



Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37379

May 30, 1995

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

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 2 - DOCKET  
NO. 50-328 - FACILITY OPERATING LICENSE DPR-79 - LICENSEE EVENT REPORT  
(LER) 50-328/95002

The enclosed LER provides details concerning an automatic turbine and reactor trip resulting from actuation of the main generator neutral overvoltage relay. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv) as an event that resulted in the automatic actuation of engineered safety features, including the reactor protection system.

Sincerely,

R. J. Adney  
Site Vice President

Enclosure  
cc: See page 2

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U.S. Nuclear Regulatory Commission  
Page 2  
May 30, 1995

cc (Enclosure):

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## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Sequoyah Nuclear Plant (SQN), Unit 2										DOCKET NUMBER (2)   PAGE (3) 015101013   2   8   11   OF   0   5									
TITLE (4) Turbine and Reactor Trips Resulting From Actuation of the Main Generator Neutral Overvoltage Relay																			
EVENT DAY (5)					LER NUMBER (6)					REPORT DATE (7)					OTHER FACILITIES INVOLVED (8)				
					SEQUENTIAL   REVISION					FACILITY NAMES					DOCKET NUMBER(S)				
MONTH   DAY   YEAR   YEAR					NUMBER   NUMBER					MONTH   DAY   YEAR					01510101				
0   4   2   8   9   5   9   5					0   0   2   0   0   0   5   3   0   9   5					01510101									
OPERATING MODE (9)										THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following)(11)									
1   20.402(b)   20.405(c)   XX   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)   5   9   20.405(a)(1)(iii)   50.73(a)(2)(i)   50.73(a)(2)(viii)(A)   Abstract below and in																			
										Text, NRC Form 366A)									
										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									
J. W. Proffitt, Compliance Licensing										AREA CODE   6   1   5   8   4   3   -   6   6   5   1									
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																			
CAUSE   SYSTEM   COMPONENT   MANUFACTURER   TO NPRDS										CAUSE   SYSTEM   COMPONENT   MANUFACTURER   TO NPRDS									
X   F   K   G   A   S   K   W   1   2   0   YES																			
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED MONTH   DAY   YEAR									
YES (If yes, complete EXPECTED SUBMISSION DATE)   X   NO										SUBMISSION DATE (15)									
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																			

On April 28, 1995, at 2031 Eastern standard time with Unit 2 operating at 99 percent power, the turbine tripped followed by a reactor trip as a result of operation of the main generator neutral overvoltage relay. The immediate cause of this event was attributed to a bus duct gasket that came loose and caused a ground. The ground was on the electrical bus leading from the main generator to the 'C' phase main transformer. The gasket provided a path for electrical leakage to ground that was detected by the neutral overvoltage relays. The actuation of the relays tripped the generator resulting in subsequent turbine and reactor trips. The relays actuated, as designed, to prevent damage to other components. The cause of this event is ineffective/inadequate corrective action of a previous similar event. As a result of a reactor trip in 1984, a preventive maintenance (PM) instruction was revised to periodically inspect the gaskets and bus alignments at the transformer doghouses and rework or replace as required. The PM lacked sufficient detail to ensure that the proper inspection and repairs were accomplished. The PM has been revised to provide sufficient detail to ensure proper inspection of the gasket. The Unit 1 transformers will be inspected during the next outage.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)	PAGE (3)
Sequoyah Nuclear Plant (SQN), Unit 2		SEQUENTIAL	REVISION
		YEAR NUMBER	NUMBER
	05000328	95--002--	0002 OF 05

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

I. PLANT CONDITIONS

Unit 2 was in power operation, Mode 1, at approximately 99 percent power.

II. DESCRIPTION OF EVENT

A. Event

On April 28, 1995, at 2031 Eastern standard time (EST), the turbine tripped followed by a reactor trip as a result of operation of the main generator neutral overvoltage relay (EIIS Code AIT). The immediate cause of this event was attributed to a bus duct gasket (EIIS Code FK) that came loose and caused a ground. The ground was on the electrical bus leading from the main generator (EIIS Code EL) to the 'C' phase main transformer. The gasket provided a path for electrical leakage to ground that was detected by the neutral overvoltage relays. The actuation of the relays tripped the generator, resulting in subsequent turbine and reactor trips. The relays actuated, as designed, to prevent damage to other components. The designated spare transformer was in service as the 'C' phase main transformer.

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

None.

C. Dates and Approximate Times of Major Occurrences

April 28, 1995 at 2031 EST	A turbine trip and subsequent reactor trip were initiated because of the loss of the main transformer.
April 28, 1995 at 2043 EST	Operators initiated RCS boration in accordance with abnormal operating procedures because of the RCS Temperature decreasing below 540 degrees Fahrenheit (F). Manual control of auxiliary feedwater was initiated in accordance with procedures.
April 28, 1995 at 2049 EST	Operators completed boration to the RCS.
April 28, 1995 at 2105 EST	Operations personnel stabilized the plant in a safe condition in Mode 3.

