

July 23, 2003

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

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 - ENVIRONMENTAL  
ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT REGARDING  
EXEMPTIONS TO THE REQUIREMENTS OF TITLE 10 OF THE CODE OF  
FEDERAL REGULATIONS, PART 50, APPENDIX G (TAC NOS. MB6436 AND  
MB6437)

Dear Mr. Scalice:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to one of the two exemptions in your application dated September 6, 2002, as supplemented on December 19, 2002. The proposed exemptions would permit the use of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, Code Case N-640, "Alternative Requirement Fracture Toughness for Development of P-T Limit Curves for ASME B&PV Code, Section XI, Code Case N-640," in lieu of Title 10 of the *Code of Federal Regulations*, Part 50, Appendix G, Paragraph IV.A.2.b. The other exemption in your application dated September 6, 2002, as supplemented on December 19, 2002 is still undergoing review by the U.S. Nuclear Regulatory Commission staff.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,  
**/RA/**

Michael L. Marshall, Jr., 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: Environmental Assessment

cc w/encl: See next page

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UNITED STATES NUCLEAR REGULATORY COMMISSIONTENNESSEE VALLEY AUTHORITYDOCKET NOS. 50-327 AND 50-328SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2ENVIRONMENTAL ASSESSMENT AND FINDING OFNO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an exemption from Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.60 for Facility Operating License Nos. DPR-77 and DPR-79, issued to the Tennessee Valley Authority (TVA, the licensee), for operation of the Sequoyah Nuclear Plant (SQN), Units 1 and 2, located in Hamilton County, Tennessee. Therefore, as required by 10 CFR 51.21, the NRC is issuing this environmental assessment and finding of no significant impact.

ENVIRONMENTAL ASSESSMENTIdentification of the Proposed Action:

The proposed action would permit the use of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI Code Case N-640, "Alternative Requirement Fracture Toughness for Development of P-T Limit Curves for ASME B&PV Code, Section XI, Code Case N-640," in lieu of 10 CFR 50, Appendix G, paragraph IV.A.2.b.

The regulation at 10 CFR Part 50, Section 50.60(a), requires, in part, that except where an exemption is granted by the Commission, all light-water nuclear power reactors must meet the fracture toughness requirements for the reactor coolant pressure boundary set forth in Appendix G to 10 CFR Part 50. Appendix G of 10 CFR Part 50 requires the establishment of pressure-temperature (P-T) limits for specific material fracture toughness requirements of the reactor coolant pressure boundary materials and mandates the use of the ASME B&PV Code, Section XI, Appendix G. The requirements in 10 CFR 50, Appendix G, establish an adequate

margin to brittle failure during normal operation, anticipated operational occurrences, and system hydrostatic tests.

ASME B&PV Code, Section XI, Code Case N-640 permits the use of an alternate reference fracture toughness curve for reactor pressure vessel materials for use in determining the P-T limits. ASME Code Case N-640 permits the use of alternate reference fracture toughness (i.e., use of " $K_{IC}$  fracture toughness curve" instead of " $K_{IA}$  fracture toughness curve," where  $K_{IC}$  and  $K_{IA}$  are "Reference Stress Intensity Factors," as defined in ASME Code, Section XI, Appendices A and G, respectively) for reactor vessel materials in determining the P-T limits. Since the  $K_{IC}$  fracture toughness curve shown in ASME Code, Section XI, Appendix A, Figure A-2200-1, provides greater allowable fracture toughness than the corresponding  $K_{IA}$  fracture toughness curve of ASME Code, Section XI, Appendix G, Figure G-2210-1, using ASME Code Case N-640 to establish the P-T limits would be less conservative than the methodology currently endorsed by 10 CFR Part 50, Appendix G. Therefore, an exemption to apply ASME Code Case N-640 is required.

The proposed action is in accordance with the licensee's application dated September 6, 2002, as supplemented by letter dated December 19, 2002 and June 24, 2003.

The Need for the Proposed Action:

The proposed exemption is needed to allow the licensee to implement ASME Code Case N-640 in order to revise the method used to determine the P-T limits because continued use of the present method for determining P-T limits unnecessarily restricts the P-T operating window. The two primary benefits to the licensee from the use of Code Case N-640 are:

- Challenges to the operators would be reduced since the requirements for maintaining high-vessel temperature during pressure testing would be lessened.
- Enhanced personnel safety would result because of the lower temperatures which would exist during the conduct of inspections in primary containment.

Environmental Impacts of the Proposed Action:

The NRC has completed its evaluation of the proposed action and concludes that there are no significant environmental impacts associated with the use of the alternative analysis method to support the revision of the reactor coolant system P-T limits.

The proposed action will not significantly increase the probability or consequences of accidents, no changes are being made in the types or significant increase in the amounts of effluents that may be released offsite, and there is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential nonradiological impacts, the proposed action does not have a potential to affect any historic sites. It does not affect nonradiological plant effluents and has no other environmental impact. Therefore, there are no significant nonradiological environmental impacts associated with the proposed action.

Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

Environmental Impacts of the Alternatives to the Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the “no-action” alternative). Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

The action does not involve the use of any different resource than those previously considered in the Final Environmental Statement for SQN, dated February 13, 1974.

Agencies and Persons Consulted:

On July 15, 2003, the staff consulted with the Tennessee State official, Ms. Elizabeth Flannagan, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of this environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated September 6, 2002, as supplemented by letter dated December 19, 2002. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the Internet at the NRC Web site, <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS, should contact the NRC PDR Reference staff by telephone at 1-800-397-4209 or 301-415-4737, or by e-mail to [pdr@nrc.gov](mailto:pdr@nrc.gov).

Dated at Rockville, Maryland, this 23<sup>rd</sup> day of July 2003.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Allen G. Howe, Chief, Section 2  
Project Directorate 2  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Tennessee Valley Authority

**SEQUOYAH NUCLEAR PLANT**

cc:

Mr. Karl W. Singer, Senior Vice President  
Nuclear Operations  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. James E. Maddox, Vice President  
Engineering & Technical Services  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. Richard T. Purcell  
Site Vice President  
Sequoyah Nuclear Plant  
Tennessee Valley Authority  
P.O. Box 2000  
Soddy Daisy, TN 37379

General Counsel  
Tennessee Valley Authority  
ET 11A  
400 West Summit Hill Drive  
Knoxville, TN 37902

Mr. Robert J. Adney, General Manager  
Nuclear Assurance  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. Mark J. Burzynski, Manager  
Nuclear Licensing  
Tennessee Valley Authority  
4X Blue Ridge  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. Pedro Salas, Manager  
Licensing and Industry Affairs  
Sequoyah Nuclear Plant  
Tennessee Valley Authority  
P.O. Box 2000  
Soddy Daisy, TN 37379

Mr. D. L. Koehl, Plant Manager  
Sequoyah Nuclear Plant  
Tennessee Valley Authority  
P.O. Box 2000  
Soddy Daisy, TN 37379

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

Mr. Lawrence E. Nanney, Director  
Division of Radiological Health  
Dept. of Environment & Conservation  
Third Floor, L and C Annex  
401 Church Street  
Nashville, TN 37243-1532

County Executive  
Hamilton County Courthouse  
Chattanooga, TN 37402-2801

Ms. Ann P. Harris  
341 Swing Loop Road  
Rockwood, Tennessee 37854

Heinz Mueller [5 copies]  
Environmental Review Coordinator  
US EPA Region 4  
61 Forsyth Street, SW.  
Atlanta, Georgia 30303-3104