

LICENCEE EVENT REPORT (LER)

FACILITY NAME (1) Sequoyah, Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 2 8	PAGE (3) 1 OF 0 4
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Inadequate Review Of A Plant Modification Caused An Inaccurate Response Time Measurement Resulting In Noncompliance With A Technical Specification Surveillance Requirement

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		
									Sequoyah, Unit 1		
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OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)									
POWER LEVEL (10) 0 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(e)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(e)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	<input checked="" type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)							
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(vii)(B)							
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)								

LICENCEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME K. W. Fenn, Plant Operations Review Staff		AREA CODE 6 1 5	
		NUMBER 8 7 0 - 1 6 5 1 1	

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDPS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDPS

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO				

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

On January 18, 1988, with unit 2 in mode 5 (cold shutdown), a postperformance review of an Instrument Maintenance Instruction (IMI) revealed that the subject IMI incorrectly measured the response time of the two valves that open the Centrifugal Charging Pumps (CCPs) suction line to the Refueling Water Storage Tank (RWST). During a subsequent search of the Sequoyah Nuclear Plant (SQN) records, it was discovered that an October 1984 response time measurement was inadequate to verify compliance with the SQN Technical Specification (TS) for one of the two valves. The event was caused by an inadequate review of a design change that was implemented to modify approximately 65 of the SQN Westinghouse Type W-2 handswitches. This modification connected the red and green valve status light in series with the neutral (auto) switch contacts to provide plant operators with an immediate visual indication of electrical continuity when the handswitch was in the neutral position. Since the subject IMI obtained the response time of the CCP suction valves by measuring the voltage drop across the green status lights, any change to the electrical wiring configuration of the valve status lights could affect the response time measurement. However, because this modification was not adequately reviewed for its potential effect on SQN procedures, no permanent changes were made to the IMI, and the October 1984 performance was incorrect. As immediate corrective action, TVA permanently changed the subject IMI to properly measure the valves' response time. In addition, all IMIs used for response time testing of engineered safety feature (ESF)-actuated equipment were reviewed, and no similar deficiencies were identified. To prevent recurrence of this event, TVA has consolidated the design change control and plant modification processes through the issuance of new nuclear engineering procedures and a revised administrative instruction.

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Sequoyah, Unit 2	0500032888	—	002	—	0002	OF 04

TEXT (if more space is required, use additional NRC Form 368A's) (17)

DESCRIPTION OF EVENT

On January 18, 1988, with unit 2 in mode 5 (0 percent power, 105 psig, 110 degrees F), a postperformance review of Instrument Maintenance Instruction (IMI)-99RT604, "Response Time Testing Engineered Safety Features Actuations - Slave Relay K604," revealed that the subject IMI incorrectly measured the response time of Level Control Valves (LCVs) LCV-62-135 and LCV-62-136. The proper response time of these valves, which open the centrifugal charging pump (CCP) (EIIS Code BQ) suction line to the refueling water storage tank (RWST) on a safety injection (SI) signal (EIIS Code JE), is necessary to verify compliance with Technical Specification (TS) 3.3.2, Table 3.3-5 (items 2a through 6a). During a subsequent search of the Sequoyah Nuclear Plant (SQN) records for past performances of the subject IMI, it was discovered that an October 1984 response time measurement of unit 2 valve LCV-62-135 was inadequate to verify compliance with the TS.

The response time of many engineered safety feature (ESF)-actuated valves at SQN is obtained by measuring the voltage drop across the valves' status indicating lights. In general, the status indicating lights, which are connected to limit switches on the valve operator, operate as follows. A green status light indicates that the valve is in the closed position. When the valve receives an open signal and begins moving, both the green and red status lights are illuminated. As soon as the valve reaches its full open position, the green light is extinguished and only the red status light is illuminated. Hence, the response time of a valve can be obtained by measuring the voltage drop across the green status light. That is, the response time of a valve is the time difference between when the valve is given an open signal and when the voltage across the green status light drops to zero. Thus, IMI-99RT604 provided the specific instructions (i.e., terminal connections) necessary for measuring the voltage drop across the green status lights associated with LCV-62-135 and LCV-62-136.

In September 1983, TVA responded to NRC IE Bulletin 80-20, "Failures of Westinghouse Type W-2 Spring Return to Neutral Control Switches," by implementing Engineering Change Notice (ECN)-L5591. This ECN modified approximately 65 of the SQN Westinghouse Type W-2 handswitches by connecting the red and green status lights in series with the neutral (auto) switch contacts, thereby providing plant operators with an immediate visual indication of electrical continuity when the handswitch was in the neutral position. Since implementation of this ECN changed the electrical wiring associated with the subject valves' status lights, the terminal connections specified by IMI-99RT604 were no longer correct. That is, with the red/green status lights connected in series, the terminal connections specified by IMI-99RT604 resulted in a measurement of the voltage difference between the red and green status lights instead of the voltage difference across the green status light alone.

