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Robert A. Fenech
Vice President, Sequoyah Nuclear Plant

March 23, 1993

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 1 - DOCKET
NO. 50-327 - FACILITY OPERATING LICENSE DPR-77 - LICENSEE EVENT REPORT
(LER) 50-327/93004

The enclosed LER provides details concerning an inoperable containment
personnel airlock. This event is being reported in accordance with
10 CFR 50.73(a)(2)(i) as an operation prohibited by technical
specifications.

Sincerely,

Robert A. Fenech

Enclosure
cc: See page 2

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cc (Enclosure):

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

Sequoyah Nuclear Plant, Unit 1

DOCKET NUMBER (2) | PAGE (3)

050003 2 7 10 0 5

TITLE (4) Containment Personnel Airlock Blind Flange Leakage Causes Airlock Inoperability

EVENT DAY (5)			LER NUMBER (6)		REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
			SEQUENTIAL	REVISION				FACILITY NAMES	
MONTH	DAY	YEAR	NUMBER	NUMBER	MONTH	DAY	YEAR	DOCKET NUMBER(S)	
0	2	2	9	3	0	0	4	0	0
OPERATING			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:						
MODE			(Check one or more of the following)(11)						
(9)	1	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)				
POWER		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)				
LEVEL		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in				
(10)	1	20.405(a)(1)(iii)	XX 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	Abstract below and in				
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	Text, NRC Form 366A)				
		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
K. E. Meade, Compliance Licensing	6 1 5 8 4 3 - 7 7 6 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) X NO			

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

On February 22, 1993, it was determined that a blind flange on the Unit 1 Elevation 734 personnel airlock outer housing was leaking. During performance of a routine surveillance instruction (SI) on the airlock, a test performer noticed leakage coming from the blind flange. The leak rate was determined to be greater than the allowable containment bypass leak rate. The outer O-ring of the blind flange was discovered to be out of the machined groove and overlapping a portion of the inner O-ring. The O-rings were replaced, and the blind flange successfully passed subsequent testing. Investigation concluded that on February 16, 1993, during the performance of the SI that tests the airlock for leakage and operability, the outer O-ring slipped out of the groove during blind flange installation. An analysis determined that the increased leakage had little effect on the offsite and control room doses. In order to prevent recurrence of this event, the SI will be revised to perform testing that also pressurizes the back side of the blind flange.

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Sequoyah Nuclear Plant, Unit 1			SEQUENTIAL		REVISION								
		YEAR	NUMBER		NUMBER								
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TEXT (If more space is required, use additional NRC Form 365A's) (17)

I. PLANT CONDITIONS

Unit 1 was operating at approximately 100 percent rated thermal power.

II. DESCRIPTION OF EVENT

A. Event

On February 22, 1993, it was determined that a blind flange on the Unit 1 Elevation 734 personnel airlock (E11S Code BD) outer housing was leaking greater than the technical specification (TS) allowable limits. During performance of a routine surveillance instruction (SI) on the airlock, a test performer noticed leakage coming from the blind flange. TS 3.6.1.3 was entered at 1034 Eastern standard time (EST), the inner airlock door was locked, and a work request was written to test the blind flange for leakage. The blind flange was tested, pressurizing the outside of the flange in order to check for leakage between the O-rings. No leakage was determined to exist from this test. A new test was then performed, pressurizing from the back side of the flange. It was during this test that the blind flange was determined to be leaking 57.0701 standard cubic feet per hour (SCFH). The blind flange was then removed for inspection. The outer O-ring was discovered to be out of the machined groove and overlapping a portion of the inner O-ring. The O-rings were replaced and retested. Testing was complete with no leakage identified at 1955 EST on February 22, 1993. TS 3.6.1.3 was exited at 2112 EST after review of the test results.

Investigation concluded that on February 16, 1993, during the performance of the SI that tests the airlock for leakage and operability, the outer O-ring slipped out of the machined groove during the blind flange installation. During this test, the blind flange is removed and a test flange is installed in order to pressurize the airlock to check for potential airlock leakage. Once the test is complete, the test flange is removed and the blind flange is reinstalled. The blind flange is then tested for leakage. With the O-rings overlapping, it was concluded that a seal was formed, which prevented detection of the leakage. Thus, the blind flange indicated no leakage when tested. The blind flanges in the other three personnel airlocks on Units 1 and 2 were also tested, pressurizing the flanges from both sides. No leakage from the blind flanges was identified.

