August 2, 2000

Mr. J. A. Scalice
President, TVA Nuclear and
Chief Nuclear Officer
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION ON THE HOLTEC INTERNATIONAL REPORTS (TAC NOS. MA9101 AND MA9102)

Dear Mr. Scalice:

The Tennessee Valley Authority (TVA) submitted two topical reports for review by the U.S. Nuclear Regulatory Commission (NRC) on April 21, 2000. The reports (HI-992349 and HI-992302) were prepared by Holtec International to support a future license amendment request for the Sequoyah Nuclear Plant (SQN), Units 1 and 2 to take partial credit for the soluble boron required to be maintained in the spent fuel pool. The amendment will be part of the long-range TVA strategy to ensure adequate future spent fuel storage capacity at the Sequoyah facility. Our initial review of these topical reports revealed that we need additional information to complete our review.

The questions in the enclosed Request for Additional Information were discussed during a conference call with your staff and Holtec on July 27, 2000. At the conclusion of the call, Mr. James D. Smith of the SQN Licensing Staff stated that TVA would respond to this request by September 29, 2000.

Please have your staff contact me at (301) 415-2010 if there are any questions regarding the enclosed request.

Sincerely,
/RA by R. Martin Acting for/

Ronald W. Hernan, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosure: Request for Additional Information

cc w/enclosure: See next page

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REQUEST FOR ADDITIONAL INFORMATION
HOLTEC INTERNATIONAL TOPICAL REPORTS TO SUPPORT
SEQUOYAH BORON CREDIT AMENDMENT

TAC NOS. MA9101 & MA9102

1) A recent review performed for the U.S. Nuclear Regulatory Commission of the practice of equating the reactivity of spent fuel to fresh fuel in burnup credit criticality safety analyses for PWR spent fuel pool storage has indicated a possible non-conservatism in certain instances where the calculations are done for configurations that differ from the reference configuration. For example, if the "equivalent" fresh fuel enrichment is used in the reference storage rack configuration (e.g., infinite array of storage rack cells in unborated water) rather than the actual spent fuel isotopics, an under-estimation of k-eff may exist which increases with increasing soluble boron concentration. The results also indicate that equivalencing may yield non-conservative results in configurations in which the spent fuel is placed in storage with higher reactivity assemblies and where soluble boron is credited for a misplaced fresh fuel assembly accident condition. Please provide justification if the "equivalent" fresh assembly concept was used for your spent fuel pool calculations rather than the actual spent fuel isotopics.

2) You state that the use of an axial burnup distribution profile, as opposed to an assembly-average uniform burnup over the burnup range of interest, results in a slightly lower k-eff which is conservatively neglected in your k-eff analyses. This is attributed to the lower reactivity worth of the more reactive fuel in the end regions due to neutron leakage. However, for the cooling time analyses, since the ends of the assembly are more reactive (less burned) than the center, was the actinide decay credit based on the fuel burnup at the assembly ends rather than an assembly average burnup? If not, please justify.

3) Which nuclides were included in the cooling time analyses? What uncertainties were assumed?

4) Since part of the uncertainty in burnup calculations derives from uncertainties in the fuel and moderator temperatures and the spectral effect of soluble boron during core operation, how are these uncertainties included?

5) Statement (1) on page 15 appears to be contradictory. Should the word "too" be inserted before "low"?

6) Please explain the reason for assuming the removal of a burnable poison rod assembly (BPRA) at 30,000 MWD/MTU and deriving a reactivity penalty due to this removal. Does this penalty include the non-conservative effect of depleting the remainder of the assembly life over a softer spectrum?

Enclosure

Mr. J. A. Scalice
Tennessee Valley Authority

SEQUOYAH NUCLEAR PLANT

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