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TEXT (if more space is required, use additional NRC Form 365A's) (17)

To reflect the new wiring configuration of the red/green status lights, Temporary Instruction Change (TC)-84-0493 was made to IMI-99RT604 in March 1984. In April 1984, the response time of unit 1 valve LCV-62-136 was correctly measured; however, in May 1984, the subject TC expired and was removed from IMI-99RT604. As a result, an October 1984 performance of IMI-99RT604 specified incorrect terminal connections. Since the measured differential voltage dropped to zero when the red light illuminated (i.e., when the valve began moving), the recorded value of valve response time was incorrect.

CAUSE OF EVENT

The event was caused by an inadequate review of ECN-L5591 for its potential effect on SQN procedures. Administrative Instruction (AI)-19, "Plant Modifications - After Licensing," requires all plant modifications to be reviewed for their potential effect on procedures and/or vendor manuals. However, SQN Work Plans 9973 and 10114, which implemented ECN-L5591 for units 1 and 2, respectively, did not identify IMI-99RT604 as being affected by the subject ECN. A contributing cause of this event was the failure to make a permanent instruction change to IMI-99RT604 when the deficiency was initially identified.

ANALYSIS OF EVENT

This event is reportable under 10 CFR 50.73, paragraph a.2.i.B, as an operation prohibited by the plant's TSs.

The proper response time of valves LCV-62-135 and LCV-62-136 is required to ensure that high head SI flow can be delivered to the RCS within the time assumed in Chapter 15 of the Final Safety Analysis Report (FSAR). In this case, the subject valves are assumed to open fast enough to ensure that high head SI flow reaches the RCS within approximately 30 seconds of a SI signal.

Previous response time testing of unit 2 valve LCV-62-135, both before and after the inadequate October 1984 test, verified that the response time of the subject valve was sufficient. TVA feels that LCV-62-135 would have opened within the required time period if high head SI was necessary to mitigate the consequences of an accident. LCV-62-136 was adequately tested during this period and provides a fully redundant flow path from the RWST to the suction of the charging pumps. Thus, because previous response time testing of the subject valve was acceptable and a redundant flow path from the RWST was available, there were no significant safety consequences associated with this event.

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TEXT (If more space is required, use additional NRC Form 266A's) (17)

CORRECTIVE ACTION

As immediate corrective action, TVA issued permanent procedure changes 88-105 and 88-106 (approved on January 19, 1988) to provide the correct terminal connections. In addition, TVA has reviewed all SQN IMIs that are used for response time testing of ESF-actuated equipment to verify that similar problems do not exist for other equipment. No other deficiencies of this type were identified.

In October 1987, TVA issued Nuclear Engineering Procedures (NEP) 6.3, "Operating Plant Modifications;" NEP 6.4, "Plant Modifications Packages;" NEP 6.5, "Plant Modification Studies;" and NEP 6.7, "Document Update Process - Modifications." These procedures consolidated the design change control and plant modification processes. Specifically, Section 3.5 and Appendix K of NEP-6.4 provide the requirements necessary to ensure that the effect of a design change on plant operating procedures has been reviewed before the change has been released for implementation. AI-19 has also been revised since the September 1983 implementation of ECN-L5591 and now provides more explicit requirements for the review of proposed plant modifications to determine the potential effect on SQN procedures. Additionally, Condition Adverse to Quality Report (CAQR) SQQ 88109 was initiated on January 28, 1988, to address the problem of Instruction Change Forms (ICFs) not being incorporated into site procedures in a timely manner. The corrective actions for this CAQR and proposed implementation dates are presently being formulated in accordance with AI-12, "Adverse Conditions and Corrective Actions." These corrective actions will most likely include revising AI-4, "Preparation, Review, Approval and Use of Site Procedures/Instructions," to add requirements for timely incorporation of ICFs and to limit the number of ICFs initiated before a procedure revision is implemented. Also, a new ICF tracking system is being proposed as part of the CAQR corrective actions to ensure that all permanent ICFs get incorporated into a procedure revision. Adherence to the above described procedures and resolution of the above listed CAQR should prevent the recurrence of this event.

ADDITIONAL INFORMATION

There have been no previous occurrences where an inadequate review of a plant modification has resulted in noncompliance with the SQN TSs.

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TENNESSEE VALLEY AUTHORITY

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

February 17, 1988

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

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 2 - DOCKET NO.
50-328 - FACILITY OPERATING LICENSE DPR-79 - REPORTABLE OCCURRENCE REPORT
SQRO-50-328/88002

The enclosed licensee event report provides details concerning an inadequate review of a plant modification that resulted in an inaccurate response time measurement and subsequent noncompliance with a technical specification surveillance requirement. This event is reported in accordance with 10 CFR 50.73, paragraph a.2.i.B.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


S. J. Smith
Plant Manager

Enclosure
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