

March 27, 1996

Mr. Oliver D. Kingsley, Jr.  
President, TVA Nuclear and  
Chief Nuclear Officer  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - RELIABILITY OF OFFSITE POWER  
STUDY (TIA 94-021) - SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2  
(TAC NOS. M93319 AND M93320)

Dear Mr. Kingsley:

By memorandum dated August 11, 1995, NRC Region II requested that the Office of Nuclear Reactor Regulation (NRR) review the transmission network analysis that has been revised by the Tennessee Valley Authority for the Sequoyah Nuclear Plant. In general, this review should include a study of (1) the acceptability of the immediate preferred offsite power source when the 500 kV to 161 kV intertie transformer is not operable, (2) the ability of the 161 kV analysis to demonstrate that the plant can achieve safe shutdown without the intertie transformer, and (3) the adequacy of the plant's technical specifications regarding loss of the intertie transformer.

Based on the results of the review that has been conducted to date, we have identified a need for additional information in order to continue this review, as explained in the enclosure.

This request affects nine or fewer respondents and, therefore, is not subject to Office of Management and Budget review under P.L. 96-511.

Sincerely,

Original signed by  
David E. LaBarge, Sr. Project Manager  
Project Directorate II-3  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

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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

RELIABILITY OF OFFSITE POWER STUDY (TIA 94-021)

SEQUOYAH NUCLEAR PLANT 1 AND 2

At the Sequoyah Nuclear Plant, the Tennessee Valley Authority (TVA) replaced the preferred offsite power system Common Station Service Transformers (CSSTs) with new transformers equipped with automatic load tap changers. In connection with this replacement, TVA revised the analysis that demonstrated that the 161 kV transmission network remains stable and thus, available, as a reliable offsite power supply to ensure safe shutdown of the Sequoyah units in the event of (1) anticipated operational occurrences and accidents at the nuclear facility or (2) anticipated contingencies on the transmission network such as the loss of the transformer that interties the 161 kV and 500 kV switchyards located at the Sequoyah plant.

Transmission network load-flow drawings [TVA Engineering Calculation - Offsite Power Supply - (E31930907200)] indicate that pre-LOCA steady state voltage was 165 kV (intertie transformer out of service) and post-event (subsequent to a LOCA in Unit 2) steady state voltage was above the 153 kV limit, with the lowest voltage of 154.7 kV occurring for the case with a system loading of 15,000 MVA. The load-flow drawings thus indicated that the TVA transmission network will be capable of providing adequate post event steady state voltage and frequency to SQN. The drawings, however, do not provide transient voltages which may occur during the transition from pre to post LOCA event steady state voltages.

SQN loss of voltage and degraded voltage set points imposed by the technical specifications for under-voltage protective relays require that offsite circuits to the SQN safety system loads be disconnected if voltage at the safety buses (1) goes below 5520 V for greater than 1 second or (2) goes below 6456 V without recovery to a voltage above 6595.5 V within a minimum of 7.5 seconds.

The staff is concerned that transient voltages (which may occur on the transmission network following trip of the nuclear unit due to a LOCA condition) may exceed protective relay set points and cause disconnection of offsite circuits to safety buses when needed, due to actuation of under-voltage protective relays. Based on the information that has been made available by the licensee to date, the staff is unable to determine if the immediate access offsite circuit would be available due to the transient conditions, as requested by the TIA. In order to resolve this concern, we have determined that additional information is needed. We therefore request that the following identified information be supplied by TVA.

ENCLOSURE

Analysis (or other justification) to demonstrate that the immediate access offsite circuits from the transmission network to the Sequoyah facility will remain connected to safety system loads as their source of power for all anticipated transmission network contingencies, including the worst-case contingency (intertie transformer out of service with a postulated LOCA in Unit 2). The analysis or justification should demonstrate that voltage at the safety buses (1) will not go below 5520 V for greater than the minimum technical specification limit of 1 second or (2) will not go below 6456 V without recovery to a voltage above 6595.5 V within the minimum technical specification limit of 7.5 seconds (i.e., the offsite circuits will not be tripped by the design of under voltage protective relays) due to transient voltages on the transmission network immediately after trip of Unit 2 due to a LOCA condition.

Mr. Oliver D. Kingsley, Jr.  
Tennessee Valley Authority

cc:

Mr. O. J. Zeringue, Sr. Vice President  
Nuclear Operations  
Tennessee Valley Authority  
3B Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. Mark O. Medford, Vice President  
Engineering & Technical Services  
Tennessee Valley Authority  
3B Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. R. J. Adney, Site Vice President  
Sequoyah Nuclear Plant  
Tennessee Valley Authority  
P.O. Box 2000  
Soddy Daisy, TN 37379

General Counsel  
Tennessee Valley Authority  
ET 10H  
400 West Summit Hill Drive  
Knoxville, TN 37902

Mr. P. P. Carrier, Manager  
Corporate Licensing  
Tennessee Valley Authority  
4G Blue Ridge  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. Ralph H. Shell  
Site Licensing Manager  
Sequoyah Nuclear Plant  
Tennessee Valley Authority  
P.O. Box 2000  
Soddy Daisy, TN 37379

## SEQUOYAH NUCLEAR PLANT

TVA Representative  
Tennessee Valley Authority  
11921 Rockville Pike  
Suite 402  
Rockville, MD 20852

Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, NW., Suite 2900  
Atlanta, GA 30323

Mr. William E. Holland  
Senior Resident Inspector  
Sequoyah Nuclear Plant  
U.S. Nuclear Regulatory Commission  
2600 Igou Ferry Road  
Soddy Daisy, TN 37379

Mr. Michael H. Mobley, Director  
Division of Radiological Health  
3rd Floor, L and C Annex  
401 Church Street  
Nashville, TN 37243-1532

County Judge  
Hamilton County Courthouse  
Chattanooga, TN 37402-2801