

SummerRAIsPEm Resource

From: Joshi, Ravindra
Sent: Monday, May 05, 2014 10:01 AM
To: SummerRAIsPEm Resource
Subject: RE: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 01 RELATED TO LAR 13-09, FOR THE VCSNS Units 2 and 3 COMBINED LICENSE
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Subject: RE: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 01 RELATED TO LAR 13-09, FOR THE VCSNS Units 2 and 3 COMBINED LICENSE
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From: Joshi, Ravindra

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May 5, 2014

Mr. Ronald A. Jones, Vice President
New Nuclear Operations
South Carolina Electric & Gas Company
14368 State Highway 213
Jenkinsville, SC 29065

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 01 RELATED TO EXEMPTION AND LICENSE AMENDMENT REQUEST (LAR) 13-09, FOR THE VIRGIL C. SUMMER NUCLEAR STATION UNITS 2 AND 3: ANNEX AND RADWASTE BUILDING CHANGES (TAC NO. RQ0409)

Dear Mr. Jones:

In accordance with the provisions of 10 CFR 50.90, by letter dated February 27, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14065A019), South Carolina Electric & Gas Company (SCE&G) submitted a request for a license amendment (LAR) for the Virgil C. Summer Nuclear Station, Units 2 and 3 Combined Licenses (Licenses No.NPF-93 and NPF-94, respectively). The proposed license amendment request would depart from the plant-specific Design Control Document (DCD) Tier 1 and Tier 2 material by making changes to the annex and radwaste building structures and layout by:

- (1) Updating the annex building column line designations on affected Tier 1 Figures and Tier 2 Figure 3.7.2-19; and
- (2) Revising the radwaste building configuration including the shielding design and radiation area monitoring.

The NRC staff is performing a detailed review of this LAR to enable the staff to reach a conclusion on the safety of the proposed LAR.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

To support the review schedule, you are requested to respond within 45 days of the date of this letter. If changes are needed to the final safety analysis report, the staff requests that the RAI response include the proposed wording changes.

If you have any questions or comments concerning this matter, you may contact me at 301-415-6191 or ravindra.joshi@nrc.gov.

Sincerely,

/RA/

Ravindra G. Joshi, Senior Project Manager
Licensing Branch 4
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-027
52-028
eRAI Tracking No. 7519

Enclosure:
Request for Additional Information

CC: see next page

If you have any questions or comments concerning this matter, you may contact me at 301-415-6191 or ravindra.joshi@nrc.gov.

Sincerely,

/RA/

Ravindra G. Joshi, Senior Project Manager
Licensing Branch 4
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-027
52-028
eRAI Tracking No. 7519

Enclosure:
Request for Additional Information

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Request for Additional Information 01

Issue Date: 05/05/2014

Application Title: Virgil C. Summer Nuclear Station, Units 2 and 3

Operating Company: South Carolina Electric and Gas Company

Docket No. 52-027 and 52-028

Review Section: 11.04 - Solid Waste Management System

Application Section: Summer LAR 13-09, Annex and Radwaste Building changes

QUESTIONS

11.04-1

1. Section 20.1101 (b) of 10 CFR Part 20 states that the licensee shall use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses that are as low as is reasonably achievable (ALARA).

Section 2.2 of Enclosure 1 (page 4 of 19) proposes to modify the configuration of the radwaste building to add three bunkers for storage of moderate and high activity waste. Section 2.2 also states that since both packaged and unpackaged waste will contain moderate or high activity, both types of waste (packaged and unpackaged) will be stored in the bunkers.

- a) In order to ensure that doses to personnel working in the Waste Accumulation Room, including workers moving waste into or removing waste from the three proposed bunkers, are maintained ALARA, describe your criteria for determining what types of wastes will be stored in each of the three proposed bunkers (e.g., will certain bunkers be used for packaged vs. unpackaged waste or for moderate vs. high activity waste).
 - b) In order to minimize the dose to workers in the Waste Accumulation Room, describe your criteria for determining what wastes will be stored in the bunkers and what wastes will be stored outside the bunkers in the Waste Accumulation Room.
2. Section 20.1101 (b) of 10 CFR Part 20 states that the licensee shall use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses that are as low as is reasonably achievable (ALARA).

Section 2.2 of Enclosure 1 (page 4 of 19) states that three bunkers will be added to the Waste Accumulation Room in the radwaste building to allow for the segregation of moderate or high activity waste from the remainder of the low activity waste. This section also states that the use of these bunkers to separate the moderate or high activity waste from the remainder of the low activity waste in the Waste Accumulation Room reduces operational exposure while workers handle low activity waste. Although this section states that these bunkers will be used for the storage of moderate or high activity waste, it does not include any information on the shielding effectiveness of the bunkers, other than stating that these bunkers will be added "to maintain acceptable radiation levels on the radwaste building roof and to maintain portions of the radwaste building at radiation zone I levels as defined in UFSAR Tier 2 Figure 12.3-1 (sheet 1 of 16)." Further, this section states that the three bunkers will have removable steel plates.

