 	No clarification required.

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			<p>d. Basis of total population within the 50-mile radius - A review of ER Section 5.4.3 and Table 5.4-10 reveals an inconsistency in the size of the total population within the 50-mile radius used in assessing collective doses between ER Section 2.5.1 (Table 2.5.1-1) and ER Section 5.4. ER Section 2.5.1 cites a population of 674,102 and ER Table 5.4-10 states 667,092, while referencing ER Table 2.5.1-1 as the basis of this value. Also, note that ER Section 2.9, Table 2.9-1 gives a value of 670,000 for the total population.</p> <p>e. Operational radiological monitoring program of onsite ground water wells - SSAR Section 2.4.12 states that onsite ground water wells will be used as a source of potable water as well as supplying plant systems. In light of the information presented in ER Sections 2.3.3, 6.2.3, and 6.3.3, and SSAR Section 2.4.12, describe how ground water from onsite wells will be monitored for the presence of radioactivity generated by plant operations. Note that ER Section 6.2, Table 6.2-1 refers to "surface water" and "drinking water," but does not identify water from onsite ground water wells. Finally, a review of the 2004 ODCM (Rev. 22) indicates that the current REMP only considers the analysis of river water samples collected downstream from the plant.</p> <p>Accordingly, revise the relevant ER and SSAR Sections in light of the above observations, and provide the information, references, rationale, etc., in support of any proposed revisions. Without this information, the staff cannot perform an independent evaluation and conclude, with reasonable assurance, that the application demonstrates compliance with (a) 10 CFR Part 50, Appendix I dose objectives, (b) compliance with the EPA drinking water standards of 40 CFR Part 141 for man-made radionuclides.</p>	

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RAI 11-6	J. Dehmel	Augmentation of the radiological monitoring program	<p>A review of ER Section 6.2 indicates that there is no discussion on whether the current REMP program would be augmented in light of the NEI and nuclear utility initiative in response to the NRC's Liquid Radioactive Release Lessons Learned Task Force Report on contamination of ground and surface water (ADAMS Accession No. ML062650312). Provide descriptions of how facility design and operational procedures would minimize, to the extent practicable, contamination of site facilities, surface and ground water, and prevent uncontrolled and unmonitored releases of radioactive materials in the environment.</p> <p>Accordingly, update ER Section 6.2 and provide a discussion describing how the scope of the existing radiological environmental monitoring program information might be augmented to address the recommendations of the NEI and nuclear utility initiative in light of the issues identified in the NRC's Liquid Radioactive Release Lessons Learned Task Force Report on contamination of ground and surface water.</p>	No clarification required.
RAI 15-1	J. McGuire M. Hart	Provide Ch.15 reference on source terms and explain methodology	Please provide the Chapter 15 reference (Westinghouse 2006b) Westinghouse Document No. LTR-CRA-06-21, <i>AP1000 Accident Releases and Doses as Function of Time</i> , Westinghouse Electric Company, February 1, 2006, and explain the methodology used to determine the time-dependent activity releases for each design basis accident.	No clarification required.