D. Other Systems or Secondary Functions Affected

None.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)										PAGE (3)				
Sequoyah Nuclear Plant (SQN), Unit 2			SEQUENTIAL				REVISION									
		YEAR	NUMBER				NUMBER									
	05000328	95	--	0	0	2	--	0	0	0	3	OF	0	5		

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

E. Method of Discovery

The turbine and reactor trips were annunciated on the main control room panels.

F. Operator Actions

Control room personnel responded as prescribed by emergency procedures. They promptly diagnosed the plant condition and took the actions necessary to stabilize the unit in a safe condition and maintained the unit in hot standby, Mode 3.

G. Safety System Response

The plant responded to the turbine and reactor trips as designed.

III. CAUSE OF EVENT

A. Immediate Cause

The immediate cause of the event was attributed to a bus duct gasket that came loose and caused a ground. The ground was on the electrical bus leading from the main generator to the 'C' phase main transformer. The gasket provided a path for electrical leakage to ground that was detected by the neutral overvoltage relays. The actuation of the relays tripped the generator resulting in subsequent turbine and reactor trips. The relays actuated, as designed, to prevent damage to other components. The designated spare transformer was in service as the 'C' phase main transformer.

B. Root Cause

The root cause of this event was ineffective/inadequate corrective action of a previous similar event. As a result of a reactor trip in 1984 a preventive maintenance (PM) instruction was revised to periodically inspect gaskets and bus alignments at the transformer doghouses and rework or replace as required. The PM lacked sufficient detail to ensure that the proper inspection and repairs were accomplished.

C. Contributing Factors

A contributing factor to this event was that at the time of the previous failures, the designated spare transformers were not inspected and repaired. At that time, the designated spare transformers were not going to be utilized for service; therefore, the spare transformers were not inspected. In 1990, the spare transformers were inspected and placed in service. Since that time, the spare transformers have been reinspected, and the condition of the gaskets was not properly assessed.



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						PAGE (3)		
		YEAR	NUMBER	REVISION	NUMBER	NUMBER	NUMBER			
Sequoyah Nuclear Plant (SQN), Unit 2		05	003	2	8	9	5	0	0	2
		0	0	2	0	0	0	0	4	0

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

## IV. ANALYSIS OF EVENT

During the transient, the RCS temperature decreased below 540 degrees F. The operators manually injected boric acid into the RCS in accordance with plant procedures. In addition, the operators took manual control of AFW in accordance with procedures because of RCS temperature decreasing below 540 degrees F. A minimum RCS temperature of 539.5 degrees F occurred during the transient. The unit was stabilized in Mode 3.

The other plant responses during and after the unit trip were consistent with responses described in the final safety analysis report and accordingly, the event did not adversely affect the health and safety of plant personnel or the general public.

## V. CORRECTIVE ACTION

A. Immediate Corrective Action

Control room personnel responded as prescribed by emergency procedures. They promptly diagnosed the plant condition and took the action necessary to stabilize the unit in a safe condition.

B. Corrective Action to Prevent Recurrence

The PM has been revised to provide sufficient detail to ensure proper inspection of the gasket. A work request has been initiated to inspect the Unit 1 transformers during the next outage.

In addition, the SQN Management Review Committee is reviewing open Level A corrective action documents to ensure that significant problems are being addressed effectively and in a timely and cost effective manner. A focus area team has been established to reassess the significance and risk associated with existing, generally known problems dating back to early 1993 and their associated corrective actions. The recommendations resulting from this team review will be established to address the findings.

## VI. ADDITIONAL INFORMATION

A. Failed Components

The gasket material, Part No. 868A8151H36, was manufactured by Westinghouse.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Sequoyah Nuclear Plant (SQN), Unit 2	05000328	95	002	00	05	OF	05

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

B. Previous Similar Events

A review for previous events identified two similar events that resulted in reactor trips that were initiated from a loose gasket causing a short. LER 50-327/84036 was a reactor trip that resulted from a neoprene gasket coming loose and causing a phase-to-ground fault. The gasket was replaced and sealed with RTV to secure the gasket in place. The corrective actions included inspection of the other Unit 1 transformers and revising PM to periodically inspect gaskets and bus alignments at the transformer doghouses and rework or replace as required. LER 50-328/84016 was a reactor trip as a result of the same problem. The gasket was replaced and sealed with RTV to secure the gasket in place. Additional corrective actions included inspection of the other Unit 2 transformers. It has been determined that the designated spare transformers on each unit were not inspected until 1990. The PM utilized to inspect the subject gasket was inadequate to prevent recurrence of the event.

## VII. COMMITMENTS

None.