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

R.J. Adney
Site Vice President
Sequoyah Nuclear Plant

May 6, 1997

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

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT (SQN) UNITS 2 - DOCKET NO. 50-328 - FACILITY OPERATING LICENSES DPR-79 - LICENSEE EVENT REPORT (LER) 50-328/97002

The enclosed report provides details concerning the failure to properly maintain two independent offsite power supplies as required by technical specifications. This condition is being reported in accordance with 10 CFR 50.73(a)(2)(i)(P) - an operation prohibited by the plant's technical specifications.

Sincerely,

R. J. Adney

Enclosure
cc: See page 2

130076

Enclosure
cc (Enclosure):

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NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Sequoyah Nuclear Plant (SQN) Unit 2	05000328	1 OF 6

TITLE (4)

Failure to Maintain Two Offsite Power Sources as Required by Technical Specifications.

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 NAME	DOCKET NUMBER
										05000
04	01	97	97	-- 009 --	00	05	06	97	FACILITY NAME NA	DOCKET NUMBER 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
20.2203(a)(1)	20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
J. W. Proffitt, Licensing Engineer	(423) 843-6651

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 15 single-spaced typewritten lines) (16)

On April 6, 1997, it was determined that a problem existed with Start Bus 1A alternate feeder breaker. The breaker was removed from service and the normal feeder breaker was placed in service. The breaker was inspected and it was determined that the main contact compression was out of tolerance and a gap of the main contacts caused minor arcing and burning of the arcing contacts. The breaker was determined to be inoperable since April 1,1997, when it had been placed in service. The cause was determined to be the inadequate refurbishment of quality-related breakers by Asea Brown Boveri (ABB). Installation of ABB refurbished breakers was suspended. Main contact compression checks on two ABB breakers that had been recently refurbished were performed and were determined to be satisfactory. An inspection of the refurbished breakers currently installed on Start Bus 1A was performed, no refurbished breakers are currently installed on Start Bus 1B. An evaluation of the refurbished breakers that are in service was performed. The breakers were determined to be functioning properly. Increased inspection requirements for refurbished breakers has been defined and incorporated into plant procedures. Appropriate procedures have been revised to include post maintenance testing requirements to ensure that breakers function properly following installation.

I. PLANT CONDITIONS

Unit 2 was in Mode 1 at approximately 100 percent power.

II. DESCRIPTION OF EVENT

A. Event:

On April 1, 1997 Start Bus 1A alternate feeder breaker [EIIS Code FK] was placed in service. On April 6, 1997, it was determined that a problem existed with Start Bus 1A alternate feeder breaker. The breaker was removed from service and the normal feeder breaker was placed in service. The breaker was inspected. Evidence of minor arcing, pitting and burnt surfaces on the 'B' and 'C' phase arcing contacts were observed. On April 7 it was determined that the main contact compression was out of tolerance and a gap of the main contacts caused the minor arcing and burning of the arcing contacts. Technical specifications require two physically independent circuits between the offsite transmission network and the onsite Class IE distribution system and four separate and independent diesel generator (D/G) [EIIS Code EK] sets to be operable. With one offsite power circuit inoperable technical specifications require the circuit to be restored to operable status within 72 hours. It has been determined that during the period of April 1-6, only one offsite power circuit was considered operable. Therefore, SQN did not comply with limiting condition for operation (LCO) 3.8.1.1 action (a).

On April 2, 1997, at 1126 Eastern Standard Time (EST), D/G 1B-B was declared inoperable. With one offsite power circuit and one D/G set inoperable technical specifications require one of the inoperable sources to be restored within 12 hours. D/G 1B-B was returned operable on April 5, 1997, at 0310 EST. Therefore, SQN did not comply with LCO 3.8.1.1 action (c).

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

None.

