

April 6, 2006

Mr. Karl W. Singer  
Chief Nuclear Officer and  
Executive Vice President  
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6A Lookout Place  
1101 Market Street  
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SUBJECT: SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 — ISSUANCE OF  
AMENDMENTS RE: REVISION OF ALLOWABLE VALUE FOR REACTOR  
TRIP SYSTEM (TAC NOS. MC8246 AND MC8247) (TS-05-04)

Dear Mr. Singer:

The Commission has issued the enclosed Amendment No. 307 to Facility Operating License No. DPR-77 and Amendment No. 296 to Facility Operating License No. DPR-79 for the Sequoyah Nuclear Plant, Units 1 and 2, respectively. These amendments are in response to your application dated September 1, 2005, as supplemented by letters dated March 16 and 30, 2006 (TS-05-04).

The amendments revise the reactor protection system turbine trip allowable value for low trip system pressure from greater than or equal to 43 pounds per square inch gauge (psig) to 39.5 psig. The amendments revise Technical Specification 2.2.1, Functional Unit 17.A allowable value in Table 2.2-1 "Reactor Trip System Instrumentation Setpoints." The amendments are limited in duration and will expire at the end of the Cycle 15 Operating Cycle for each unit.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,  
/RA/

Douglas V. Pickett, Senior Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Encls: 1. Amendment No. 307 to License No. DPR-77  
2. Amendment No. 296 to License No. DPR-79  
3. Safety Evaluation

cc w/encls: See next page

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Mr. Karl W. Singer  
Tennessee Valley Authority

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TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 307  
License No. DPR-77

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated September 1, 2005, as supplemented by letters dated March 16 and 30, 2006, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in Title 10 *Code of Federal Regulations* (10 CFR) Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-77 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 307, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance, to be implemented no later than 45 days after issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Michael L. Marshall, Jr., Branch Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: April 6, 2006

ATTACHMENT TO LICENSE AMENDMENT NO. 307

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Replace the following page of the Appendix A Technical Specifications with the attached page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE

2-6a

INSERT

2-6a

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-328

SEQUOYAH NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 296  
License No. DPR-79

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated September 1, 2005, as supplemented by letter dated March 16 and 30, 2006, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-79 is hereby amended to read as follows:

- (2) Technical Specifications

- The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 296, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance, to be implemented no later than 45 days after issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Michael L. Marshall, Jr., Branch Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: April 6, 2006



ATTACHMENT TO LICENSE AMENDMENT NO. 296

FACILITY OPERATING LICENSE NO. DPR-79

DOCKET NO. 50-328

Replace the following page of the Appendix A Technical Specifications with the attached page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE

2-7

INSERT

2-7

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 307 TO FACILITY OPERATING LICENSE NO. DPR-77  
AND AMENDMENT NO. 296 TO FACILITY OPERATING LICENSE NO. DPR-79  
TENNESSEE VALLEY AUTHORITY  
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2  
DOCKET NOS. 50-327 AND 50-328

1.0 INTRODUCTION

By application dated September 1, 2005, as supplemented by letters dated March 16 and March 30, 2006, the Tennessee Valley Authority (TVA, the licensee) proposed amendments to the Technical Specifications (TSs) for Sequoyah Nuclear Plant (SQN) Units 1 and 2. The supplemental letters provided clarifying information that expand the scope of the amendment and did not change the initial proposed no significant hazards consideration determination.

The requested changes would temporarily revise the allowable value for the low trip system pressure input to the reactor trip system that indicates a turbine trip condition. This function has a setpoint value of greater than or equal to ( $\geq$ ) 45 pounds per square inch (psig) and the current allowable value is  $\geq$  43 psig. The licensee proposes to revise the allowable value to  $\geq$  39.5 psig. The amendments would be limited in duration and would expire at the end of the Cycle 15 Operating Cycle for each unit.

The proposed change would revise the allowable value of TS Table 2.2.1 "Reactor Trip System Instrumentation Trip Setpoints," Functional Unit 17.A "Low Trip System Pressure." This function monitors the main turbine auto oil stop pressure and generates an anticipatory trip of the reactor in the event that the pressure drops below a predetermined value. The autostop oil pressure signal dumps the autostop emergency trip fluid, closing all of the turbine steam stop valves. The trip setpoint will remain at the current value of  $\geq$  45.0 psig. This change will not affect other portions of the TS.

