November 19, 1998

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

SUBJECT: ISSUANCE OF TECHNICAL SPECIFICATION AMENDMENTS FOR THE SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 (TAC NOS. MA2164 AND MA2169)(TS 98-01)

Dear Mr. Scalice:

The Commission has issued the enclosed Amendment No. 239 to Facility Operating License No. DPR-77 and Amendment No. 229 to Facility Operating License No. DPR-79 for the Sequoyah Nuclear Plant (SQN), Units 1 and 2, respectively. These amendments are in response to your application dated April 30, 1998. The amendments revise the SQN Technical Specification Surveillance Requirement 4.4.3.2.1.b by changing the mode requirement to allow power-operated relief valve stroke testing in Modes 3, 4, and 5 with a steam bubble in the pressurizer rather than only in Mode 4.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice. Please direct any questions you or your staff should have to me at 301-415-2010.

Sincerely,

Original signed by:

Ronald W. Hernan, Senior Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosures:
1. Amendment No. 239 to License No. DPR-77
2. Amendment No. 229 to License No. DPR-79
3. Safety Evaluation

Distribution (w/enclosure):

[redacted]
PUBLIC
SQN r/f
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ACRS
R. Hernan
F. Hebdon
W. Beckner
G. Hill (4)
T. Harris (TLH3 w/ SE)
J. Zwolinski (A)
OGC
B. Clayton
T. Collins

df01

cc w/enclosures: See next page

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DATE	~~10/23/98~~ 11/10/98	~~10/~~ 11/10/98	10/29/98	11/9/98	11/11/98	11/19/98

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OFFICE	PDII-3/PM		PDII-3/LA		SRXB/BC		EMEB		OGC		PDII-3/D	C
NAME	RHernan		BClayton		TCollins*		RWessman				FHebdon	
DATE	~~10/23/98~~ 11/10/98		~~10/~~ 11/10/98		10/29 /98		11/ 5 /98		11/ 11 /98		11 / 19 /98	

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

November 19, 1998

Mr. J. A. Scalice
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Executive Vice President
Tennessee Valley Authority
6A Lookout Place
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Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosures:
1. Amendment No. 239 to License No. DPR-77
2. Amendment No. 229 to License No. DPR-79
3. Safety Evaluation

cc w/enclosures: See next page

Mr. J. A. Scalice
Tennessee Valley Authority

SEQUOYAH NUCLEAR PLANT

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Chattanooga, TN 37402-2801

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 239
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 April 30, 1998, 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-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. 239 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

Frederick J. Hebdon

Frederick J. Hebdon, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: November 19,1998

ATTACHMENT TO LICENSE AMENDMENT NO. 239

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Revise the Appendix A Technical Specifications by removing the page identified below and inserting the enclosed page. The revised page is identified by the captioned amendment number and contains a marginal line indicating the area of change.

REMOVE	INSERT
3/4 4-4a	3/4 4-4a
B 3/4 4-2a	B 3/4 4-2a

REACTOR COOLANT SYSTEM

RELIEF VALVES - OPERATING

LIMITING CONDITION FOR OPERATION

3.4.3.2 Two power relief valves (PORVs) and their associated block valves shall be OPERABLE. R16

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one or more PORV(s) inoperable, but capable of RCS pressure control, within 1 hour either restore the PORV(s) to OPERABLE status or close the associated block valve(s); otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. R115 R161

b. With one PORV inoperable and incapable of RCS pressure control, within 1 hour either restore the PORV to OPERABLE status or close the associated block valve and remove power from the block valve; restore the PORV to OPERABLE status within the following 72 hours or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. R115 R161

c. With both PORVs inoperable and incapable of RCS pressure control, within 1 hour either restore each of the PORVs to OPERABLE status or close their associated block valves and remove power from the block valves and be in HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours. R115 R161

d. With one or more block valve(s) inoperable, within 1 hour: (1) restore the block valve(s) to OPERABLE status, or close the block valve(s) and remove power from the block valve(s), or close the PORV(s) and remove power from its associated solenoid valve(s); and (2) apply the ACTION b. or c. above, as appropriate, for the isolated PORV(s). R115

e. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 In addition to the requirements of Specification 4.0.5, each PORV shall be demonstrated OPERABLE at least once per 18 months by:

a. Performance of a CHANNEL CALIBRATION, and

b. Operating the valve through one complete cycle of full travel during Modes 3, 4, or 5 with a steam bubble in the pressurizer. R161

