400 Chestnut Street Tower II

July 24, 1980

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Light Water Reactors Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Schwencer:

In the Matter of the Application of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

Reference: Letter from L. M. Mills to J. P. O'Reilly dated June 12, 1980

In an interim response to OIE Bulletin 80-06 for Sequoyah Nuclear Plant unit 1, TVA provided a preliminary list of equipment that could change position upon reset of an Engineered Safety Feature (ESF) signal. Since that time, TVA has performed a functional review of that equipment and has determined that the present control schemes are adequate. Enclosed is an evaluation of each item. Please forward this information to T. Dunning of the Instrumentation and Controls Systems Branch. TVA will continue to respond to OIE Bulletin 80-06 as scheduled with Region II in Atlanta.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure (5)

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ENCLOSURE

EVALUATION OF EQUIPMENT THAT CAN CHANGE
POSITION ON ESF SIGNAL RESET

Shutdown Board Room A Pressurizing Fans

The shutdown board room pressurizing fans maintain a slight positive pressurizer in the shutdown board areas of the auxiliary building to minimize contaminated inleakage. Phase A containment isolation trips the pressurizing fans and initiates auxiliary building isolation which starts the auxiliary building emergency gas treatment system. The ABEGTS maintains a slight negative pressure in the building to prevent leakage of unfiltered air to the outside. Reset of the containment isolation signal will allow restart of the low capacity shutdown board room pressurizing fans; however, auxiliary building isolation and ABEGTS operation is not changed by phase A isolation reset. Fan restart will minimize inleakage of possible contaminates from the auxiliary building air space into the shutdown board room by maintaining the pressure in the board rooms slightly above the pressure in the surrounding area of the auxiliary building. TVA believes that this is an acceptable mode of operation, and it is not necessary to modify the present system.

Lower Compartment Cooler Fan and Control Rod Drive Mechanism Cooler Fan

The RLCC's and the CRDMC's function to maintain the temperature in the lower containment, the reactor well, and the CRDM shroud at acceptable levels during normal operation. Upon initiation of containment phase B isolation, the cooling water supply to the coolers is isolated and the fans are tripped. Following reset of the isolation signal, the fans are allowed to restart. Although the cooling capacity of the lower compartment and control rod drive mechanism coolers is lost (cooling water remains isolated), fan operation will enhance mixing of containment air in the lower compartment spaces. These spaces include the steam generator and pressurizer compartments, the space below the reactor vessel, the space around the reactor vessel, the reactor vessel nozzle and support openings, and the reactor well space around the CRDM shroud. Restart of the fans after isolation signal reset and the resulting circulation and mixing of containment air in the lower compartment spaces will not degrade plant safety performance. Consequently, TVA does not believe that it is necessary to alter the logic circuits to prevent fan restart.

Main Feedwater Control and Low Load Bypass Valves

The valves numbered FCV-3-35, 48, 90, 103, 35A, 48a, 90A, and 103A are main feedwater control valves and feedwater control valve low load bypass valves, respectively. A feedwater isolation signal will cause them to close. In addition, the main feedwater pumps trip and the feedwater isolation valves (just downstream of the control and bypass valves) close. A reset of the ESF signal could cause these control valves to reopen, however, this is prevented by a reactor trip signal which was initiated by the SI. Since the feedwater pump turbines are now tripped and the feedwater isolation valves closed, no feedwater can be pumped

into the steam generator even if the valves open. In addition, the feedwater isolation valve and a series check prevents backflow of water from the isolated steam generator. TVA believes that this is an adequate equipment control scheme and no modification is required.

Auxiliary Feedwater Level Control Valve

Level control valves LCV-3-172, 173, 174, 175, 148, 156, 164, 171, 148A, 156A, 164A, and 171A, and the respective controllers, regulate auxiliary feedwater control to the steam generators. If the handswitches for these valves are in the auto position (as it is during normal operation), the ESF actuation signal or its reset has no effect on the valves. If, for some reason, a valve handswitch was in a position other than auto, the ESF signal would effectively cause the valve to act as if the handswitch were in the auto position. If the ESF signal were reset, the valve would remain in the position it was in just before the reset. TVA believes this is an adequate control scheme and no modification is required.

Cask Loading Exhaust Dampers

FCO 30-122 and 30-123 are cask loading area exhaust dampers. These dampers isolate the cask load area exhaust in the event of an auxiliary building isolation signal or a high radiation signal in the spent fuel pit area. The auxiliary building isolation signal stops the normal ventilation and aligns and starts the auxiliary building gas treatment system. This is initiated by a phase A containment isolation or a high radiation signal from the auxiliary building general exhaust vent (the normal auxiliary building ventilation discharge). The auxiliary building isolation signal will not reset upon resetting the containment isolation signal. The auxiliary building isolation can be reset only if the initiating signals no longer exist. Reset will cause the cask load area exhaust dampers to reopen. Since these valves reopen only on the reset of the auxiliary building isolation signal and specifically do not reset upon resetting the phase A containment isolation (ESF) signal, TVA believes this is an acceptable mode of operation and that no modification is necessary.

