NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Sequoyah, Unit 1	0 5 0 0 0 3 2 7	1 OF 0 4

TITLE (4)

Some Test Instruments Do Not Meet All ASME Section XI Requirements

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	0 2	8 6	8 6	0 2 8	0 0	0 8	0 1	8 6	Sequoyah, Unit 2	0 5 0 0 0 3 2 8
										0 5 0 0 0

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	20.402(b)	20.405(c)	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)	XX 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
David P. Ormsby, Plant Reporting Section	6 1 5 8 7 0 6 1 4 6

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

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

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

During a review of pump test procedures, it was determined on July 2, 1986, that various installed instruments do not meet the range and accuracy requirements of ASME Section XI, Boiler and Pressure Vessel Code, Articles IWP-4110 and IWP-4120. IWP-4110, "Quality," specifies that instrument accuracy for flow and pressure measurements shall be within ± 2 percent of full-scale. IWP-4120, "Range," specifies that the full-scale range shall be three times the reference value or less. The subject deficiency affects containment spray pumps, centrifugal charging pumps, essential raw cooling water pumps, component cooling pumps, residual heat removal pumps, safety injection pumps, turbine-driven auxiliary feedwater pumps, and boric acid transfer pumps.

This event is reportable in accordance with 10 CFR 50.73, paragraph a.2.i.B.

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

DESCRIPTION OF EVENT

During a review of procedures used to conduct testing of pumps, it was noted that various installed plant instruments do not meet the range and accuracy requirements of ASME Section XI, Boiler and Pressure Vessel Code, Articles IWP-4110 and IWP-4120. IWP-4110, "Quality," specifies that instrument accuracy for flow rate and pressure shall be within ± 2 percent of full-scale. IWP-4120, "Range," specifies that the full-scale range of each instrument shall be three times the reference value or less. On July 2, 1986, at 0900 EDT, it was determined that a potentially reportable situation existed due to deficiencies in testing of the containment spray pumps, centrifugal charging pumps, essential raw cooling water pumps, component cooling pumps, residual heat removal pumps, safety injection pumps, turbine-driven auxiliary feedwater pumps, and boric acid transfer pumps. Specific information related to each system including the proposed corrective action is provided below.

Containment Spray Pumps

The pressure instrument is calibrated to the required accuracy. The flow instrumentation is only calibrated with an accuracy of ± 4.5 percent for flow less than 1500 gpm and 3.0 percent for flow greater than or equal to 1500 gpm and less than 6000 gpm. The suction pressure gauges do not always meet the range requirements due to varations in pressure suction.

The next and all subsequent tests will be performed using instruments that meet section XI requirements.

Centrifugal Charging Pumps

The pressure instrumentation is calibrated to the required accuracy. The discharge pressure gauge instrumentation meets the required range of section XI, but suction gauges are not always within the required range.

The next and all subsequent tests will be performed using instruments that meet section XI requirements.

Essential Raw Cooling Water Pumps

The pressure instrumentation meets the accuracy and range requirements. The flow instrumentation is only calibrated to an accuracy 2.5 percent, and flow rate is obtained from two 0-20,000 gpm flow indicators in parallel which do not meet range requirements.

The next and all subsequent tests will be performed using instruments that meet section XI requirements.

Component Cooling Pumps

The accuracy of all instruments used for pressure and flow testing meet the ± 2 percent required by section XI. The range of the discharge gauges complies with range requirements. However, the range of suction gauges is borderline and only meets the requirement if the suction pressure is greater than 20 psig. The ranges of the flow indicators meet section XI requirements, provided there is a minimum flow of 4300 gpm.

The next and all subsequent tests will be performed using instruments that meet section XI requirements. Surveillance Instruction (SI)-46 will be revised to ensure section XI gauge ranges are complied with.

Residual Heat Removal Pump

The flow instrumentation meets the range requirements; however, due to the wide range of suction pressures, the suction and discharge gauges will not always meet the section XI range requirements. Instrumentation is calibrated to the required accuracy.

The next and all subsequent tests will be performed using instruments that meet section XI requirements.

Safety Injection Pump

Pressure instrumentation meets the requirement of ± 2 percent of full-scale, and the discharge pressure gauges meet range requirements. However, procedures for flow instrumentation only require a functional test and not periodic calibration. The range on the suction gauges are six to seven times instead of three times or less the reference value.

The next and subsequent test will be performed using instruments that meet the section XI requirements.

Turbine-Driven Auxiliary Feedwater Pump

The pressure instrumentation is calibrated to the required accuracy, and the range of the discharge gauge is within the required range. The range of the suction gauge could exceed the three times criteria of section XI.

SI-130.1 will be revised to ensure that the instrument readings are within the required range.

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

Boric Acid Transfer Pumps

Instruments are calibrated to the required accuracy; however, the pressure instruments do not meet the range requirements of section XI.

The next and all subsequent tests will be performed using instruments that meet section XI requirements.

During the recent procedure review, it was determined, as specified above, that some instrumentation could not meet the required calibration accuracy. It was also discovered that certain instruments did not meet range requirements of Article IWP-4120, and in some instances, procedures did not always ensure this criteria was met. The situation is primarily attributed to personnel error in failure to ensure that pressure and flow instrumentation met section XI requirements, and that procedures were adequate to ensure proper test performance.

During current operation in mode 5 (0 percent power) only the centrifugal charging pumps (CCP) and residual heat removal pumps (RHRP) are required to be operable.

Limiting instrument full-scale range to three times the reference reading ensures that an error of 2 percent of full-scale range would still provide reasonable accuracy even at the low end of the range for the instrument. Accordingly, data from the last performances of corresponding surveillance instructions (SI) for the RHRPs and CCPs was reviewed. In some cases, the measured suction pressures were less than one-third of the full-scale range of the used plant instruments. Conservatively applying the worst case additional allowable error to the data caused by using these high-range instruments (both to reference and test values) indicated the pumps would still have met the allowable deviation from reference values in all but one case. In this one case, the worst case calculated differential pressure for the 2B-B RHRP was less than 1 psig below the worst case calculated allowable differential pressure.

In summary, the potential errors introduced into the last test performances for the RHRPs and CCPs (caused by use of instruments exceeding allowable range requirements) did not cause the acceptance criteria to not be met. The RHRPs and CCPs remain operable and capable of performing their intended functions for the current mode of operation with both units in mode 5.

The corrective action specified above will provide a pump test program which will be in compliance with requirements of ASME Section XI for pressure and flow.

There are no previous occurrences of failure to meet section XI pump pressure and flow testing.

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

August 4, 1986

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-50-327/86028

The enclosed licensee event report provides details concerning the failure to comply with ASME Section XI accuracy and range requirements for instruments used for pump testing required by Technical Specification Surveillance Requirement 4.0.5. 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
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