

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

September 3, 1982

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

In the Matter of the) Docket Nos. 50-259
Tennessee Valley Authority) 50-260
50-296

By D. B. Vassallo's letter to H. G. Parris dated July 28, 1982 we received a request for additional information regarding single recirculation loop operation at the Browns Ferry Nuclear Plant. Enclosed is our response to the request. Your continued expeditious review of license amendment request TVA BFNP TS 172 will be greatly appreciated.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills
L. M. Mills, Manager
Nuclear Licensing

Subscribed and sworn to before
me this 3rd day of September 1982.

Paulette W. White
Notary Public

My Commission Expires 9-5-84

Enclosure

cc (Enclosure):

U.S. Nuclear Regulatory Commission
Region II
ATTN: James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Mr. R. J. Clark
Browns Ferry Project Manager
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20014

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ENCLOSURE

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
SINGLE LOOP OPERATION
BROWNS FERRY NUCLEAR PLANT
(Reference: D. B. Vassallo's Letter to H. G. Parris
dated July 28, 1982)

Question 1 - Describe how the change from normal two recirculation cooling loop operation to single loop operation would be accomplished. What physical, electrical, and/or administrative controls would be employed to satisfy the requirements of BTP EICSB-12 and IEEE Std. 279-4.15 regarding multiple setpoints and their control?

Response - Entry into single recirculation pump operation is accomplished either through the automatic tripping of one recirculation pump or manual removal from service by reducing the speed of one pump to minimum and opening the motor feeder circuit breaker. One setpoint adjustment is required when it is determined that single recirculation pump operation is required for longer than 24 hours. The flow bias average power range monitor (APRM) scram, rod block, and rod block monitor (RBM) trip settings are then adjusted downward in order to accommodate an error (ΔW) in flow measurement due to backflow through the idle recirculation loop jet pumps.

The rod block setpoints for APRMs will be under the administrative control of surveillance instruction 2.1, (used to satisfy technical specification table 4.2.C), which is performed on a once-daily frequency. This procedure computes the control rod block equation for the appropriate operating mode and parameters and verifies that the setpoints for each APRM channel are within technical specification limits. The flow-biased scram trip setpoint line for the APRMs is a fixed amount above the rod block line regardless of the value of ΔW , and the adjustment for ΔW is accomplished for both scram and rod block lines using one procedure (SI 4.1.B.15 used to satisfy technical specification 2.1.A.1). This distance between rod block and scram lines is a separate adjustment from the ΔW adjustment and is not normally changed. Completion of SI 4.1.B-15 ensures that both the scram and rod block lines for the APRMs have been properly adjusted, and daily completion of SI 2.1 ensures daily that the current operating conditions have been taken into account. It should be noted that a daily surveillance period is consistent with the 24 hours allowed by the proposed amendment for single recirculation pump operation before setpoint changes are required, and that this 24-hour period is consistent with the 24-hour period currently allowed for single loop operation.

The setpoint adjustment for the RBM is under the administrative control of the proposed technical specification limiting condition for operation itself. The RBM serves as a backup to the administrative control over control rod movement; thus, two administrative controls exist.

Question 2 - Describe changes made to the flow computer to automatically account for magnitude and sense change for reverse flow in the idle loop jet pumps during single loop operations.

Response - Relays associated with recirculation loop motor circuit breakers and discharge valves activate logic which applies the flow signal from an idle set of jet pumps to a special single-loop flow summer which reverses the signal from the idle loop and applies a separate calibration before delivering the summed output to the normal plant indicators and the process computer.

Question 3 - Is there a requirement for the recirculation flow equalizer valves to be closed and tagged prior to commencing single recirculation loop operation as stated in NEDO-24236 Page 1-1/1-2 and how is this requirement ensured in the technical specification change?

Response - Because of previously identified LOCA single-failure considerations, the recirculation equalizer line is closed with power removed from the valves. It may not be opened during power operation.

Question 4 - Where setpoint adjustments for single loop operation are required, is sufficient range available on the adjustment mechanisms to keep the new settings within the stable operating portion of the adjusting device?

Response - The required adjustment to the APRM system is similar to one which is routinely made to adjust for peaking factors in excess of design. ΔW adjustments are similar in magnitude to these typical peaking factor adjustments and are well within the range.