

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

1750 Chestnut Street Tower II

April 8, 1982

Mr. James P. O'Reilly, Director  
U.S. Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
Region II  
101 Marietta Street, Suite 3100  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 2 - DOCKET  
NO. 50-328 - FACILITY OPERATING LICENSE DPR-79 - SPECIAL REPORT 82-1

The enclosed special report provides details concerning three events of  
emergency core cooling system injections into the reactor coolant system.  
This report is submitted in accordance with Sequoyah unit 2 Technical  
Specification 3.5.2.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*J. A. Green*  
H. J. Green  
Director of Nuclear Power

Enclosure

cc (Enclosure):

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# SEQUOYAH NUCLEAR PLANT

## SPECIAL REPORT 82-1

### UNIT 2

This report covers three events of emergency core cooling injection incidents which occurred on the following dates: event 1 occurred January 12, 1982, event 2 occurred January 19, 1982, and event 3 occurred January 21, 1982.

#### Event 1

##### Conditions of Unit 2

Unit 2 in Mode 1 at 6-percent power  
540°F, 2235 psig

##### Event Description

At 0518 CST on January 12, 1982, while trying to roll the Unit 2 turbine, a safety injection actuation occurred.

##### Probable Cause

Operators were in the process of rolling the Unit 2 turbine when a high steam flow coincident with Lo-Lo Tavg and low steam pressure signals occurred causing the reactor to trip and a safety injection. The reactor trip and safety injection were caused by the inadvertent opening of the turbine throttle valves.

A maintenance request was initiated to investigate the spurious opening of the throttle valve, and it was found that static noise caused the electronic hydraulic control circuitry for these valves to change state.

##### Corrective Actions

A temporary alteration change request was initiated to install two filter capacitors and a pull up resistor to remove the static noise. Upon completion, a check was made of input signals and the DC signal was found to be clean. A similar modification was made on the Unit 1 electronic hydraulic control circuitry. A Design Change Request is being prepared to make this a permanent change.

#### Event 2

##### Conditions of Unit 2

Unit 2 in Mode 3 and 0-percent power

## Event 2 (Cont.)

### Event Description

At 1209 CST on 1/19/82, the unit experienced a safety injection actuation because of low pressurizer pressure following a reactor trip.

### Probable Cause

Unit 2 was at 30% reactor power when a reactor trip occurred. The reactor trip was caused by a turbine trip initiated from high steam generator level. During cooldown from the reactor trip, steam leaks occurred from the steam dump valves and the main feedwater pump turbine stop valves. Also, during the reactor trip, Lo-Lo steam generator level occurred starting the auxiliary feedwater turbine driven pump which dumped cool water in the steam generator causing excessive cooldown of the reactor. This resulted in a low pressurizer pressure signal and the safety injection actuation.

### Corrective Actions

The steam leaks have been repaired and operators have been instructed to limit the amount of steam usage following a reactor trip to prevent excessive reactor cooldown recurrence.

## Event 3

### Conditions of Unit 2

Unit 2 in Mode 3 at 0-percent power  
538°F, 2235 psig

### Event Description

At 1503 CST on 1/21/82, Unit 2 experienced a safety injection due to a high steam flow signal coincident with a Lo-Lo Tavg signal.

### Probable Cause

Instrument Maintenance personnel entered containment and, using an approved maintenance request, performed a calibration on steam generator #3 level loops L-3-172 and 94. Upon completion of this work, the loops were returned to service. While still in containment, the Instrument Maintenance personnel contacted Operations who verbally approved a calibration on steam generator #2 level loop L-3-93. This loop is connected to flow loop F-3-21A. While backfilling loop 93, the pulsations from the backfill pump caused a spurious high-steam flow signal from flow loop F-3-21A. This signal, coincident with flow loop F-3-10B already in the tripped condition for maintenance, and a Lo-Lo Tavg signal (the reactor was in mode 3 prior to the event and permissive P-12 was not blocked), completed the safety injection logic resulting in the SI actuation. The injection was terminated before all of the BIT was injected into the RCS.

### Event 3 (Cont.)

#### Corrective Actions

The unit was stabilized and the steam generator level and flow loops returned to service. Information concerning the steam generator level and flow loops which share a common sense line has been provided to operations personnel for readily available control room reference.

Also, although it is not clear that the event could have been prevented by use of a separate maintenance request to perform the calibration on loop L-3-93, instrument and operations personnel were instructed that maintenance work must be initiated, approved, and performed by established procedures such as an MR.

#### Conclusion

Sequoyah Unit 2 Technical Specification limiting conditions for operation 3.5.2 requires that the current value of the usage factor of safety injection nozzles be included in the special report if the value exceeds 0.7. The usage factor for the affected nozzles will not exceed 0.7 if the emergency core cooling system occurrences are less than 35 cycles and this is the third, fourth, and fifth such events for Unit 2. (Reference IE Circular 78-05)