



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

November 18, 1994

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) 50-328/94008

The enclosed LER provides details concerning the manual actuation of the reactor trip
breakers.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv) as a condition that
resulted in the manual actuation of an engineered safety feature.

Sincerely,

O. J. Zeringue
Acting Site Vice President

Enclosure
cc: See page 2

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cc (Enclosure):

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LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS
INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD
COMMENTS REGARDING BURDEN ESTIMATE TO THE
INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB8
7714), U.S. NUCLEAR REGULATORY COMMISSION,
WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK
REDUCTION PROJECT (3150-0104), OFFICE OF
MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Sequoyah Nuclear Plant (SQN), Unit 2

DOCKET NUMBER (2)

05000328

TITLE (4) Manual Actuation of the Reactor Trip Breakers as a Result of a Malfunction of a Rod Control Demand Step Counter

| 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 |
| 10 | 21 | 94 | 94 | 008 | 00 | 11 | 18 | 94 | FACILITY NAME | DOCKET NUMBER |

| OPERATING MODE (9) | 5 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) | | | | |
|--------------------|-----|---|------------------|-------------------------------------|----------------------|--|
| POWER LEVEL (10) | 000 | 20.402(b) | 20.405(c) | <input checked="" type="checkbox"/> | 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 |
| | | 20.405(a)(1)(iii) | 50.73(a)(2)(i) | | 50.73(a)(2)(viii)(A) | (Specify in 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

Steve D. Gilley, Compliance Licensing Engineer

TELEPHONE NUMBER (Include Area Code)

(615) 843-7427

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 |
|-------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|
| X | AA | CTR | W185 | NO | | | | | |
| | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

YES
(If yes, complete EXPECTED SUBMISSION DATE).☒ NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On October 21, 1994, at 2230 Eastern daylight time (EDT) with Unit 2 in Mode 5 (cold shutdown), the reactor trip breakers were opened as a result of rod control demand step counter malfunctions in Control Bank "A". The Technical Specification (TS) 3.1.3.3 action statement requires opening the reactor trip breakers when the group demand counter is inoperable or is not capable of determining demand position within plus or minus two steps during Mode 5. During the manipulation of Control Bank "A", the step counter for Group 2 did not move when Operations personnel were attempting to move the control rods. This resulted in a deviation between Group 1 and Group 2 step counters by more than the plus or minus two steps required by TSs. An investigation of the event determined that the reset mechanism for the Control Bank "A" Group 2 step counter was mechanically bound. The subsequent operation of the counter did not reveal any problems as a result of binding.

LICENSEE EVENT REPORT
TEXT CONTINUATION

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| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) |
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| Sequoyah Nuclear Plant (SQN), Unit 2 | 05000328 | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 2 of 5 |
| | | 94 | 008 | 00 | |

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

I. PLANT CONDITIONS

Unit 2 was in Mode 5, cold shutdown.

II. DESCRIPTION OF EVENT

A. Event

On October 21, 1994, at 2230 EDT with Unit 2 in Mode 5 (cold shutdown), the reactor trip breakers (EIIS Code AA) were opened as a result of rod control demand step counter (EIIS Code AA) malfunctions in Control Bank "A". The Technical Specification (TS) 3.1.3.3 action statement requires opening the reactor trip breakers when the group demand counter is inoperable or is not capable of determining demand position within plus or minus 2 steps during Mode 5. During manipulation of Control Bank "A", the step counter for Group 2 did not move, resulting in a deviation between Group 1 and Group 2 step counters by more than the plus or minus two steps required by TSs. The reactor trip breakers were manually opened in accordance with TS 3.1.3.3. This constituted an actuation of the engineered safety features (ESF) system.

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

None.

C. Dates and Approximate Times of Major OccurrencesOctober 21, 1994
2150 EDT

Postmaintenance testing began on the demand step counter by a senior reactor operator (SRO) trainee under the supervision of the unit SRO and control room operator (CRO). During the testing for Control Bank A, the thrust switch was placed in the out position and the SRO trainee observed that the Group 1 step counter began to move but the Group 2 counter did not move. The trainee did not release the Rx thrust switch in time to prevent the Group 1 rods from reaching three steps.

NRC FORM 366A
(5-92)

U.S. NUCLEAR REGULATORY COMMISSION

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APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

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WASHINGTON, DC 20503

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| | | | | | |

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

2230 EDT The UO/CRO informed the unit SRO that step counter deviation between Groups 1 and 2 for Control Bank A was greater than two steps. The reactor trip breakers were opened in accordance with TS Action Statement 3.1.3.3.

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

The demand step counter failure was observed by the SRO trainee and the UO/CRO.

F. Operator Actions

The SRO trainee opened the reactor trip breakers under the supervision of the UO/CRO.

G. Safety System Responses

The plant responded to the opening of the reactor trip breakers as designed.

III. CAUSE OF THE EVENT

A. Immediate Cause

The immediate cause for this event was incorrect step position indication on the Control Bank A Group 2 step counter.

B. Root Cause

The root cause of this event was mechanical binding caused by the reset mechanism for the Control Bank A Group 2 step counter. Mechanical binding of the counter mechanism results in a condition where the counter fails to register a numerical increase or decrease upon receiving a signal to do so.

C. Contributing Factors

None.

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IV. ANALYSIS OF THE EVENT

SQN has two separate systems to provide control rod position indication, the analog rod position indication system (RPIS) and the demand position indication system. Each system serves as a backup for the other. During the demand step counter malfunction, the RPIS provided correct indication. This allowed the operator to compare the demand with the RPIS for the "actual" rod position and take the appropriate action necessary for the condition. The actual position of the rods was indicated by the RPIS and was not in error. Therefore, there were no adverse consequences to the health and safety of plant personnel or the general public as a result of this event.

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

The operator opened the reactor trip breaker.

B. Corrective Actions to Prevent Recurrence

1. A functional test was successfully completed on the Control Bank A Group 2 step counter.
2. A more deliberate method of operating the thrust switch has been incorporated into Operations' Procedures SOI-85.1, Revision 28 and O-SI-OPS-085-011.0, Revision 4 to minimize the possibility of step deviations greater than two steps.
3. Enhancement of the step counter system is planned for future outages. The enhancement will consist of replacing the electro-mechanical rod control step counters with electronic counters.

VI. ADDITIONAL INFORMATION

A. Failed Components

The component that failed in this event was an electro-mechanical step counter manufactured by Whittaker Corporation, Electrical Resources Division, Model No. 127FD100AS/3.

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B. Previous LERs on Similar Events

A review for previous similar events identified three previous LERs documenting a total of seven events in which the reactor trip breakers were opened as a result of step counter problems. Two of these events were the result of the mechanical binding of the counter mechanism. LER 50-328/88-013 described a failure of the Control Bank B Group 1 counter because of debris in the counter mechanism. The counter was replaced and all counters were cleaned. LER 50-328/92-001 described a failure of the Shutdown Bank D step counter as the result of mechanical binding; no visible foreign material was found in the mechanism, and this counter was replaced.

Therefore, none of the corrective actions taken in the previous LERs would have precluded this event.

VII. Commitments

None.