

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) Power Operated Relief Valves Inoperability																									
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	4	0	2	8	4	8	4	0	2	3	0	0	0	5	0	1	8	4	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)																						
5																									
POWER LEVEL (10)			20.402(b)				20.406(c)				50.73(a)(2)(iv)				73.71(b)										
0 0 0			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)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)														
			20.406(a)(1)(iv)				50.73(a)(2)(ii)				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										TELEPHONE NUMBER															
Glenn Duggin, Compliance Section Engineer										6 1 1 5 8 1 7 1 0 - 1 6 1 1 4 1 6															
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)										EXPECTED SUBMISSION DATE (15)				MONTH DAY YEAR											
YES (If yes, complete EXPECTED SUBMISSION DATE)										X NO															

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

While performing surveillance instruction (SI) 92, "Remote Shutdown Monitoring Instrumentation - Pressurizer Pressure Channel Calibrations," the alarm indicating lights on the bistables of the power-operated relief valves (PORV) appeared to be reversed for the correct bistable action. The wiring and operation of the bistables and controller module was investigated and thought to be incorrect. The wiring on the PORVs for both units was modified to this new position. Later, the wiring and bistable operation was reviewed and more thoroughly investigated with additional information and drawings. This additional investigation showed that the PORVs had been modified to an inoperable (reverse from normal) state. The PORVs were immediately blocked on the operating unit while both PORVs on both units were rewired and tested to be in the correct wiring configuration and operating correctly. The surveillance instruction has been revised to explain PORV operation and to give details of bistable action. The administrative instruction (AI-25) has been revised to better control wiring changes.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1) Sequoyah, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 7	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 4	— 0 2 3	— 0 0	0 2	OF	0 3

TEXT: (If more space is required, use additional NRC Form 366A-1 (17))

This incident was discovered at 1309C on 04/02/84 while unit 1 was in mode 5 (0% power, 35 psig, 113 degrees F) and unit 2 was in mode 1 (100% power, 2235 psig, 578 degrees F).

While performing surveillance instruction (SI) 92, "Remote Shutdown Monitoring Instrumentation - Pressurizer Pressure Channel Calibrations," the alarm indicating lights on the bistables of the power-operated relief valves (PORV) appeared to be reversed for the intended bistable (contact) action on unit 1. The problem could not be immediately resolved, so the bistable alarm lights and wiring were checked on unit 2. The module internal switch and terminal wiring were different on unit 2 than on unit 1. The foreman consulted the wiring schematic, calibration cards, and the SI-92 loop sheets. His conclusion was that the bistable action was wrong since the schematic indicated a contact closure on increasing pressurizer pressure, but the indicating lights were going from energized to deenergized on increasing pressure. Maintenance engineers were consulted to determine the correct bistable action. The engineers decided that the internal switches on unit 1 and unit 2 (all four PORVs) should be changed from "low" to "high" and that the terminal wiring on unit 2 (PORV 334) should be changed to agree with the "as constructed" schematic. (PORV 340, unit 2, and both PORVs on unit 1 already agreed with the schematic.) The engineers were not aware of another TVA drawing (wiring diagram) that showed the configuration of the internal switches. Since the terminal wiring was being made to agree with the "as constructed" drawing, no other paperwork or consultation was determined to be needed. These wiring changes were made on the morning of 03/31/84.

On the morning of 04/02/84, this above perceived problem and the action described above were further discussed with management to review reportability requirements and the actions taken. The NRC was notified by phone with the "understanding" of the problem as perceived on Monday morning (04/02/84). Maintenance began an investigation to determine when and how the wiring had been changed or gone undetected until this time. After studying the manufacturer's manual, the fail safe feature was "discovered." The fail safe feature is what necessitated the bistable action to be reversed from indicator light action.

Further investigation revealed that "operable" circuits had actually been changed to "inoperable" circuits. This information was relayed to the assistant plant managers, and the block valves for the PORVs on unit 2 (the operating unit) were blocked closed (valve 340 was already closed due to leakage, 334 was closed). On Tuesday morning (04/03/84), this new information was phoned in to the NRC to update the previous call-in.

All wiring associated with these bistables were thoroughly analyzed and researched to ensure correct bistable action. The bistable action was corrected, fail-safe action verified, and the PORV operation was tested for both units. Valve 334 on unit 2 was then unblocked.

The incorrect rewiring done after the performance of SI-92 would cause the PORVs to open should the transfer switches be placed in the auxiliary position and RCS pressure be less than the bistable setpoint. The only problem that existed prior to the rewiring was that PORV 334 on unit 2 would have opened if its transfer switch had been in the auxiliary position coincident with a loss of power to the control module. The three other valves were correct. There was no safety significance to unit 1 since

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

it was in mode 5. The block valve to PORV 340 on unit 2 was already closed due to slight valve leakage. For PORV 334 to have inadvertently opened, (1) the main control room (MCR) would have to be abandoned and the valve placed in the auxiliary position, and (2) the PORV control module would have to suffer a loss of power (fail safe feature worked in reverse). If any of the above circumstances had occurred, the operator had backup control indications of pressurizer relief tank (PRT) pressure and temperature as well as direct position indication from the handswitch lights to indicate PORV position. If the PORV had opened, the operator could have closed the PORV from the handswitch in the auxiliary control room (ACR).

Investigation revealed that the PORVs had been installed correctly and tested per the preoperational test. The official preoperational test data does not show a step for testing the fail safe feature, but recollection of cognizant preop engineers indicate the feature was informally checked. Personnel were unable to determine how the fail safe feature on PORV 334 on unit 2 became reversed. This is believed to be an isolated occurrence and no other valves have this type of fail safe feature. The confusion over the correct wiring of the PORVs stemmed from the fact that these controllers are used in a reverse logic application relative to other controllers of the same type in the plant (i.e., the high process alarm used the low alarm configuration). Long-term corrective actions include: (1) SI-92 has been revised to explain why the bistable action is set up as it is and more detail was added to clearly describe how to verify contact action; (2) Administrative instruction (AI) 25, "Drawing Control After Unit Licensing," has been revised to require reporting of differences in "as found" plant configurations versus "as constructed" drawings. These reports will be evaluated by the Shift Technical Advisor (STA) for safety significance and timely reportability; (3) Personnel have been reinstructed to consult schematic drawings, manufacturer's manuals and drawings, and wiring diagrams before considering a wiring change. Wiring changes will be discussed with craft, engineers, and management before a decision is made to change a wire termination; (4) An attempt will be made to eliminate unnecessary management tasks to provide more time for involvement in regulatory and procedure compliance.

All of these corrective actions are in progress to prevent a similar occurrence in the future.

There was no effect on public health or safety, and no plant safety margins were exceeded.

Previous occurrences - none.

TENNESSEE VALLEY AUTHORITY

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

May 1, 1984

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-50-327/84023

The enclosed licensee event report provides details concerning the power operated relief valves being in an inoperable state when controlled in automatic from the auxiliary control room. This event is reported in accordance with 10 CFR 50.73, paragraph a.2.ii.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

C. C. Mason

C. C. Mason
Power Plant Superintendent

Enclosure
cc (Enclosure):

James P. O'Reilly, Director
U.S. Nuclear Regulatory Commission
Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30303

Records Center
Institute of Nuclear Power Operations
Suite 1500
1100 Circle 75 Parkway
Atlanta, Georgia 30339

NRC Inspector, NUC PR, Sequoyah

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