4.4.3.2.2 Each block valve shall be demonstrated OPERABLE at least once per 92 days by operating the valve through one complete cycle of full travel.

to cycle the valves when they have been closed to comply with the ACTION requirements. This precludes the need to cycle the valves with full system differential pressure or when maintenance is being performed to restore an inoperable PORV to operable status. R161

Testing of PORVs with a steam bubble in the pressurizer is considered to be a representive test for assessing PORV performance under normal operating conditions.

3/4.4.4 PRESSURIZER

The limit on the maximum water volume in the pressurizer assures that the parameter is maintained within the normal steady state envelope of operation assumed in the SAR. The limit is consistent with the initial SAR assumptions. The 12 hour periodic surveillance is sufficient to ensure that the parameter is restored to within its limit following expected transient operation. The maximum water volume also ensures that a steam bubble is formed and thus the RCS is not a hydraulically solid system. The requirement that 150 kw of pressurizer heaters and their associated controls be capable of being supplied electrical power from an emergency bus provides assurance that the plant will be able to control reactor coolant pressure and establish natural circulation conditions. R16

3/4.4.5 STEAM GENERATORS

The Surveillance Requirements for inspection of the steam generator tubes ensure that the structural integrity of this portion of the RCS will be maintained. The program for inservice inspection of steam generator tubes is based on a modification of Regulatory Guide 1.83, Revision 1. Inservice inspection of steam generator tubing is essential in order to maintain surveillance of the conditions of the tubes in the event that there is evidence of mechanical damage or progressive degradation due to design, manufacturing errors, or inservice conditions that lead to corrosion. Inservice inspection of steam generator tubing also provides a means of characterizing the nature and cause of any tube degradation so that corrective measures can be taken.

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-328

SEQUOYAH NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 229
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 April 30, 1998, 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. 229 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

Frederick J. Hebdon

Frederick J. Hebdon, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: November 19, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 229

FACILITY OPERATING LICENSE NO. DPR-79

DOCKET NO. 50-328

Revise the Appendix A Technical Specifications by removing the page identified below and inserting the enclosed page. The revised page is identified by the captioned amendment number and contains a marginal line indicating the area of change.

REMOVE	INSERT
3/4 4-8	3/4 4-8
B 3/4 4-2a	B 3/4 4-2a

REACTOR COOLANT SYSTEM

RELIEF VALVES - OPERATING

LIMITING CONDITION FOR OPERATION

3.4.3.2 All power operated relief valves (PORVs) and their associated block valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one or more PORV(s) inoperable, but capable of RCS pressure control, within 1 hour either restore the PORV(s) to OPERABLE status or close the associated block valve(s); otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. R101 R147

b. With one PORV inoperable and incapable of RCS pressure control, within 1 hour either restore the PORV to OPERABLE status or close the associated block valve and remove power from the block valve; restore the PORV to OPERABLE status within the following 72 hours or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. R101 R147

c. With both PORVs inoperable and incapable of RCS pressure control, within 1 hour either restore each of the PORVs to OPERABLE status or close their associated block valves and remove power from the block valves and be in HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours. R101 R147

d. With one or more block valve(s) inoperable, within 1 hour: (1) restore the block valve(s) to OPERABLE status, or close the block valve(s) and remove power from the block valve(s), or close the PORV(s) and remove power from its associated solenoid valve(s); and (2) apply the ACTION b. or c. above, as appropriate, for the isolated PORV(s). R101

e. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 In addition to the requirements of Specification 4.0.5, each PORV shall be demonstrated OPERABLE at least once per 18 months by:

a. Performance of a CHANNEL CALIBRATION, and

b. Operating the valve through one complete cycle of full travel during Modes 3, 4, or 5 with a steam bubble in the pressurizer.