B. Inoperable Structures, Components, or Systems That Contributed to the Event

None.

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

C. Dates and Approximate Times of Major Occurrences

February 16, 1993	The blind flange on the Unit 1 Elevation 734 personnel airlock outer housing was installed incorrectly after the airlock leakage and operability test. Leakage from the blind flange was not detected.
February 16, 1993- February 22, 1993	The inner personnel airlock door was opened ten different times for a total of approximately 12 to 13 minutes.
February 22, 1993 1034 EST	During performance of a routine SI, personnel noticed leakage from the blind flange. TS 3.6.1.3 was entered.
February 22, 1993 1820 EST	Testing revealed that the blind flange was leaking approximately 57.07 SCFH.
February 22, 1993 1955 EST	New O-rings were installed in the blind flange, and the flange was retested with no leakage measured.
February 22, 1993 2112 EST	TS 3.6.1.3 was exited after the review of test data.

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

This condition was discovered by an individual performing another routine surveillance test. The individual heard a hissing noise, investigated, and determined that the noise was coming from the blind flange.

F. Operator Action

None.

G. Safety System Response

None.

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

III. CAUSE OF EVENT

A. Immediate Cause

The immediate cause of this event was that the outer O-ring on the blind flange slipped out of the machined groove during the installation process.

B. Root Cause

The root cause of this event was the improper installation of the blind flange. A review of plant data indicates that this is the first known occurrence of this type of condition.

C. Contributing Cause

A contributing cause to this event was that normal industry-accepted testing could not detect this condition since it does not pressurize both sides of the flange. The industry-accepted method of testing for this type of flange is to pressurize from the front side to ensure that there is no leakage between the O-rings. However, by also pressurizing from the back side of the flange, testing would assure that an artificial seal had not developed such as the seal postulated to have caused this event.

IV. ANALYSIS OF EVENT

The containment airlocks are designed to prevent leakage from containment into the auxiliary building in the event of an accident inside containment. In order for a pathway to exist from containment to the auxiliary building, the inner door would have had to also been leaking excessively or been open simultaneously with the blind flange leakage. The inner door has been determined to be within allowable leakage limits. Review of plant data indicates that the inner door was opened ten different times from February 16 to February 22, 1993. This equates to a total of 12 to 13 minutes in which the inner door was open in conjunction with the blind flange leakage. The short period of time, combined with the unlikelihood that someone would enter containment at the same time an accident was in progress, makes this event very unlikely.

An analysis was also performed to determine the effect of exceeding the TS bypass leakage limit on the offsite and control room operator doses. The evaluation assumed that the additional leakage occurred for the entire duration of the postulated accident. The Updated Final Safety Analysis Report Chapter 15 analysis was evaluated with an increase of 6.1 percent in the leakage assumed from containment to the auxiliary building. The results indicate that the increased leakage had little effect on the offsite and control room doses. The calculated doses are still well below 10 CFR 100 and 10 CFR 50 Appendix A General Design Criteria 19 limits. Therefore, this event had no effect on the health and safety of the public.

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		SEQUENTIAL	REVISION	YEAR	NUMBER	NUMBER			
Sequoyah Nuclear Plant, Unit 1									
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

V. CORRECTIVE ACTIONS

A. Immediate Corrective Action

Corrective action was immediately taken upon discovery of the condition in order to quantify the leakage and correct the adverse condition. The action included testing the blind flange to determine the amount of leakage, correcting the deficiency, and retesting the flange before declaring the airlock operable.

B. Action to Prevent Recurrence

SI-159.1.2, "Personnel Airlock Operability and Overall Leakage Testing," will be revised to test the back side of the subject blind flange.

Blind flanges with similar applications will be evaluated to determine whether alternate testing methods are appropriate.

An evaluation of the proper job-planning requirements will be performed to ensure reliable installation of double O-ring blind flanges.

The individuals involved in this event have been counselled as to management's expectations with respect to the importance of installing this component correctly.

VI. ADDITIONAL INFORMATION

A. Failed Components

None.

B. Previous Similar Events

None.

VII. COMMITMENTS

1. SI-159.1.2, "Personnel Airlock Operability and Overall Leakage Testing," will be revised by June 15, 1993, to test the back side of the subject blind flange.
2. Blind flanges with similar applications will be evaluated by May 7, 1993, to determine whether alternate testing methods are appropriate.
3. An evaluation of the proper job-planning requirements will be performed by June 15, 1993, to ensure reliable installation of double O-ring blind flanges.