UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 15, 2012

Mr. Joseph W. Shea
Manager, Corporate Nuclear Licensing
Tennessee Valley Authority
3R Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNIT 2 – REQUEST FOR ADDITIONAL INFORMATION REGARDING THE PROPOPSED TECHNICAL SPECIFICATION CHANGES TO ALLOW USE OF SHIELD BUILDING DOME PENETRATIONS DURING MODES 1 THROUGH 4 (TAC NO. ME7026)

Dear Mr. Shea:

By letter dated August 31, 2011, as supplemented by letter dated November 28, 2011, you submitted an application for license amendment proposing to temporarily revise the Sequoyah Nuclear Plant (SQN), Unit 2 Technical Specifications. During the SQN, Unit 2 spring 2011 refueling outage (RFO), two penetrations through the shield building (SB) dome were created. To maintain SB integrity, these penetrations were closed with a steel hatch assembly prior to entering Mode 4 at the end of the spring 2011 RFO. The proposed change will allow opening of one of the penetration hatches in the SB dome for up to 5 hours per day, 6 days per calendar week while in Modes 1 through 4 during SQN, Unit 2, Cycle 18 (U2R18) between receipt of the U.S. Nuclear Regulatory Commission (NRC) approval for this proposed request, and until entering Mode 5 at the start of the SQN, Unit 2 fall 2012 RFO (U2R18).

The NRC staff is reviewing the submittal and has determined that additional information is required to complete its evaluation. This request was discussed with Mr. Clyde Mackaman of your staff on April 26, 2012, and it was agreed that a response would be provided within 30 days from the date of this letter.

If you have any questions regarding this matter, I can be reached at 301-415-1564.

Sincerely,

Siva P. Lingam

Siva P. Lingam, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-328

Enclosure: Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

REGARDING TECHNICAL SPECIFICATION CHANGES

TO ALLOW USE OF SHIELD BUILDING DOME

PENETRATIONS DURING MODES 1 THROUGH 4

SEQUOYAH NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-328

1. Provide additional information describing all the parameters and assumptions used for the Loss-of-Coolant Accident (LOCA) dose consequence analyses. For each parameter, please indicate the current licensing basis (CLB) value, the revised value where applicable, as well as the basis for any changes to the CLB. For each assumption, please discuss if the assumption is consistent with the assumptions described in Regulatory Guide (RG) 1.183, *Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors*. Also, describe any methodologies that may have changed based on the proposed amendment. The U.S. Nuclear Regulatory Commission (NRC) staff requests that the information be presented in a tabular form.

2. In the marked up Sequoyah Nuclear Plant (SQN) Updated Final Safety Analysis Report (UFSAR), page 15.5-4 of Attachment 5 of the submittal, still references Part 100 to Title 10 to the *Code of Federal Regulations* (10 CFR) limits. As the submittal requests full-scope implementation of RG 1.183 related to LOCA, address whether after this outage SQN intends to maintain the alternative source term as the source term of record.

3. In the August 31, 2011, submittal, Tennessee Valley Authority has indicated that 2.8 rem would be saved by the proposed alternative. Section 20.1101(b) to 10 CFR indicates that "[t]he licensee shall use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA)." Address why staging of equipment during Mode 1 supports the ALARA principle. In addition, provide the projected doses to the workers in Modes 2, 3, and 4. This projection should include ingress/egress, considering breaks and mission time. Also, provide the projected dose to members of the public if the proposed was performed in Modes 2, 3, and 4.

4. Provide the maximum expected dose rate from radiation streaming through the shield dome penetration, prior to closure, during a design-basis accident. Describe what precautions/design features ensure that the operator is not able to enter this dose rate while performing the hatch closure operation. Explain how backscatter (sky shine) is addressed as it relates to the determination of mission dose to the operator assigned to close the shield dome penetration hatch.

Enclosure

5. Section 3.8.1.3 of the SQN UFSAR details the loads and load combinations to which the shield building dome and cylinder may be subjected. On page E-20 of Reference 1, it is stated that in the event of a postulated safe-shutdown earthquake (SSE), the 18-inch penetrations installed in the SQN shield building dome may lose functionality due to the inability to close. However, Appendix A, *Seismic and Geological Siting Criteria for Nuclear Power Plants*, to 10 CFR Part 100, requires that nuclear power plants must be designed so that certain structures, systems and components remain functional if the SSE occurs. These plant features are those necessary to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guideline exposures of 10 CFR 100.11 or 10 CFR 50.67, as applicable.

   To satisfy the regulatory requirements noted above, provide a technical justification that demonstrates the 18-inch penetrations, including all associated components (doors, hinges, sleeves, etc.), will remain functional (i.e., remains able to mitigate the consequences of an accident) in their open configuration when subjected to loads resulting from an SSE and other concurrent loads that may act on the penetrations during Modes 1 through 4. State the applicability of the design loading combinations listed in Table 3.8.1-2 of the SQN UFSAR to the 18-inch penetrations located in the dome of the SQN shield building. If design criteria other than that presented in Table 3.8.1-2 was utilized in the design of the 18-inch penetrations, state the design criteria used, including loads, load combinations and structural acceptance criteria, to demonstrate that the functionality of the penetrations in their open state will be maintained following an SSE, such that the ability to close the penetrations is not compromised.

6. Given the difference in the assumption regarding timing of the source term between the Technical Information Document (TID) 14844, *Calculation of Distance Factors for Power and Test Reactor Sites*, and NUREG-1465, *Accident Source Terms for Light-Water Nuclear Power Plants,* explain why the mission doses for accidents other than LOCA (e.g., steam generator tube rupture, main steam line failure, etc.) are not limiting.

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