Docket Nos. 50-327

May 9, 1990

Mr. Oliver D. Kingsley, Jr.
Senior Vice President, Nuclear Power
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Mr. Kingsley:

SUBJECT: RHR MID LOOP OPERATION, AUTOCLOSURE INTERLOCK DELETION (TAC 75523) (TS 89-18) - SEQUOYAH NUCLEAR PLANT, UNIT 1

The Commission has issued the enclosed Amendment No. 139 to Facility Operating License No. DPR-77, Sequoyah Nuclear Plant, Unit 1. This amendment is in response to your application dated December 8, 1989, as supplemented by your letter dated March 15, 1990.

The amendment deletes Surveillance Requirement (SR) 4.5.2.d.1 of the Sequoyah Nuclear Plant, Unit 1, Technical Specifications (TSs). This SR required verification of the automatic isolation and interlock function of the residual heat removal (RHR) system which was used to protect the RHR system from the reactor coolant system pressure when the pressure is above 700 psi gauge. The autoclosure interlock function is being removed from the RHR system in the current Unit 1 Cycle 4 refueling outage. This is discussed in the enclosed Safety Evaluation.

Your application also proposed changes to the Unit 2 TSs. These changes will be issued during the upcoming Unit 2 Cycle 4 refueling outage, which is scheduled to begin in October 1990, because the autoclosure interlock function for the Unit 2 RHR system is scheduled to be removed during this outage. The enclosed Safety Evaluation for Unit 1 also applies to Unit 2.

A Notice of Issuance of this Amendment will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

J. Donohew for
Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 139 to License No. DPR-77
2. Safety Evaluation

cc w/enclosures:
See next page

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OFC	:NRR:TVA:PM	:OGC	:TVA:AD	:	:	:
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DATE	:5/6/90	:5/7/90	:5/9/90	:	:	:

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AMENDMENT NO. 139 FOR SEQUOYAH UNIT NO. 1 - DOCKET NO. 50-327
DATED: May 9, 1990

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TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 139
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 December 8, 1989 and the supplemental letter dated March 15, 1990 comply 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. 139, 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.

FOR THE NUCLEAR REGULATORY COMMISSION

Jack n Donohew Jr for

Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 9, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 139

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE	INSERT
3/4 5-6	3/4 5-6

SURVEILLANCE REQUIREMENTS (Continued)

	Valve Number	Valve Function	Valve Position
a.	FCV-63-1	RHR Suction from RWST	open
b.	FCV-63-22	SIS Discharge to Common Piping	open

b. At least once per 31 days by:

1. Verifying that the ECCS piping is full of water by venting the ECCS pump casings and accessible discharge piping high points, and

2. Verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

c. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions. This visual inspection shall be performed:

1. For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and

2. Of the areas affected within containment at the completion of each containment entry when CONTAINMENT INTEGRITY is established.

d. At least once per 18 months by:

1. Deleted.

2. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.

e. At least once per 18 months, during shutdown, by:

1. Verifying that each automatic valve in the flow path actuates to its correct position on a safety injection test signal and automatic switchover to containment sump test signal.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 139 TO FACILITY OPERATING LICENSE NO. DPR-77

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT, UNIT 1

DOCKET NOS. 50-327

1.0 INTRODUCTION

By letter dated December 8, 1989 (Ref. 1), the Tennessee Valley Authority (TVA or the licensee) proposed changes to the Technical Specifications (TSs) for Sequoyah Nuclear Plant, Units 1 and 2, to delete Surveillance Requirement (SR) 4.5.2.d.1. This SR requires verification of the automatic isolation of the residual heat removal (RHR) system from the reactor coolant system (RCS) when the RCS pressure is above 700 pounds per square inch gage. The SR 4.5.2.d.1 is proposed to be deleted because the autoclosure interlock (ACI) function of the RHR system is being removed during the Cycle 4 refueling outage for each unit. The ACI function for Unit 1 has been removed in the current Unit 1 Cycle 4 refueling outage and for Unit 2 will be removed during the upcoming Unit 2 Cycle 4 refueling outage scheduled to begin in October 1990. Removal of the ACI function is expected to reduce the risk to Sequoyah from events involving loss of RHR cooling capabilities during nonpower operations. Additional information was requested and was supplied in the letter dated March 15, 1990 (Reference 2).

The letter dated March 15, 1990 provided the Westinghouse Electric Corporation's report documenting the qualitative probabilistic risk assessment evaluation of the Sequoyah design for ACI deletion. The Sequoyah design is different from the design reviewed by the staff when it evaluated WCAP-11736-A for the removal of ACI on a generic plant basis. The information provided by the licensee in this letter did not change the substance of the proposed action published in the Federal Register Notice (55 FR 2446) on January 24, 1990 for the proposed amendments and does not affect the staff's initial determination of no significant hazards consideration in that notice.

2.0 EVALUATION

The licensee referenced the approved Westinghouse Owners Group (WOG) report WCAP-11736-A, "Residual Heat Removal System Autoclosure Interlock Removal Report for the Westinghouse Owners Group." In this report the Sequoyah plant is shown to be similar to plants in Group 1 for which the reference plant is Salem Unit 1.

The licensee presented the results from WCAP-11736-A and applicable Sequoyah information from a series of plant-specific analyses. These results take into account the impact of the removal of the ACI function on the RHR inlet isolation valves. The licensee concluded that implementation of the proposed design, proposed technical specifications, and procedure changes will reduce the frequency of an RHR overpressurization event and increase the RHR system availability at Sequoyah.

