

Mr. Oliver D. Kingsley, Jr.
President, TVA Nuclear and
Chief Nuclear Officer
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

April 15, 1997

SUBJECT: BROWNS FERRY NUCLEAR PLANT UNITS 1, 2, AND 3 - REQUEST FOR
ADDITIONAL INFORMATION REGARDING UPGRADE OF POWER RANGE NEUTRON
MONITORS (TAC NOS. M92503, M92504, AND M92505) (TS 353)

Dear Mr. Kingsley:

By letter dated March 6, 1997, the Tennessee Valley Authority (TVA) submitted a revision of its June 2, 1995 request to amend the operating licenses for the Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3. The proposed amendments consist of technical specification changes to support upgrade of the BFN power range neutron monitoring system. The NRC staff has reviewed your letters, and has determined additional information will be required to complete its review.

A description of the information requested is provided in the enclosure. Your prompt response will assist us in completing the review in a timely fashion to avoid any impact on the upcoming BFN Unit 2 refueling outage.

Please contact me at (301)415-1470 if you have any questions on this topic.

Sincerely,

Original signed by

Joseph F. Williams, Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260, and 50-296

Enclosure: Request for Additional Information

cc w/enclosure: See next page

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Mr. Oliver D. Kingsley, Jr.
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BROWNS FERRY NUCLEAR PLANT

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REQUEST FOR ADDITIONAL INFORMATION

BROWNS FERRY NUCLEAR POWER PLANTS, UNITS 1, 2, AND 3

The following questions address the power range neutron monitoring system upgrades for Browns Ferry Units 1, 2, and 3.

References:

1. "Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Technical Specifications (TS) Change 353R1 - Power Range Neutron Monitor (PRNM) Upgrade with Implementation of Average Power Range Monitor (APRM) and Rod Block Monitor (RBM) TS (ARTS) Improvements and Maximum Extended Load Line Limit (MELLL) Analyses - Revision 1," Tennessee Valley Authority, March 6, 1997.
2. "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC-PRNM) Retrofit Plus Option III Stability Trip Function," NEDC-32410P-A, October 1995.

Question 1

See Reference 1, pages E1-5 and E1-6 of Enclosure 1:

In the BFN submittal (Reference 1), Page 3.1/4.1-3/3/2 and Page 3.1/4.1-6/6/5, the proposed change adds Note 21 to the IRM High Flux trip function for the Refuel mode, and revises Note 21 in the Notes for Table 3.1.A. The current BFN Note 21 states,

- (21) Only required with any control rod withdrawn from a core cell containing one or more fuel assemblies. The APRM High Flux and Inoperative Trips do not have to be OPERABLE in the REFUEL mode if the Source Range monitors are connected to give a noncoincidence, High Flux scram at 5×10^5 cps. The SRMs shall be OPERABLE per Specification 3.10.B.1. The removal of eight (8) shorting links is required to provide noncoincidence high flux scram protection from the Source Range Monitors.

The proposed change revises Note 21 to be a direct requirement for shorting link removal. The revised Note 21 states:

- (21) In the REFUEL Mode, unless adequate shutdown margin has been demonstrated per Specification 4.3.A.1 and the one-rod-out control rod block is OPERABLE per Specification 3.10.A.1, whenever any control rod is withdrawn from a core cell containing one or more fuel assemblies either (a) shorting links shall be removed from the RPS circuitry to enable the Source Range Monitor (SRM) noncoincidence high-flux scram

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function or (b) the indicated APRM trip functions shall be OPERABLE per the requirements applicable in the STARTUP/HOT STANDBY Mode. If the SRM noncoincidence high flux scram function is enabled, the SRMs shall be OPERABLE per Specification 3.10.8.1. The removal of eight (8) shorting links is required to provide noncoincidence high-flux scram protection from the SRMs.

Neither of these Note 21 versions address a requirement for IRM High Flux trip function operability in the Refuel mode. Consequently, this note should be amended to include the IRM High Flux trip function in Table 3.1.A, or the reference to Note 21 for the IRM High Flux trip function should be removed.

Question 2

See Reference 1, pages 2-3 and 2-4 of Enclosure 1, Attachment 2.

As stated in the staff's safety evaluation of NEDC-32410P (Reference 2), to receive NRC approval of a NUMAC-PRNMS installation, the licensee must satisfy six conditions. The fourth condition requires the licensee to confirm that the plant-specific environmental conditions are enveloped by the NUMAC-PRNM equipment environmental qualification values. In response to this condition, the licensee described specific plant environmental conditions for temperature, humidity, pressure, radiation, seismic acceleration, and electromagnetic interference. These conditions could not be verified in the BFN FSAR, TS, or TS Bases. Provide a reference that defines these values.