



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

April 16, 2010

Mr. Rodney M. Krich  
Vice President, Nuclear Licensing  
Tennessee Valley Authority  
3R Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 – REVIEW OF THE UNIT 1  
CYCLE 17 AND UNIT 2 CYCLE 16 CORE OPERATING LIMITS REPORTS  
(TAC NOS. ME1193 AND ME1165)

Dear Mr. Krich:

By letters dated April 27 and April 30, 2009, Tennessee Valley Authority, the licensee, submitted the Sequoyah Nuclear Plant core operating limits reports (COLRs) for Unit 2, Cycle 16, and Unit 1, Cycle 17, respectively, as required by Technical Specification Section 6.9.1.14.c. On March 9, 2010, the Nuclear Regulatory Commission (NRC) requested for additional information, and the licensee provided responses on April 2, 2010. The NRC staff has reviewed these responses and concluded that the COLRs are acceptable per the enclosed safety evaluation.

If you have any questions, please contact me at 301-415-1564.

Sincerely,

A handwritten signature in cursive script that reads "Siva P. Lingam".

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

Docket Nos. 50-327 and 50-328

Enclosure: Safety Evaluation

cc w/encls: Distribution via ListServ



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

SAFETY EVALUATION OF THE CORE OPERATING LIMITS REPORTS

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

By letters dated April 27 and April 30, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML091210699 and ML091240246, respectively), Tennessee Valley Authority (TVA, the licensee) submitted the Sequoyan Nuclear Plant (SQN) core operating limits reports (COLRs) for Unit 2, Cycle 16, and Unit 1, Cycle 17, respectively, as required by Technical Specification Section 6.9.1.14.c. The April 27, 2009, letter indicated that the previous revision to the Unit 2, cycle 16, COLR had errors in the calculation of departure from nucleate boiling (DNB) maximum allowable peaking (MAP) limits. The Nuclear Regulatory Commission (NRC) staff reviewed the COLR submittals and requested additional information (RAI) about the error and its impact on the SQN Units 1 and 2 COLRs by letter dated March 9, 2010.

The licensee provided the RAI responses on April 2, 2010, addressing the NRC staff questions with respect to: (a) an identification of the exact error that impacted the parameters listed in Section 1.0 of the licensee's April 27, 2009, submittal; (b) the methodology used to analyze the impact of the input error; and (c) a description of the analysis used to determine the impact of the error and to justify that there is sufficient margin to account for the error for both Unit 2, Cycle 16 COLR and Unit 1, Cycle 17 COLR. The NRC staff reviewed the licensee's RAI responses, and found them acceptable for the following reasons:

1. In version 27.1 of the NRC-approved LYNXT thermal-hydraulic computer code, an incorrect manual entry of the critical heat flux (CHF) correlation was made. This error was revealed in a later version of the LYNXT code that included an automatic feature to select the appropriate CHF correlation.
2. NRC-approved methods were used to analyze the impact of the input error. The licensee used Version 29.0 of the LYNXT computer code to regenerate the initial condition DNB (IC-DNB) MAP limits using the NRC-approved methodology. DNB peaking margins relative to the IC-DNB MAP limits, calculated from limiting power distributions for the reload core, are used in the core power distribution monitoring software to validate the core power peaking surveillance requirements when monthly incore flux map results are generated.
3. The peaking margin calculation results demonstrated that greater than 9.5 percent IC-DNB peaking margin at the positive axial flux difference limit existed even for the most limiting core power distributions that occurred for outlet-peaked axial power shapes based upon DNB criteria.

Enclosure

4. The minimum measured IC-DNB peaking margin for limiting conditions was always greater than 8 percent for both SQN, Unit 1 Cycle 17 and SQN, Unit 2 Cycle 16, which is greater than the maximum reduction seen in the IC-DNB MAP limits due to error.

In conclusion, the error did not result in operation outside the design basis, and the error has been corrected in the current version of the LYNXT code.

Principal Contributor: T. Huang

Date: April 16, 2010

April 16, 2010

Mr. Rodney M. Krich  
Vice President, Nuclear Licensing  
Tennessee Valley Authority  
3R Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 – REVIEW OF THE UNIT 1  
CYCLE 17 AND UNIT 2 CYCLE 16 CORE OPERATING LIMITS REPORTS  
(TAC NOS. ME1193 AND ME1165)

Dear Mr. Krich:

By letters dated April 27 and April 30, 2009, Tennessee Valley Authority, the licensee, submitted the Sequoyah Nuclear Plant core operating limits reports (COLRs) for Unit 2, Cycle 16, and Unit 1, Cycle 17, respectively, as required by Technical Specification Section 6.9.1.14.c. On March 9, 2010, the Nuclear Regulatory Commission (NRC) requested for additional information, and the licensee provided responses on April 2, 2010. The NRC staff has reviewed these responses and concluded that the COLRs are acceptable per the enclosed safety evaluation.

If you have any questions, please contact me at 301-415-1564.

Sincerely,

*/ra/*

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

Docket Nos. 50-327 and 50-328

Enclosure: Safety Evaluation

cc w/encls: Distribution via ListServ

Distribution:

PUBLIC	LPL2-2 R/F	RidsNrrDorlLpl2-2
RidsNrrPMSequoyah	RidsOgcRp	RidsNrrLACSola (Hard Copy)
RidsAcrcAcnw_MailCTR	RidsRgn2MailCenter	RidsNrrDssSrxb
RidsNrrDorlDpr	THuang, SRXB	

ADAMS ACCESSION NO.: ML100990248

\*by memo

OFFICE	LPL2-2/PM	LPL2-2/LA	SRXB/BC	LPL2-2/BC (A)
NAME	SLingam	CSola	GCranston*	DBroaddus (SBailey for)
DATE	4/13/10	4/13/10	04/08/10	4/16/10

OFFICIAL RECORD