The staff position taken in its evaluation of WCAP-11736-A and the removal of the ACI function is in Reference 3 and consisted of hardware changes and procedural enhancements along with ACI removal which the staff believes will produce a net safety benefit compared to the current plant arrangement with the ACI function. The hardware changes at Sequoyah will consist of the addition of an alarm to each RHR suction valve. The alarm will actuate if (1) one RHR valve is open and the other is closed or (2) the RHR system pressure exceeds a specified limit below 700 psi gauge. The open permissive circuitry which prevents these valves from being opened will not be affected by the addition of the alarm and the removal of the ACI circuitry. The alarm and valve position indication in the control room are still available following power lockout of the RHR suction valves.

2.1 Plant Specific PRA

The staff discussed with the licensee the need for a plant-specific probalistic risk assessment (PRA) for Sequoyah and the diversity of the RHR isolation valve position indication. The plant-specific PRA was to account for differences between the design for Sequoyah as presented in the licensee's letter dated March 15, 1990 (Reference 2) and the design for Salem as presented in WCAP-11736-A. These are the designs for ACI removal. The basic differences between the Salem design and the Sequoyah design are the following: (1) the pressure sensors for Salem are on the RCS side and the pressure sensors for Sequoyah are on the RHR side of the suction valves and (2) the alarm for Salem is on valve position and pressure ("and" logic) and the alarm for Sequoyah is on valve position or pressure ("or" logic).

The licensee's letter of March 15, 1990 (Ref. 2) provided an update to their letter of December 8, 1989 (Ref. 1) and included a Westinghouse report that documents a qualitative PRA evaluation comparing the Salem and Sequoyah designs taking into account the design differences with regard to ACI removal. Based on Sequoyah's proposed alarm configuration, the estimated failure probabilities from the effect of ACI removal were determined for (1) interfacing system loss of coolant accident potential, (2) RHR availability, and (3) low-temperature over-pressurization protection. In each one, the failure probability for Sequoyah, with ACI removed and the main control room alarm installed, was estimated to be approximately the same or less than the failure probability with ACI remaining.

2.2 Diversity of RHR Isolation Valve Position Indication

In regards to diversity of the RHR isolation valve position indication, the staff was informed in a telecon with the licensee on February 5, 1990, that the signal to the local panel, the control room, and the alarm are from the same position switch on the valve. Therefore, the indication of valve position is not independent. However, assurance is provided that the valves will be closed by the following: the position switch is tested in two ways to relate the signal from the position switch to the proper valve position by (1) the MOVATS program for each valve and (2) a leak rate test of each closed valve (Technical Specification 4.4.6.2.2). The MOVATS program correlates valve position by the "signature" of the valve thrust force and the valves are tested every 18 months as a minimum. The leak rate test is required at every refueling outage and when coming out of a cold shutdown condition which lasted more than 72 hours (if the valves have not been tested within the last 9 months). Redundant pressure sensors to the alarm are a diverse method for valve position indication to assure that at least one valve is fully closed. The pressure sensors are calibrated at 22 1/2 month intervals. The combination of the above two position switch tests (MOVATS program and leak rate) provide assurance that both valves are closed. The staff concludes that the Sequoyah design is acceptable.

The licensee also stated that there is a procedure to close and depower the RHR valves in the General Operating Instruction (GOI)-1 for plant startup from cold shutdown (Mode 5) to hot standby (Mode 3). A double sign off in GOI-1 for breaker lockout with a padlock will be added after ACI removal before entry of the units into Mode 4.

2.3 ACI Procedure Enhancements

The ACI procedure enhancements at Sequoyah are as follows:

1. An alarm for the RHR suction valves is to be added. The alarm response procedure used during plant startup will be modified to reflect the alarm recognition responses for the added alarm. The procedure will be revised to direct the operator to take the necessary actions to close the open RHR suction valve(s), if they are found open following alarm actuation. The operator will be instructed to not pressurize further and to return to a non-alarm condition.

2. A surveillance procedure for the alarm will be added before entry into Mode 4 to verify that the alarm remains operable.

3. Operating and test procedures will be in place to ensure that these valves are closed when the power is locked out (see Section 2.2 above for discussion on MOVATS, leak rate tests and pressure sensors).

The licensee has stated that the procedural enhancements will be done before either unit is restarted from its Cycle 4 refueling outage without ACI. Unit 1 is currently in its Cycle 4 refueling outage and the ACI function has been removed. Unit 2 will be in its Cycle 4 refueling outage in the fall and the ACI function will be removed from the Unit 2 RHR system at that time.

3.0 SUMMARY

The staff has evaluated the Sequoyah submittals (References 1 and 2) and has concluded that the hardware and procedural modifications proposed by the licensee meet the staff requirements for ACI removal and are, therefore, acceptable for removing the ACI function. This is discussed above. Based on this, the proposed TS changes to delete ACI from the TSs are acceptable.

4.0 REFERENCES

1. Letter, M. J. Ray, Tennessee Valley Authority to USNRC, Subject: Technical Specification Change 89-18, dated December 8, 1989.

2. Letter, E. J. Wallace, Tennessee Valley Authority to USNRC, Subject: Technical Specification Change 89-18, Additional Information, dated March 15, 1990.

3. Letter, Harry Rood (USNRC) to J. D. Shiffer (Pacific Gas and Electric), dated February 17, 1988.

5.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component within the restricted area as defined in 10 CFR Part 20 and changes to the surveillance requirements. The 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 cummulative occupational radiation exposure. The Commission had previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets 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 nor environmental assessment need be prepared in connection with the issuance of this amendment.

6.0 CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (55 FR 2446) on January 24, 1990 and consulted with the State of Tennessee. No public comments were received and the State of Tennessee did not have any comments.

The staff 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendments will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributor: H. Balukjian

Dated: May 9, 1990