Control Building Ventilation

The spreading room supply fans (FCO-17 and 102), the toilet and locker room exhaust fans (FCO-31A, 103 and 104), and the main control and spreader room fresh air isolation dampers (FCO-31A, 105A, B, D, FCO-31A, 106A, B, and C), are in the normal supply and exhaust paths of outside air to the main control room, toilet and locker room, and the spreading room. These dampers close and fans stop in the event of a control room isolation. This isolation can be initiated by a safety injection or by the presence of chlorine, smoke, or high radiation levels in the fresh air supply duct and by manual initiation from the main control room. The control room isolation signal seals in and will not reset upon the reset of the SI signal. Opening of the fresh air supply and exhaust paths will occur upon

resetting the control room isolation signal. This signal can only be reset, however, if the initiating signal no longer exists. TVA believes this mode of operation ensures adequate equipment control and that no modification is necessary.

Auxiliary Feedpump Turbine Trip Valve

The auxiliary feedpump turbine trip and throttle valve (FCV-1-51) goes full open on an SI signal. Resetting the signal has no effect on the valve. Therefore, this valve should be removed from the list.

Auxiliary Feedpump Turbine Speed Control Valve

The auxiliary feedwater pump turbine speed control valve (FCV-1-52) controls the auxiliary feedwater turbine speed in one of two modes. In the automatic (or flow control) mode, it regulates the flow from the turbine driven auxiliary feedwater pump. In the manual (or speed) mode, it regulates the turbine speed, allowing it to be ramped up or down. Reset of an SI signal has no effect on the valve when the control room handswitch is in the auto position. With the handswitch in the ACC reset or manual position, an SI signal will force the valve to operate in the automatic (flow control) mode. During ESF operation, the speed control valve can modulate between two setpoints; upper speed limit or upper flow setpoint. The valve position will be the lesser of the two setpoints. However, either setpoint will put the valve in essentially the full open position. If the SI signal is then reset, the valve remains in the position it was in just before the reset. The valve does not return to its original position. TVA believes that adequate equipment control is maintained and no modification is necessary.

Shield Building Vent and Containment Annulus Isolator Valves

FCV's-65-81, 86, 83, and 87 modulate during a phase A containment isolation to maintain the shield building annulus at a slightly negative pressure during an accident. If the containment isolation signal is reset, the valves will go closed. Since the valve goes to the closed position on the reset of the containment isolation signal, this precludes inadvertent opening of a flow path out of containment by resetting the isolation signal. TVA believes that adequate equipment control is maintained with operation in the present mode and no modifications are required.

Smoke Removal Fan Circuit

The smoke removal fan circuit is a manually actuated fan system to remove smoke from the control and battery rooms. In the event of a control room isolation, dampers close (if they are open) to help maintain a slightly positive pressure in the main control room. If the control room isolation signal is reset, the valves return to their previous position. However, the control room isolation signal cannot be reset if any of the initiating signals are present. TVA believes that this logic ensures adequate equipment control and no modification is necessary.

FCV-74-16 and FCV-74-28

FCV-74-16 and -28 are self-regulating valves which use an analog signal to control flow from the RHR heat exchangers. The flow valve is preset by adjustment of the flow controller in the main control room. During plant heatup/startup, the general operating instructions require that the valve flow controllers be set in the full open position. Additionally, when the RHR pumps are operating, plant instructions require an operator to be stationed in the control room with no other duties than to monitor RHR system performance. Upon initiation of safety injection, the analog control signal is bypassed and the valve goes to the full open position. This will permit full RHR flow to the RCS after RCS pressure has dropped below the shutoff heat of the RHR pumps. With RCS pressure above the pump shutoff heat, RHR flow is recirculated through the minimum flow bypass line; no flow is delivered to the reactor coolant system. Following reset of the safety injection signal, the valves will return to the flow control mode. Presently, we believes that this control scheme ensures adequate equipment control and no modification is necessary. However, TVA is reevaluating operational conditions where SI reset might occur during this mode of operation to determine if other control schemes would enhance equipment control.

Steam Generator Blowdown Sample Isolation Valves

Flow control valves FCV-43-55, 58, 61, and 64 are isolation valves on the steam generator blowdown sample lines. The sample lines come off the steam generator blowdown line at a point between the two blowdown isolation valves. The blowdown sample valves isolate on a phase A containment isolation signal or on an auxiliary feedwater system pump start signal. Phase A containment isolation is caused by either manual initiation or by an SI signal.

Since an SI signal also starts the auxiliary feedwater system, resetting a containment isolation which was initiated by an SI will not cause the sample isolation valves to open. Therefore, the sample isolation valves will open on the reset of a containment isolation signal only if the signal was manually initiated. This line could then provide a flow path of liquid from inside containment only if the inboard blowdown isolation valve is manually opened. TVA believes this control scheme ensures adequate equipment control and no modification is necessary.

Summary

In our review, we found no instances where an ESF reset would provide a path for contaminated water to be inadvertently pumped from the containment building. We are making a more thorough review of the control schemes discussed above to determine if other schemes would enhance equipment control or increase the plant safety margin following an ESF reset. We will continue our evaluation. All requirements of the OIE Bulletin 80-06 will be met as scheduled.