

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Sequoyah, Unit 1

DOCKET NUMBER (2)

0 5 0 0 0 3 2 7

PAGE (3)

1 OF 0 3

TITLE (4)

Reactor Trip

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)														
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)													
0	7	1	9	8	5	8	5	0	2	9	0	0	0	8	0	6	8	5	0	5	0	0	0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																	
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	XX	50.73(a)(2)(iv)	73.71(b)													
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)														
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)														
		20.405(a)(1)(iii)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(A)															
		20.405(a)(1)(iv)	50.73(a)(2)(iii)	50.73(a)(2)(viii)(B)															
		20.405(a)(1)(v)	50.73(a)(2)(iv)	50.73(a)(2)(ix)															

LICENSEE CONTACT FOR THIS LER (12)
NAME
Heyward R. Rogers, Compliance Section Engineer
TELEPHONE NUMBER
6 1 5 8 7 1 0 - 1 6 1 4 7

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)
YES (If yes, complete EXPECTED SUBMISSION DATE) ☒ NO ☐
EXPECTED SUBMISSION DATE (15)
MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On July 19, 1985, with unit 1 at 100 percent reactor power, a trip occurred on low-low steam generator level in loop 3 due to a partial loss of feedwater. The trip occurred when an attempt was made to transfer power from an electrical board, and a momentary power loss resulted in loss of a main feedwater pump. All systems performed as expected, and there was no effect upon public health and safety.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Sequoyah, Unit 1	0 5 0 0 0 3 2 7	8 5	— 0 2 9	— 0 0	0 2	OF 0	3

TEXT (If more space is required, use additional NRC Form 366A's) (17)

With unit 1 operating at 100 percent power on July 19, 1985, a reactor trip occurred at 0349 CST on low-low steam generator level in loop 3. All engineered safeguard and reactor protection systems operated as designed, and the unit was stabilized at 547 degrees F and 2235 psi hot standby condition. The low-low steam generator level occurred as a result of a feedwater transient when the "B" main feed pump turbine high pressure and low pressure steam stop valves went closed. This caused a partial loss of feedwater flow to the steam generators.

Prior to the trip on unit 1, the unit assistant shift engineer (ASE)/senior reactor operator (SRO) and the Turbine Building ASE/SRO were attempting to locate a ground on the 1B 480V unit board (non-safety-related board). A ground problem had been previously identified approximately a week prior to the trip but had not been located. In the attempt to locate the ground, loads were being sequentially transferred off the board in order to isolate the fault. One of the loads from this board is the 1B Turbine Building 480V MOV board from which the number 1 main oil pump for the "B" main feedwater pump turbine (MFWPT) is fed. Each MFWPT has two main oil pumps, normally with one running and one in standby. The main oil pump supplies control oil pressure for the main feed pump turbine (MFPT) high pressure and low pressure steam stop valves in addition to lube oil, and these oil pumps are AC pumps. A D-C emergency oil pump is provided; however, it supplies only lube oil pressure.

While transferring the 1B MOV board from normal to alternate feeder, there was a momentary loss of power to the board which caused a trip of the number 1 main oil pump supplying oil pressure for the 1B MFWPT. When the oil pressure dropped below the 115 psig low pressure interlock set point, the standby (number 2) oil pump started. The initial oil pressure drop was very rapid, and the pressure reached less than 50 psi which is the low-low pressure interlock before the standby pump was able to recover the pressure. The low-low pressure interlock closes on decreasing governor valve positioner oil pressure which actuates a series of contacts including: closing of the low pressure and high pressure steam stop valves, isolating the "B" MFPT condenser inlet and outlet valves, initiating a main turbine runback, and initiating an auxiliary feedwater pump start for both motor-driven and turbine-driven pumps. The low-low pressure interlock was reached and recovered almost instantaneously resulting in several of the above items not actuating. The main turbine controls did not run back automatically and were required to be manipulated by manual operations action which caused steam demand on the generators to be higher for longer than would normally occur from a MFWPT trip. Auxiliary feedwater was initiated; however, due to the short time duration, the auxiliary feedwater pump turbine (AFWPT) did not start which caused the lack of an additional 880 gpm of makeup flow to the generators. The inlet and outlet valves to the 1B MFWPT condenser did not close to divert all condensate flow through the 1A MFWPT condenser; therefore, the 1A MFWPT condenser was not at the best possible vacuum which diminished the pump's operating efficiency. The operations staff responded by manually running the turbine back and placing the reactor rod control system in automatic; however, the unit tripped due to a low-low steam generator level in loop 3.

When the reactor trip occurred all engineered safeguard feature equipment including turbine trip, main feedwater isolation, main feed pump trip, and auxiliary feedwater pump start (all pumps) actuated as designed.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Before unit restart, a thorough investigation was performed to ensure safe operation upon return to power. A 1B MOV board normal to alternate feeder transfer was made to verify the transfer could be performed without loss of power. No problems were experienced on several transfers, and it has been determined that when the board was deenergized to initiate the event, it was due to improper positioning of the alternate breaker before the normal breaker was tripped. Since this event, all ASE/SROs have been made aware of the potential problem in transferring this type of electrical board.

The oil pressure switches on the MFWPT were verified for set point accuracy, and the low-low pressure switch setting was verified as exactly 50 psig, also the low pressure switch setting was 112.6 psig versus 115 psig. It has been determined that the slight calibration error on the low pressure switch would have had little effect on the event; however, the switch was recalibrated. These switches are normally calibrated on an alternate refueling outage basis, and a review of the calibration history has shown no evidence of significant drift on the pressure switches. Calibration of the feedwater flow interlock, for closure of the 1B MFWPT condenser valves, was also verified to be within normal tolerances.

In order to verify the proper operation of the plant equipment which did not initiate during the event, a performance of SI 118.1, "Turbine-Driven Auxiliary Feedwater Pump and Valve Automatic Actuation," was made. This test verified that the AFWPT would start and the condenser vacuum valves would close for a single MFWPT trip at greater than 80 percent power. In addition, a special test switch was connected across the MFWPT low-low oil pressure switch, and it was attempted, by hand, to activate the switch rapidly enough to prevent start of the turbine-driven auxiliary feedwater pump. The event could not be duplicated thereby proving that only a time of infinitesimal duration could have caused the condition to occur.

It was concluded from the investigation, that all equipment operated as designed, and that the anomalies have been explained under the given plant condition and event. Further, the ground was located on the A-phase 500 kV main transformer control cabinet. After repairs were made, it was concluded that the unit was safe for restart, and the unit returned to critical on July 21, 1985. There was no effect upon public health and safety.

TENNESSEE VALLEY AUTHORITY

Sequoyah Nuclear Plant
Post Office Box 2000
Soddy Daisy, Tennessee 37379

August 7, 1985

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

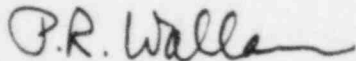
Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 1 - DOCKET NO.
50-327 - FACILITY OPERATING LICENSE DPR-77 - REPORTABLE OCCURRENCE REPORT
SQRO-50-327/85029

The enclosed licensee event report provides details concerning a reactor trip on July 19, 1985. This event is reported in accordance with 10 CFR 50.73, paragraph a.2.iv.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



P. R. Wallace
Plant Manager

Enclosure
cc (Enclosure):

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NRC Inspector, NUC PR, Sequoyah

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