

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Sequoyah, Unit 1 DOCKET NUMBER (2) 0 5 0 0 0 3 2 7 1 OF 0 3 PAGE (3)

TITLE (4) Frozen Sense Lines

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)		
01	20	85	85	006	00	02	15	85	Sequoyah, Unit 2	0 5 0 0 0 3 2 8		
										0 5 0 0 0		

OPERATING MODE (9) 1 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)

20.402(b)	20.406(c)	50.73(a)(2)(iv)	73.71(b)
20.406(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.406(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.406(a)(1)(iii)	XX 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.406(a)(1)(iv)	50.73(a)(2)(iii)	50.73(a)(2)(viii)(B)	
20.406(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(ix)	

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

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS

SUPPLEMENTAL REPORT EXPECTED (14) YES (If yes, complete EXPECTED SUBMISSION DATE) NO XX

EXPECTED SUBMISSION DATE (15) MONTH DAY YEAR

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

On January 20, 1985, unit 1 entered LCO 3.3.1.1 due to loss of one feedwater channel at 2303 CST caused by a frozen sense line. At 0447 CST on January 21, 1985, a second channel became inoperable for the same reason, and the unit entered LCO 3.0.3. Within twenty minutes, one channel was returned to service, and the unit exited LCO 3.0.3. There was no effect upon public health and safety.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

With both units 1 and 2 operating at 100% reactor power on January 20, 1985, two unit 1 main feedwater flow channels experienced erratic readings and were declared inoperable causing the unit to comply with LCO 3.0.3. The erratic readings were caused by partially frozen sense lines from abnormally frigid outside temperatures. Within approximately twenty minutes, one channel was unfrozen and declared operable, and the unit exited 3.0.3 and complied with LCO 3.3.1.1, action statement 7, for the one inoperable channel.

Chattanooga and surrounding areas, including Sequoyah Nuclear Plant, experienced record-setting low temperatures on January 20 and 21, 1985, with temperatures plunging to -15 degrees F and wind chill factors of up to -45 degrees F. The feedwater sense lines are partially routed in the outside environment and are insulated and heat traced; however, the design temperature rating for the freeze protection system is -10 degrees F, which is normally more than adequate for temperature variations at the plant site. Feedwater flow channel 1-FI-3-35A was declared inoperable at 2303 CST on January 20, 1985, and channel 1-FI-3-35B became inoperable at 0447 CST on January 21, 1985. Channel 1-FI-3-35A was not returned to service prior to the loss of channel 1-FI-3-35B, causing the unit to enter LCO 3.0.3. With work continuing on the 1-FI-3-35A channel, successful efforts were made to thaw the -35B channel at 0505 CST on January 21, 1985, allowing the unit to exit LCO 3.0.3. Channel -35A was returned to service at 1351 CST on January 21, 1985. During these abnormal weather conditions, other instrument lines also experienced some slight freezing causing the plant to enter and exit similar LCOs. These were: 1-PI-1-20A, unit 1 steam line pressure channel; unit two steam line pressure channel 2-PI-1-2A; unit 2 feedwater flow channels 2-FI-3-90A and -103A. All instrument lines were cleared and returned to service within the time frames of their respective LCO.

The feedwater sense lines were cleared by increasing the temperature control point on the heat trace circuit to thaw the line and opening the drain valves to blow out the cold water. Temporary tents were constructed around the sense lines and portable heaters installed to ensure no further freezing would occur.

The sense lines for the steam line pressure instrumentation are located in the east steam valve room for their perspective unit. The lines are not insulated or heat traced and are not considered to be in an area of risk for freezing. The sense lines were exposed to partially open room intake vents that are assumed to have caused the freezing. These sense lines were heated, and drain valves were opened to clear cold water from them. The intake vents were closed and secured to prevent refreezing.

The feedwater sense lines have series-type heat tracing which provides an equal amount of heating to all parts of the sense line covered. The current flow to the heat trace is controlled by a temperature controller referenced by a single thermocouple to the coldest point on the line.

Prior to the freezing conditions, all the sense lines had been insulated with 2½-inch calcium silicate and covered with a protective sheath. The heat trace to these lines had been verified operable and set to control at 75 degrees F in anticipation of the extreme cold.

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

In October of 1984, the plant maintenance staff assigned a committee to investigate previous problems with freezing of instrument sense lines exposed to the outside environment. In response, the committee inspected all insulation and heat trace associated with critical sense lines. Work items were identified and promptly completed to ensure all insulation was installed and in good serviceable condition, and that the heat trace circuits were working and drawing the proper current.

Approximately one week prior to the freezing experienced on January 20, 1985, maintenance requests (MR) were written by the committee to reverify all associated heat trace circuits. The insulation was also inspected at this time to ensure it was in good serviceable condition. All equipment and insulation were verified in good working condition. Subsequent to the incidents of January 1985, the freeze protection committee and plant management has made the following conclusions and initiated the following actions.

Conclusions

1. The feedwater sense lines froze primarily due to the record-setting low temperatures. A secondary cause is considered to be the positioning of the heat trace thermocouples. It is believed that, had the thermocouples been placed in a more optimum position in conjunction with the 75 degrees F setting, the lines may have withstood abnormally cold temperatures.
2. The steam line pressure transmitter froze due to outside cold air entering the valve room through the door dampers and hitting the sense lines. Procedures did not call for Operations to close these dampers during extremely cold weather.

Actions

1. Surveillance Instructions (SI)-706, -706.1, and -706.2 have been written and implemented to verify the insulation and heat trace on outside sense lines on a monthly basis from October through March each year.
2. Electrical Maintenance will evaluate and move, if required, the control thermocouples for the feedwater heat trace circuits to ensure they are positioned in the optimum area for maximum control.
3. Operations Section will revise General Operating Instruction (GOI) 6 to ensure the steam valve room dampers are closed and to ensure conditional performances of heat trace SIs are performed for extremely cold weather.

Item one has been implemented, and items two and three should be completed by July 15, 1985. It is expected that these measures should prevent freezing in the future even in abnormally cold temperatures as experienced in January 1985.

The incidents in this report had no effect upon public health and safety, and this is the first incident of this type since December of 1983.

TENNESSEE VALLEY AUTHORITY

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

February 15, 1985

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

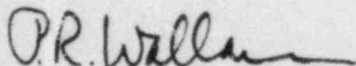
Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 1 - DOCKET NO.
50-327 - FACILITY OPERATING LICENSE DPR-77 - REPORTABLE OCCURRENCE REPORT
SQRO-50-327/85006

The enclosed licensee event report provides details concerning the loss
of two feedwater flow channels due to frozen sense lines. This event is
reported in accordance with 10 CFR 50.73, paragraph a.2.i.

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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