TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
500C Chestnut Street Tower II

JAN 9 1979

Director of Nuclear Reactor Regulation
Attention: Mr. Thomas A. Ippolito, Chief
Branch No. 3
Division of Operating Reactors
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Ippolito:

In the Matter of the	)	Docket No. 50-259
Tennessee Valley Authority	)	

This is in further response to your letter of November 22, 1978, to N. B. Hughes concerning a request for additional information to complete your review of the reload analysis for cycle 3 operation of Browns Ferry Nuclear Plant unit 1. The enclosed information supplements my letters to you of December 5 and 14, 1978, and addresses the concerns expressed in TVA's meeting with your staff on January 3, 1979.

Very truly yours,

J E Gilleland

J. E. Gilleland
Assistant Manager of Power

Enclosure

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RESOLUTION OF CONCERNS OF NRC REVIEWER
EXPRESSED IN JANUARY 3, 1979, MEETING
BETWEEN NRC AND TVA

Concern 1 - Justify measurement of anticipatory reactor parameters rather than reactor pressure directly (per IEEE 279-1971).

Response1 - The RPS and RPT anticipates the pressure increase as a result of turbine trip or load rejection. The only pressure transients of concern which were included in the reload calculations are the cases of load rejection without bypass, turbine trip without bypass, and feedwater controller failure; and MSIV full closure. In the analysis submitted to NRC, the MSIV full closure is the worst pressure transient. This transient assumes that there is no prompt RPT installed. However, the load rejection, controller failure, and turbine trip all assume the RPT modification complete and operating as designed. However, if these transients were calculated with RPT not operable, their characteristic pressure transient would change very little. As a matter of fact, the MSIV full closure transient would still be the worst case pressure transient. Any other pressure transient that might be considered will be of no consequence when compared to the above transients.

Concern 2 - Justify why a manual prompt RPT initiation is of little use as presented in IEEE 271-1971.

Response 2 - Manual initiation of the prompt RPT breakers cannot be obtained in the control room. However, manual tripping of the recirculation pumps can be accomplished in the control room at any time by the operator using normal controls. Since benefit is derived from prompt RPT only as a fast acting automatic system, there is no particular reason to have the control room equipped

with manual prompt RPT breaker control to supplement the normal pump trip controls. The analysis of events has been reviewed, and at no point during an incident would manual initiation of the prompt RPT reduce the consequences.

Concern 3 - Provide a technical specification which provides for periodic functional testing of the RPT breakers.

Response 3 - The breakers will be functionally tested during each operating cycle and a technical specification change is forthcoming to accomplish this surveillance.

Concern 4 - Document in appropriate detail how the RPT logic testing is performed.

Response 4 - The prompt RPT logic will be modified before the RPT is needed on unit 1 coming up from refueling in such a way that both RPT systems will not be placed in test status at the same time. A technical specification change is being prepared to reflect the above. Drawings are attached which should provide enough detail to review this modification. This change in logic will not result in a need to bypass the RPT system while the RPS is being tested.

The RPT logic circuit integrity is tested monthly by closing the turbine stop/control valves as appropriate and verifying the energization of test coil 5A-k32A(B). The trip coils proper cannot be tested without tripping the pumps. Individual relay status lights 5A-DS15, 16, etc., are also checked for proper operation. As noted, the breakers are functionally tested once per operating cycle.

Concern 5 - Does the RPT trip coil which would actually be used get tested when the breaker test or logic test is performed?

Response 5 - As noted by the NRC an extra trip coil has been installed as a part of the RPT modification. However, this coil's function should not be construed as a vehicle to test the functional capability of the trip system. The trip coils that would be called upon to trip when needed are the coils that are functionally tested as presented in (3) above.

Concern 6 - Verify channel independence of the prompt RPT system with respect to the single failure criteria.

Response 6 - Two prompt RPT systems are provided for redundancy. Each system is physically independent from any common mode failure (as is each channel within each system). Our December 14, 1978, letter states that compliance with the single failure criterion is satisfied.

Concern 7 - Propose a procedure which provides for periodic testing of the response time of the RPT system.

Response 7 - The RPT system was not designed with periodic response timing in mind. We have not previously, nor presently have license requirements to provide such testing. The system response timing scheduled for the upcoming startup program requires extensive special instrumentation and temporary cabling be installed. We estimate that 1-2 full power days will be lost as a result of this testing. Furthermore, we believe that any discernable degradation of the RPT system will be detected during the monthly logic testing or the breaker functional testing, and that proposed periodic testing imposes a significant penalty in view of the lost generation

time. Nevertheless, we agree to investigate the possibility of response time testing of the RPT system during refueling outages. Since we are already performing the requested testing during the upcoming startup test program, we see no difficulty in operating unit 1 during cycle 2.

Concern 8 - Please clarify your response to Question 9 as provided in TVA's letter of December 14, 1978 (J. E. Gilleland to T. A. Ippolito).

Response 8 - The prompt RPT system is a part of the RPS system. The power supply for the RPT system comes from the same power supply sources used for the RPS. The RPT system is classified as seismic category 1 Class 1E. The system shall remain functional in the event of a design basis earthquake and shall provide a safety function to mitigate the consequences of the turbine/generator trip or load rejection event. The design of the EOC RPT conforms to IEEE 279-1971.

Concern 9 - Provide for control room annunciation of RPT being bypassed below 30% power.

Response 9 - The RPS bypass panel in the control room will be changed from the following:

"control valve fast closure and turbine stop scram bypass"

to

"control valve fast closure, turbine stop valve scram, and recirculation pump trip bypass."

Concern 10 - Why does TVA require that the RPT power switchgear be administratively prohibited from being switched out of the normal power mode?

Response 10 - The designer of this power supply wanted to make sure that the operator was aware that the preferred power source is the normal battery supply, therefore, the note was placed in the design drawing.

Both the normal and alternate power supplies are seismically qualified Class 1E. If normal power is lost, this condition is annunicated in the control room in order that the alternate source may be placed into service. If both power supplies are lost, then the remaining division of the prompt RPT can be called upon as needed.