- a) In order to assure that doses to personnel working in the Waste Accumulation Room are maintained ALARA, 1) verify that you have performed a shielding analysis of the proposed bunkers and associated removable steel plates to justify that dose rate levels in the Waste Accumulation Room will not exceed the designated radiation Zone IV classification from

radioactive waste stored in the three proposed bunkers, and 2) provide the results of this analysis.

- b) The installation and/or removal of the removable steel plates from the bunkers in the Waste Accumulation Room could result in the expenditure of unnecessary dose to the workers performing this operation. Justify the design decision to use removable steel plates on the bunkers to provide additional shielding for the radioactive waste stored in the bunkers versus designing the bunker walls with adequate shielding to maintain dose rates outside the bunkers at acceptable levels.
 - c) Describe the criteria for when these removable steel plates will be used. Describe how these removable steel plates will be added to the doors of the bunkers without impeding accessibility to the bunkers (due to the weight of the steel plates).
3. Section 3.2 of Enclosure 1 (page 8 of 19) states that three bunkers will be added to the Waste Accumulation Room in the radwaste building “to allow temporary shielding to maintain acceptable radiation levels on the radwaste building roof.
- a) Since the bunkers are being added to maintain acceptable radiation levels on the radwaste building roof, state why the shielding on the bunkers is referred to as “temporary shielding.”
 - b) Verify that routine radiation surveys will be performed on the building roof above the radwaste building to ensure that the radiation zone levels on the roof will not exceed radiation zone I criteria due to the storage of radioactive waste in the bunkers in the Waste Accumulation Room.
4. Section 20.1101 (b) of 10 CFR Part 20 states that the licensee shall use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses that are as low as is reasonably achievable (ALARA). In addition, Regulatory Guide 8.8 states that radiation shields should be designed to maintain occupational radiation exposures ALARA.

Section 3.2 of Enclosure 1 (page 8 of 19) proposes that the thickness of the shield walls for the portion of the Waste Accumulation Room associated with the original Packaged Waste Room be reduced from 2' to 1'-4". In order to ensure that this decrease in the thickness of these shield walls will not result in increased dose rates in the rooms adjacent to the Waste Accumulation Room (i.e., the Mobile Systems Facility and the Monitor Tanks Room) from wastes stored in the Waste Accumulation Room, verify that you have performed a shielding analysis to justify this proposed change in shield wall thickness and provide the results of this analysis.

5. There appear to be some inconsistencies in the descriptions of the volume of radwaste that will be stored in the radwaste building.
- a) UFSAR Section 11.4.2.1 states that the available minimum useful storage volume for packaged waste in the Waste Accumulation Room is 3900 cubic feet (10 feet deep, 30 feet long, and 13 feet high). UFSAR Section 11.4.2.5.2 states that the waste accumulation room contains three 1000 cubic feet bunkers (10 feet x 10 feet x 10 feet), with a total volume of 3000 cubic feet. On the basis of this information, it appears that the storage volume provided by the three bunkers is 77% of the useful storage volume for packaged waste in the Waste Accumulation Room. However, in UFSAR Figure 12.3-1 (sheet 14 of 16), it does not appear that the three bunkers occupy such a large percentage of the waste accumulation room. Please clarify this apparent inconsistency.

- b) Tier 1 Table 3.3-6 Item 6.b originally listed the volume of the radwaste building package storage room as being greater than or equal to 1293 cubic feet. Since the licensee proposes to remove the wall separating the Packaged Waste Storage Room and the Waste Accumulation Room and designate the new larger room as the Waste Accumulation Room, Item 6.b was modified to change the name of the room as well as to change the minimum volume of the room from 1293 cubic feet to 1417 cubic feet.
- 1) State the basis for the initial minimum volume of 1293 cubic feet for the Packaged Waste Storage Room.
 - 2) Specify whether the minimum volume of the Waste Accumulation Room was increased from 1293 to 1417 cubic feet because of the increase in room volume obtained from removal of the wall separating the two original rooms, or whether this change was made to make the minimum room volume consistent with the expected annual shipped volume of 1417 cubic feet for dry waste listed in Tier 2 Table 11.4-1.
6. In Enclosure 3 (page 13 of 15), the proposed changes to UFSAR Figure 12.3-1, (Sheet 14 of 16), included adding notes to the figure. These notes indicate that dose rates in certain areas in the radwaste building may be higher than initially indicated in the AP1000 DCD. In addition, the LAR indicates that high activity waste will be stored in the proposed Waste Accumulation Room bunkers. Finally, the removal of the wall that originally separated the Waste Accumulation Room and the Packaged Waste Storage Room adds some additional space in the Waste Accumulation Room for the storage of waste. These changes all indicate that there is a potential for a larger source term in the radwaste building than what was initially indicated in the AP1000 DCD. The LAR should include an evaluation of these potential increases in source term against the criteria contained in Regulatory Guide 1.143, Revision 2, Regulatory Positions 5 and 6, and determine if the increased source term 1) is acceptable for the current Radwaste Building SSC design and 2) is consistent with radioactivity limits for systems as described in UFSAR Appendix 1A and Chapter 11. Likewise, any increases in the total activity stored in the radwaste building as a result of an increased source term from packaged waste, should be evaluated against the criteria in NUREG-0800 Section 11.4A.
7. USFAR Section 11.4 indicates that certain types of radwaste will be processed and stored in the auxiliary building, instead of in the radwaste building. Specifically, UFSAR Section 11.4.2.1 indicates that "High activity filter cartridges fill three drums per year (22.5 cubic feet per year) and are stored in portable processing or storage casks in the rail car of the auxiliary building," which is a Seismic Category I building. UFSAR Section 11.4.2.3.3 defines high-activity wastes as wastes having contact dose rates greater than 100 mrem/hr at the time of initial waste segregation.

