



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

ENCLOSURE 3

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 160 TO FACILITY OPERATING LICENSE NO. DPR-77
AND AMENDMENT NO. 150 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 November 27, 1991, the Tennessee Valley Authority (the licensee) submitted a request for changes to the Sequoyah Nuclear Plant, Units 1 and 2 Technical Specifications (TS). The proposed amendments would address the actions required in the event that the loss-of-power instrumentation associated with the 6.9-kilovolt (kv) shutdown boards and the diesel generators is inoperable. The proposed change would: (1) add two new action statements (No. 34 and 35) to Table 3.3-3, "Engineered Safety Feature Actuation System Instrumentation;" and (2) change the references in Item 7 (Loss of Power), Items 7.a.2 and 7.b, from Action Statement 20 to Action Statement 34, and item 7.a.1 from reference to Action Statement 20 to Action Statement 35.

Table 3.3-3, Items 7.a.2 and 7.b address the 6.9-kv shutdown board load shedding and degraded voltage instrumentation. The addition of Action Statement 34 would result in retaining the present required actions specified in Action Statement 20 in the event that the number of operable channels is one less than the Total Number of Channels listed in the table. However, in the event that the number of operable channels is less than the Total Number of Channels listed in the table but more than one, new Action Statement 34.b would allow continued operation provided that the associated 6.9-kv shutdown board is declared inoperable and the actions specified in Specification 3.8.2.1 or 3.6.2.2 (as applicable, depending on the operating mode of the plant) are complied with.

Item 7.a.1 addresses operability of the 6.9-kv shutdown board diesel generator start instrumentation. In the event that the number of operable channels is less than the Total Number of Channels by one or more, the new Action Statement 35 would require that the diesel generator be declared inoperable

and Specification 3.8.1.1 or 3.8.1.2 (as applicable, depending on the operating mode of the plant) be complied with.

2.0 EVALUATION

Power to each Shutdown Board is supplied from one of three sources -- the unit main generator (the normal source), an offsite bus (the alternate source), and a diesel generator (the standby source). The shutdown boards, in turn, supply power to electrical devices that are important to safety. Transfer from the normal source or the alternate source to the standby source, tripping of certain load breakers (load shedding), startup of the emergency diesel generators and other Emergency Safeguards Function (ESF) equipment, and energizing of timers to control the sequencing of these events, occur when relay instrumentation senses a loss of voltage or low voltage on a 6.9-kv shutdown board. A two-out-of-three logic design for detecting a degraded voltage condition actuates two parallel and redundant sets of timers and relays, either one of which will cause initiation of the protective actions.

The installed test switches and test blocks provided for testing the voltage sensors do not have the capability to disable only one channel and allow performance of all required tests without actuating the ESF unnecessarily. The tests require disabling of both sets of timers and relays. For EDG start instrumentation, the single test switch disables all channels that would initiate a loss of voltage start signal. In order to perform the tests with only one channel inoperable, multiple wire lifts and jumpers would be necessary, resulting in a significant potential for inadvertent EDG starts and ESF actuations. Design changes to provide additional circuitry to allow testing a single channel, while maintaining operability of the companion channel, would be very complex, expensive, and could create test performances that could also challenge ESF actuation.

Presently, Action Statement 20 requires that if the number of operable channels is one less than the Total Number of Channels specified in Table 3.3-3, the inoperable channel must be returned to the operable status within 48 hours or else initiate a plant shutdown. If more than one channel is inoperable, this action statement would not apply and the requirements of TS 3.0.3 would be applicable, which would require that an immediate plant shutdown be initiated.

Since it is necessary to disable both relay channels in order to test the loss of voltage instrumentation for the respective shutdown board or EDG, a literal interpretation of the TS would require that a plant shutdown be initiated whenever the TS-required loss of voltage surveillance tests were performed. This interpretation of the TS requirement is more restrictive than the present TS requirement for inoperability of a single shutdown board or EDG. Since the testing of this instrumentation only affects the respective shutdown board or EDG, this aspect of the requirement is overly restrictive and the consequences

of the loss of the instrumentation inconsistent with the loss of the shutdown board or the EDG.

The proposed TS changes are intended to incorporate action statements that are consistent with the present shutdown board and EDG operability requirements and to clarify the actions required when the loss of power instrumentation and timers are inoperable. The proposed TS change requires that the shutdown board be declared inoperable for more than one load shedding or degraded voltage channel inoperable and maintains the existing action requirement if only one channel is inoperable. For the EDGs, the proposed change would require that failure of any loss of power start channel would require declaring the EDG inoperable and compliance with the associated actions for an inoperable EDG.

For the load shedding and the shutdown board degraded voltage ESF actuation channels, the required actions for a loss of one instrument channel remains unchanged (only the number of the Action Statement would change from "20" to "34a"). If both instrument channels become inoperable, Action Statement 34b would require that the associated shutdown board be declared inoperable and that the present TS requirements for inoperable shutdown boards in Specifications 3.8.2.1 or 3.8.2.2, as applicable for the plant operating mode, be enforced.

For the diesel generators, this would be accomplished by revising the Action Statement from "20" to "35," such that if one or both of the ESF loss of voltage actuation instrument channels are inoperable, the associated diesel generator is declared inoperable. The new statement then requires compliance with the present TS diesel generator operability specification (3.8.1.1 or 3.8.1.2, as applicable for the plant operating mode).

In summary, the Action 20 changes that create the proposed new Actions 34 and 35 ensure the application of actions consistent with the present TS requirement for inoperability of the shutdown board and EDGs, for loss-of-power instrumentation when multiple inoperabilities occur, and prevent unnecessary TS-required shutdown to perform TS-required testing. These proposed changes serve to clarify and strengthen the technical specification requirements. Hence, the proposed changes are acceptable.

3.0 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.

4.0 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 (57 FR 2601). 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.

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

Principal Contributor: D. LaBarge

Date: July 24, 1992

July 24, 1992

Docket Nos. 50-327
and 50-328

Tennessee Valley Authority
ATTN: Dr. Mark O. Medford, Vice President
Nuclear Assurance, Licensing & Fuels
3B Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Dr. Medford:

SUBJECT: ISSUANCE OF AMENDMENTS (TAC NOS. M82245 AND 82246) (TS 91-16)

The Commission has issued the enclosed Amendment No. 160 to Facility Operating License No. DPR-77 and Amendment No. 150 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 November 27, 1991.

The amendments revise the actions required when certain 6.9kv Shutdown Board Engineered Safety Feature Actuation System and Emergency Diesel Generator loss-of-power instrumentation is inoperable.

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

Sincerely,

Original signed by

David E. LaBarge, Senior Project Manager
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 160 to License No. DPR-77
2. Amendment No. 150 to License No. DPR-79
3. Safety Evaluation

cc w/enclosures:
See next page

NAME	PDII-4/LA	PDII-4/PM	SELB	OGE	PDII-4/D
OFFICE	MSanders	DLaBarge:dw/as	FRosa		FHebdon
DATE	6/23/92	6/23/92	7/7/92	7/14/92	7/24/92

DOCUMENT NAME: SQN91-16

AMENDMENT NO.160 FOR SEQUOYAH UNIT NO. 1 - DOCKET NO. 50-327 and
AMENDMENT NO.150 FOR SEQUOYAH UNIT NO. 2 - DOCKET NO. 50-328
DATED: July 24, 1992

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