C. Dates and Approximate Times of Major Occurrences:

March 23, 1997	ABB, type 15HK circuit breaker, was obtained for placing into service as the alternate feeder breaker on Start Bus 1A. The breaker had been refurbished by ABB.
March 24, 1997	Electrical Maintenance performed initial opening and closing response time testing and adjustments of the breaker in accordance with plant procedures.
April 1, 1997 2150 EST	The refurbished breaker was placed in service as the alternate feeder breaker on Start Bus 1A.
April 2, 1997 1126 EST	D/G 1B-B was declared inoperable as a result of a phase imbalance.
April 5, 1997 0310 EST	No problem with D/G 1B-B could be identified. The D/G was tested and declared operable.
April 6, 1997 at 0923 Eastern Daylight Time (EDT)	The power supply voltage to the main transformer insulating oil processing system was observed to be abnormal. Operator observation of other voltage indicating meters indicated that a problem existed with the power supply voltage in the plant.
April 6, 1997 at 1037 EDT	Start Bus 1A alternate feeder breaker was observed to have audible arcing noise.
April 6, 1997 1122 EDT	Start Bus 1A alternate feeder breaker was removed from service and the normal feeder breaker was placed in service.
April 7, 1997	It was determined that the main contact compression was out of tolerance and a gap of the main contacts caused the arcing and burning of the arcing contacts.

C. **Contributing Factors**

Contributing to the identified condition was the inadequate refurbishment of quality-related breakers by ABB.

IV. ANALYSIS OF THE EVENT

During the period, April 1-6, that the alternate feeder breaker was in service, one of the two physically independent circuits between the offsite transmission network and the onsite Class IE distribution system was operable. The normal feeder breaker was available to provide an additional source of offsite power with manual operator action to transfer the power supply from the alternate feeder breaker to the normal feeder breaker. Also, during this period, at least one train of onsite power was operable. With the core empty on Unit 1 and Unit 2 at 100 percent power, sufficient power sources were available to ensure electrical availability to safely shut down and maintain the plant during a design basis event. Therefore, the condition did not adversely affect the health or safety of plant personnel or the general public.

V. CORRECTIVE ACTIONS

A. **Immediate Corrective Actions:**

Upon determination of the condition, Operations transferred Start Bus 1A to the normal feeder breaker and removed the alternate feeder breaker from service.

Installation of refurbished ABB breakers was suspended. It was determined that six recently refurbished breakers had been installed in the plant (including the alternate feeder breaker). Main contact compression checks were performed on two ABB breakers that were out of service. The main contact compression was determined to be satisfactory. An inspection of the refurbished breakers currently installed on Start Buses 1A has been performed. An evaluation of the refurbished breakers that are in service on Start Buses 2A and 2B was performed. The evaluation concluded that the breakers are functioning properly. A refurbished breaker is not currently installed on Start Bus 1B.
An inspection of the 1A Start Bus alternate feeder breaker cubicle was performed; no damage to the compartment was identified.

D. Other Systems or Secondary Functions Affected:

None.

E. Method of Discovery:

The condition was identified when inadequate power supply voltage to the main transformer insulating oil processing system was observed. Operations was notified of the condition.

F. Operator Actions:

Main Control room personnel observed other indicating meters and concluded that a problem existed with the power supply voltage in the plant. An operator was dispatched to investigate the potential problem. The operator observed the Start Bus 1A alternate feeder breaker to have an audible arcing noise. Operations transferred Start Bus 1A to the normal feeder breaker and removed the alternate feeder breaker from service.

G. Safety System Responses:

No safety system responses were required.

III. CAUSE OF THE EVENT

A. Immediate Cause:

The immediate cause of the condition was determined to be that the main contact compression was out of tolerance resulting in a failure of the breaker.

B. Root Cause:

The root cause was determined to be the acceptance of a refurbishment of quality-related breakers under a vendor's commercial-grade program without an adequate technical analysis and specification of inspection / testing requirements to ensure that the breakers would function properly.

An evaluation of the 480 volt loads being supplied power from Start Bus 1A was performed. The evaluation concluded that the loads were not damaged by the low voltage condition present. A bridge and megger test on a 480-volt motor powered from the 1A Start Bus was performed, no damage was identified.

B. Corrective Actions to Prevent Recurrence:

Increased inspection requirements for refurbished breakers has been defined and incorporated into plant procedures. Appropriate procedures have been revised to include post maintenance test requirements to ensure that 6900-volt breakers function properly following installation.

An assessment of the procurement of quality-related services and the understanding of the process by site personnel is being performed. The preliminary results indicate the process is adequate but may not be well understood by site personnel. The results of the assessment will be evaluated and appropriate corrective actions established in accordance with the corrective action program.

VI. ADDITIONAL INFORMATION

A. Failed Components:

ABB type 15HK 6900-volt circuit breaker, Serial Number 54801A-1-01766.

B. Previous LERs on Similar Events:

There were no previous similar events identified.

C. Additional Information:

None.

VII. COMMITMENTS

None.