4.4.3.2.2 Each block valve shall be demonstrated OPERABLE at least once per 92 days by operating the valve through one complete cycle of full travel.

3/4.4.2 and 3/4.4.3 SAFETY AND RELIEF VALVES (Continued)

d. Automatic control of PORVs to control reactor coolant system pressure. This is a function that reduces challenges to the code safety valves for overpressure events.

e. Manual control of a block valve to isolate a stuck-open PORV.

R147

Surveillance requirements (SR) provide assurance that the PORVs and block valves can perform their functions. The block valves are exempt from the SR to cycle the valves when they have been closed to comply with the ACTION requirements. This precludes the need to cycle the valves with full system differential pressure or when maintenance is being performed to restore an inoperable PORV to operable status.

Testing of PORVs with a steam bubble in the pressurizer is considered to be a representive test for assessing PORV performance under normal operating conditions.

3/4.4.4 PRESSURIZER

The limit on the maximum water volume in the pressurizer assures that the parameter is maintained within the normal steady state envelope of operation assumed in the SAR. The limit is consistent with the initial SAR assumptions. The 12 hour periodic surveillance is sufficient to ensure that the parameter is restored to within its limit following expected transient operation. The maximum water volume also ensures that a steam bubble is formed and thus the RCS is not a hydraulically solid system. The requirement that 150 kw of pressu rizer heaters and their associated controls be capable of being supplied electr ical power from an emergency bus provides assurance that the plant will be able to control reactor coolant pressure and establish natural circulation conditions.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 239 TO FACILITY OPERATING LICENSE NO. DPR-77

AND AMENDMENT NO. 229 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

The Tennessee Valley Authority (TVA) requested amendments to Operating Licenses DPR-77 and DPR-79 for Sequoyah Nuclear Plant (SQN), Units 1 and 2, respectively, in a letter to the U.S. Nuclear Regulatory Commission (NRC) dated April 30, 1998. The amendments would modify the SQN Units 1 and 2 Technical Specification (TS) 3.4.3.2 by revising Surveillance Requirement (SR) 4.4.3.2.1.b to allow meeting the requirement by operating the power-operated relief valves (PORVs) through one complete cycle of full travel in Modes 3, 4, or 5 with a steam bubble in the pressurizer. Approval of this change would supersede the one-time footnote to Unit 1 SR 4.4.3.2.1, implemented by Amendment No. 230, dated January 13, 1998. Therefore, this request proposed deletion of the footnote in the Unit 1 TSs. The TS Bases are also being revised to reflect that representative conditions for PORV testing exist with a steam bubble in the pressurizer.

2.0 BACKGROUND

On June 25, 1990, the NRC staff issued Generic Letter (GL) 90-06, "Resolution of Generic Issue 70, 'Power-Operated Relief Valve and Block Valve Reliability' and Generic Issue 94, 'Additional Low-Temperature Overpressure Protection for Light-Water Reactors,' Pursuant to 10 CFR 50.54(f)." The GL requested that licensees adopt the staff positions and appropriate TSs for their facilities.

Generic Issue 70, "Power-Operated Relief Valve and Block Valve Reliability," involves the evaluation of the reliability of PORVs and PORV block valves and their safety significance in pressurized water reactors. The GL discussed how PORVs are increasingly being relied on to perform safety-related functions and the corresponding need to improve the reliability of both PORVs and their associated block valves. Briefly stated, the GL required the following actions to improve PORV and block valve reliability:

a. Include PORVs and PORV block valves within the scope of an operational quality assurance program that is in compliance with 10 CFR Part 50, Appendix B.

b. Include PORVs and PORV block valves within the scope of a program covered by subsection IWV, "Inservice Testing of Valves in Nuclear Power Plants," of Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. Also, stroke testing of PORVs should only be performed in Modes 3 or 4 and in all cases prior to establishing conditions where the PORVs are used for low temperature overpressure protection (LTOP).

c. Include TS for PORVs and PORV block valves for operational Modes 1, 2, and 3 to incorporate the new staff position. Included in the staff position is a requirement that plants that run with block valves closed (e.g., due to leaking PORVS) maintain electrical power to the block valves so they can readily be opened from the control room upon demand.

