TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

November 9, 1984

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of the Application of	)	Docket Nos. 50-390
Tennessee Valley Authority	)	50-391

Please refer to TVA's letter dated June 19, 1984 which transmitted various comments/proposed modifications to the proof and review version of the Watts Bar Nuclear Plant unit 1 Appendix A Technical Specifications.

Included in the referenced transmittal was a request for an exemption from the quarterly testing requirements of technical specification 4.3.2.1, table 4.3-2 for 10 engineered safety features actuation system slave relays. TVA's bases for the exemption request was that by testing the slave relays at power, certain devices would be actuated which could adversely affect plant safety. TVA proposed that the actuation of these relays for periodic testing purposes be performed during each cold shutdown exceeding 24 hours, unless tested during the previous six months.

Recently, TVA was informally requested to provide more detailed justifications in support of the requested exemption. It was indicated that TVA would need to address relay and associated equipment redundancy and relay and associated equipment failure impact.

Enclosed (enclosure 1) is a detailed discussion, which provides the basis for not testing at power, eight of the previously identified 10 slave relays. Also enclosed (enclosure 2) are corresponding revised technical specification pages.

TVA is continuing to evaluate the need for test exemptions for the two remaining slave relays. Notification will be provided should TVA elect to pursue an exemption for these slave relays.

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If you have any questions concerning this matter, please get in touch with D. B. Ellis at FTS 858-2681.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

James A. Domer

J. A. Domer
Nuclear Engineer

Sworn to and subscribed before me
this 9th day of Nov. 1984

Paulette N. White

Notary Public
My Commission Expires 8-24-88

Enclosures (2)
cc: U.S. Nuclear Regulatory Commission (Enclosures)
Region II
Attn: Mr. James P. O'Reilly Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

ENCLOSURE 1

WATTS BAR NUCLEAR PLANT
EXEMPTION REQUEST

TECHNICAL SPECIFICATION 4.3.2.1 TABLE 4.3-2
ESFAS SLAVE RELAY TESTING REQUIREMENTS

SLAVE RELAY TESTING
Table 4.3-2
Justification For Exemption

By letter dated June 19, 1984, we requested relaxation from testing at power ten (10) ESFAS slave relays. Currently, our Technical Specifications require that ESFAS relays be tested on a quarterly basis. The following is additional discussion/justification for the requested relaxation.

Attached are TVA logic diagrams 47W611-99 sheets 3 and 4 which identify all the ESFAS slave relays. The equipment actuated by the slave relays are identified in the right hand column of each table. The eight (8) relays we are now requesting relief on are circled on the prints.

Each slave relay we are requesting relief on is discussed below:

K603A, K603B

REASON FOR NOT TESTING AT POWER:

These relays close LCV-62-132 and 133. The closure of these valves cause loss of suction to the charging pumps. This requires opening of alternate suction lines to the RWST which would introduce 2,000 ppm of boron into the Reactor Coolant System causing unstable unit operation. These valves isolate the Volume Control Tank from the CCP suction on a SI signal. They are series isolation valves which get their closure signal and power supply from different trains. Either one of the two slave relays functioning to close one of the valves will achieve the safety function required. Furthermore, failure of one relay will in no way affect the operation of the other relay. These valves can still be manually closed from the MCR.

OTHER DEVICES ACTUATED BY THESE RELAYS:

FCV's 62-90 and 91 are charging flow isolation valves. These train seperated series isolation valves close on an SI signal to force injection flow through the cold leg injection lines. Again, either one of these valves closing will fulfill the required safety function. Also they can still be closed manually from the MCR. It should be noted that closing of these valves during power operation will cause an unnecessary thermal cycle on the regenerative heat exchanger. FCV's 63-25 and 26 are BIT outlet parallel isolation valves. Since these are parallel isolation valves, either one opening on an SI signal will achieve the required safety function. A failure of one slave relay will not affect the signal to the other valve. FCV's 63-41 and 42 are BIT to BAT recirculation isolation valves. Because of the deletion of the BIT 20,000 ppm requirement from the design basis of our plant these valves no longer perform safety functions and thus need not be tested. Because of the deletion of the 20,000 ppm requirement for the BIT from the design basis of our plant, BIT heaters 1A-A and 1B-B are no longer required to function and thus need not be tested. FCV's 63-98 and 118 are SIS cold leg accumulator 1 and 2 isolation valves. These valves are required by Specification 3.5.1.1 to be opened with

power removed above 1,000 psig and thus can not be tested. FCV's 74-16 and 28 are the RHR heat exchanger outlet flow control valves. These valves, although administratively required to be fully open above mode 4, receive a signal to open fully upon a safety injection signal. If the administrative requirments were bypassed and a failure of the slave relay caused one of these valves to not fully open the other train of RHR is sized to completely fulfill the required safety function. Also the operator could still open these valves from the MCR.

K604A, K604B

REASON FOR NOT TESTING AT POWER:

These relays open FCV 62-135, and 62-136, which are charging pump suction isolation valves from the RWST. Opening of these valves while at power would introduce 2,000 ppm boron into the RCS causing unstable unit operation. These valves are parellel valves which get their open signal and power supply from seperate trains. Either valve opening will achieve the required safety function. Failure of one relay will not affect the operation of the other valve. Additionally, these valves can still be opened from the main control room.