One of the proposed changes to UFSAR Figure 12.3-1 (sheet 14 of 16) is the addition of Notes C and D. Note D.2 indicates that spent filter cartridges stored in the waste accumulation room in the radwaste building could also have dose rates which could exceed 100 mrem/hr.

Please, explain the apparent discrepancy between Section 11.4.2.1, which states that high activity filter cartridges will be stored in the auxiliary building and Note D.2 for Figure 12.3-1, which states that high activity filter cartridges could be stored in the radwaste building. Evaluate this potential increase in source term in the radwaste building against the criteria contained in Regulatory Guide 1.143, Revision 2 and NUREG-0800 Section 11.4A, as discussed in question 6 above.

8 The staff requests that the licensee clarify the following issues related to some of the UFSAR Figures in Enclosure 4 (pages 5, 12, 13, 15 of 15):

a) The change “bubble” through the center of the Waste Accumulation Room in the radwaste building in UFSAR Figures 1.2-22 and 9A-4 (pages 5 and 12 of 15) is stepped, while the change “bubble” through the center of the same room in UFSAR Figure 12.3-1 (sheet 14 of 16) (LAR page 13 of 15) is straight. Since this change “bubble” represents the removal of the wall separating the Packaged Waste Storage Room and the Waste Accumulation Room in the original UFSAR in all three of these figures, explain why the shape of the change “bubble” differs between these figures.

b) In the revised UFSAR Figures of the radwaste building (Figures 1.2-22, 9A-4 and 12.3-1 (sheet 14 of 16)), explain the reason for the addition of the additional wall adjacent to the outer building wall on the south end of the Monitor Tanks Room.

c) In the revised UFSAR Figures of the radwaste building (Figures 1.2-22, 9A-4 and 12.3-1 (sheet 14 of 16)), explain the reason for the addition of the wall on the north end of the Monitor Tanks Room.

d) In revised UFSAR Figure 12.3-1 (sheet 14 of 16), the radiation zone designations in two of the rooms have changed. Provide the basis for the radiation zone changes in the following rooms:

- HVAC Equipment Room (zone III to zone I)
- Monitor Tanks Room (zone III to zone II)

e) In revised UFSAR Figure 12.3-3 (sheet 14 of 16) (LAR page 15 of 15), describe why the middle mobile system shown in the Mobile Systems Facility is depicted in a lighter shade than the two adjoining mobile systems.

f) In the existing radwaste building design, a shield wall is located inside the east entrance to the Packaged Waste Storage Room. This shield wall provides a labyrinth entrance to this room and does not permit a line of sight view of the packaged waste that would be stored in this room. However, in the proposed redesign of the Waste Accumulation Room, the shield wall opposite the entrance is removed and the entrance door is replaced by what appears to be a sliding door.

1) Verify that the above proposed modifications to the Waste Accumulation Room design (i.e., removal of the labyrinth entranceway and use of a sliding door on the entranceway on the east side of the Waste Accumulation Room) will not result in a potential increase in doses to personnel working in the adjacent Mobile Systems Facility due to an increase in the area dose rates in this room from stored waste in the Waste Accumulation Room.

2) UFSAR Section 3.2 (Enclosure 1) proposes to decrease the thickness of the shield wall on the east side of the Waste Accumulation Room from 2' to 1'-4". Verify that the proposed sliding entranceway on the east entrance to the Waste Accumulation Room will provide an equivalent amount of shielding as the shield wall to this room to ensure that doses in the adjoining Mobile Systems Facility are maintained ALARA.