Specifically, position 2 in the GL stated that stroke testing of PORVs should be performed during Mode 3 or Mode 4 and should not be performed during power operation. In response to the GL, SQN's TSs require that stroke testing be performed in Mode 4.

PORV testing for the ASME Code-required Pump and Valve Inservice Testing Program is performed while in Mode 5, while testing of PORVs to demonstrate TS operability in accordance with SR 4.4.3.2.1.b, as presently written, requires Mode 4 plant conditions. The TS testing duplicates much of the inservice testing that is performed in Mode 5. Required plant conditions for the ASME Code testing, including stroke time testing to detect PORV degradation, is that reactor coolant system (RCS) average temperature (Tavg) be less than or equal to 200°F. ASME Code testing is performed in Mode 5 because there is inherent risk from a potential loss of inventory standpoint when testing during operation, and there is a potential risk of a PORV sticking open even though the block valve is capable of being closed. In addition, indirect remote position verification, achievable in Mode 5, is necessary since direct observation of stem movement is not available due to SQN's valve design. Changing the mode requirement to allow Mode 5 performance would provide flexibility in testing and would eliminate duplication. Changing the mode requirement to include Mode 3 allows additional flexibility within the bounds of the original NRC guidance of GL 90-06.

3.0 EVALUATION

As stated in the TS Bases, the PORVs and steam bubble function to relieve RCS pressure during all design transients up to and including the design step load decrease with steam dump. Operation of the PORVs minimizes the undesirable opening of the spring-loaded pressurizer Code safety relief valves. Each PORV has a remotely operated block valve to provide positive shutoff capability should a relief valve become inoperable. The PORVs also function to remove noncondensable gases or steam from the pressurizer.

Current TSs for controlling PORVs are a result of NRC GL 90-06. GL 90-06 and NUREG-1316, "Regulatory Analysis for the Resolution of Generic Issue 94, Additional Low-Temperature Overpressure Protection for Light-Water Reactors," provide little insight as to why Mode 3 or Mode 4 may be desired, except to suggest that it would better simulate temperature and pressure environmental conditions. Requirements for Modes 3, 4, and 5 are basically defined by RCS Tavg. Mode 3 requires > 350°F; Mode 4 requires < 350°F, but > 200°F; and Mode 5 requires Tavg ≤ 200°F. However, the key parameter for PORV test is pressurizer pressure and temperature, not RCS Tavg. Frequently in Mode 5, a pressurizer bubble is developed for RCS pressure control. With a steam bubble in the pressurizer, the steam pressure is ≥200°F, which is higher than the lowest temperature allowed for Mode 4 (200°F). As a result, representative conditions for PORV testing are present in Modes 3, 4, and 5 with a steam bubble in the pressurizer. Therefore, expanding mode requirements from only Mode 4 to Modes 3, 4, or 5, with a steam bubble is acceptable and within the representative test requirements assessed in GL 90-06.

A possible factor related to testing in other than Mode 4 would be the effect on the low temperature overpressure protection (LTOP) TS 3.4.12. This TS is applicable in Modes 4 and 5, and Mode 6 with the reactor vessel head on. Since the current SR 4.4.3.2.1.b must be performed in Mode 4 and the ASME testing is performed in Mode 5, deletion of the mode restriction on SR 4.4.3.2.1.b would allow the two tests to be performed together in the same mode, lessening the time that potential LTOP impacts exist. Testing in Mode 3 likewise reduces potential LTOP impacts.

The footnote to Unit I SR 4.4.3.2.1 is superseded by this request and its deletion will have no affect on plant operations.

The staff has reviewed the licensee's proposed modifications to the SQN TS. Since the proposed modifications are consistent with the staff's position previously stated in GL 90-06 and are justified in the above referenced regulatory analysis, the staff finds the proposed modifications to be acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Tennessee State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (63 FR 38204, dated July 15, 1998). 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.

6.0 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 the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: R. Hernan

Dated: November 19, 1998