Also, these relays deenergize the PRZ heaters, (both control and backup groups). At power the deenergizing of these heaters would limit our normal RCS pressure control capabilities, and could result in unnecessary RCS pressure transients. The failure of these heaters to deenergize on the SI signal would not adversly affect the plant. They are deenergized only to protect the heaters from burning out on level loss in the PRZ. Again, these heaters can be deenergized from the MCR if the relays were to fail.

OTHER DEVICES ACTUATED BY THESE RELAYS:

These relays also open FCV-63-39 and 63-40 which are the inlet parallel isolation valves to the BIT. Since these are parallel isolation valves, either one opening on an SI signal will achieve the required function. A failure of one slave relay will not affect the signal to the other valve. Additionally, these valves could still be opened via the MCR handswitches.

FCV-63-38 is the BAT to BIT recirculation isolation valve. Because of the deletion of the 20,000 ppm requirement for the BIT from the design basis of the plant this valve no longer performs a safety function and thus need not be tested.

K609A, K609B

REASON FOR NOT TESTING EVERY 92 DAYS:

Actuating either of these relays will result in all four diesel generators starting. This will result in 32 unnecessary D/G starts per year (16 per relay). As discussed in NRC Generic Letter 84-15, additional cold starts may result in excessive mechanical wear and reduced D/G reliability. As stated above, either of the relays will start all four D/G's, thus a failure of one

relay will not prevent the diesels from starting on an SI signal. Additionally, the failure of both relays would not prevent the diesels from starting on a low voltage signal from the shutdown boards (which is the only time they are actually required to perform their safety function) or a manual start signal from the MCR. TVA proposes to test these slave relays only once every 18 months to coincide with S.R. 4.8.1.1.2.f.6, "Simulating a loss-of-offsite power in conjunction with an ESF actuation test signal." This will appropriately cut down on the number of unnecessary D/G starts.

OTHER DEVICES ACTUATED BY THESE RELAYS:

FCV 63-80 and 63-67 are the cold leg accumulators isolation valves. These valves are required by LCO 3.5.1.1 to be open with power removed whenever the RCS pressure is greater than 1,000 psig and thus can not be tested at power. These relays also stop the two reactor building floor and equipment drain pumps. This is for pump protection only since the path out of containment isolates on a phase A containment isolation signal (which will come from an SI signal). Thus the failure of these relays to stop these pumps on an SI signal will not affect the safe operation of the plant. FCV 87-23 and 87-24 are the UHI isolation valve gags. These gags close upon an SI signal coincident with the isolation valve being fully closed. Thus, the failure of these relays to close the gag will not defeat the injection of the UHI into the RCS or the subsequent isolation of the UHI lines to prevent nitrogen being introduced into the RCS. The gags serve only as an added provision to help prevent the valves from drifting back open (Note: the isolation valves are series valves designed not to reopen, i.e., 2 valves would have to drift back open before any nitrogen could potentially be introduced into the RCS). Finally, these relays also actuate an additional delay timer for the CCS thermal barrier booster pumps and the high pressure fire protection pumps. The only time these relays have any effect is when there is a blackout while (coincident with) an SI signal is present. Under these conditions it delays the pump start an additional .5 to 3 seconds to accommodate D/G loading. The failure of these relays will in no way inhibit the start signal to these pumps. The additional load to the D/G from these small thermal barrier booster pumps starting 3 seconds early (due to failure of relay), would be tolerable. In order for the relays to be required to initiate the additional .5 second delay in the HPFP start circuit there must be a pump start signal coincident with an SI and blackout. This coincidence, however, is not in the design basis of the plant and thus need not be considered.

As can be seen, the testing of these two relays on an 18 month interval will not adversly affect the safe operation of the plant, but will actually increase the reliability of the D/G's.

K625A, K625B

REASON FOR NOT TESTING AT POWER:

These relays actuate the containment air return fans. Starting these fans during normal operation would cause the lower inlet doors of the ice condenser to open and force air thorugh the ice bed. This could result in ice melting which is not accounted for in minimum ice weight analysis. Each fan is sized for 100% capacity, so the failure of one relay will not affect the capability of the other fan to perform the required function. Additionally, the failure of these relays doesn't defeat the manual start capability via the main control room handswitches.

OTHER DEVICES ACTUATED BY THESE RELAYS:

FCV's - 67-83, 87, 91, 95, 99, 103, 107, 111, 130, 133, 138, 141, 295, 296, 297, and 298 are containment isolation valves for ERCW to the upper and lower compartment coolers, RCP motor coolers, and CRDM coolers which all get a phase B closure signal. Each of these valves has either a redundant (series) isolation valve actuated by slave relays that are not being exempted or a check valve in series which would isolate the pathway out of containment (see attached TVA dwg. 47W 845-3). Thus the failure of these relays to close the isolation valves would not prevent the safety function from being performed. Additionally, the relay failures would not affect the closure of these valves via the MCR handswitches. These relays also supply a stop signal to the above cooler unit fans. However, this is for fan protection only. Thus, failure of these relays to stop the fans would not adversely affect the safe operation of the plant.

As can be seen on the attached logic prints the equipment assignment to each slave relay has resulted in a small fraction of the total devices actuated not being able to be tested at power. This could be minimized further by design changes, but TVA has decided this would not be practical.

SUMMARY

The above discussion of each slave relay that we are requesting relief on has shown that the testing of these relays could result in unsafe or unstable plant operations. Additionally, we have shown that each device that will not be tested at power has 1) sufficient redundancy or backups so that a failure of that slave relay to actuate the particular device could be tolerated without defeating the required safety function; or 2) the equipment failing has no consequence on the safe operation of the plant.