The reactor trip on turbine trip is actuated by either (1) a two out of three logic from low autostop oil pressure signals or (2) an all-closed signal from the turbine steam stop valves. A turbine trip causes a direct reactor trip above the P-9 setpoint, which is set at approximately 50 percent power level.

The reactor trip on turbine trip is an anticipatory trip input signal to the reactor trip system. The involved switch trip function is an anticipatory trip to enhance the overall reliability of the reactor trip system. The reactor trip is not credited in any of the Chapter 15 accident analysis of the SQN Updated Final Safety Analysis Report. The licensee does not attribute any safety limit for the switch function.

## 2.0 BACKGROUND

TVA has evaluated historical calibration data for the autostop oil pressure sensors at the SQN facility. This data indicates an unacceptable number of occurrences where the as-found instrument values were outside the allowable value limits. TVA has utilized the Corrective Action Program to investigate these occurrences and determine a resolution to minimize these events. The licensee concluded that the allowable value for this function was too limiting for the accuracy and repeatability of the switches and, therefore, not adequate based on the design capabilities of the instrumentation.

## 3.0 REGULATORY EVALUATION

The following regulatory bases and guidance documents pertain to the proposed TS change:

General Design Criterion (GDC) 13 "Instrumentation and Control," of Appendix A "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 "Domestic Licensing of Production and Utilization Facilities," requires, among other things, that instrumentation be provided to monitor variables and systems and that controls be provided to maintain these variables and systems within prescribed operating ranges.

GDC 20 "Protection System Functions," of Appendix A to 10 CFR Part 50 requires, among other things, that the protection system be designed to initiate operation of appropriate systems to ensure that specified acceptable fuel design limits are not exceeded.

Regulatory Guide 1.105 "Setpoints for Safety-Related Instrumentation," describes a method acceptable to the Nuclear Regulatory Commission (NRC) staff for complying with the NRC's regulations for ensuring that setpoints for safety-related instrumentation are initially within and remain within the technical specification limits.

## 4.0 TECHNICAL EVALUATION

The turbine autostop oil system is designed to operate at approximately 90 psig. As previously discussed, the autostop oil pressure signal dumps the autostop emergency trip fluid, closing all of the turbine steam stop valves. When the autostop emergency trip fluid is dumped, oil pressure immediately drops from its normal operating pressure of approximately 90 psig to 0 psig. The system trip setpoint (45 psig) and allowable value (43 psig) were supplied by the nuclear steam system supplier (Westinghouse). These values were system generic values and not specifically designed for application at the SQN facility. As discussed in Section 2.0 of this safety evaluation, the licensee has concluded that the allowable value for this function is too limiting for the accuracy and repeatability of the switches and, therefore, not adequate based on the design capabilities of the instrumentation.

The licensee has prepared a calculation to define a plant-specific allowable value for the switch setpoint of 45 psig. The allowance between the allowable value and the trip setpoint accounts for instrument drift, calibration uncertainties for the channel tested, and instrument uncertainties during normal operation that are measured during testing.

The allowable value as calculated by the licensee is simply the normal setpoint (45 psig) minus a term referred to as the Normal Measurable Accuracy. The Normal Measurable Accuracy is the square root of the summation of squares of the unknowns. The unknowns include their own tolerances (i.e., instrument drift, temperature effects, switch repeatability, as-left calibration tolerance, input calibration test equipment accuracy, and reading error allowance).

The licensee's calculation identifies the Normal Measurable Accuracy as 5.5 psig. This results in a plant-specific allowable value of 39.5 psig (i.e., 45 psig - 5.5 psig).

The staff has reviewed the licensee's setpoint methodology and calculation and concludes that the methodology demonstrates that the proposed allowable value is reasonable. This proposed change will allow the instrumentation that performs this trip function to be tested and verified to be operable within the capabilities of the pressure switches. In addition, the licensee's setpoint calibration procedures will maintain the trip setpoint within the established setting tolerance to ensure that the instrument will be capable of performing its specified safety function. Based on its review of the licensee's calculation and justification, the staff finds the proposed TS change acceptable until the end of Cycle 15 Operating Cycle for each unit. A footnote in the revised TS pages documents this limit.

## 5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the staff made a good faith effort to notify the Tennessee state official of the proposed issuance of the amendments. However, the staff was unable to contact the state official prior to issuance of the amendments. The staff will inform the state official of this action.

## 6.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (70 FR 61662). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

## 7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: S. Rhow  
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Date: April 6, 2006