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J. L. Wilson
Vice President, Sequoyah Nuclear Plant

December 10, 1991

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) 50-328/91007

The enclosed LER provides details concerning the discovery of three partially open, one-half inch essential raw cooling water test connection valves that are required to be closed for containment integrity. This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as an operation prohibited by technical specifications.

Sincerely,

J. W. Wilson

J. L. Wilson

Enclosure
cc: See page 2



IE22
1/1

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NRC Form 366 (6-89) | U.S. NUCLEAR REGULATORY COMMISSION | Approved OMB No. 3150-0104 Expires 4/30/92

# LICENSEE EVENT REPORT (LER)

FACILITY NAME (1): Sequoyah Nuclear Plant, Unit 2 | DOCKET NUMBER (2): 0 5 0 0 0 3 2 8 1 | PAGE (3): 0F 0 5

TITLE (4): Essential raw cooling water test connection valves necessary for containment integrity were discovered to be partially open for an indeterminate reason

| EVENT DAY (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 5 0 0 0 |
| 1 1 | 1 0 | 9 1 | 9 1 | 0 0 1 7 | 0 0 | 1 2 | 1 0 | 9 1 | | 0 5 0 0 0 |

| OPERATING MODE (9) | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following)(11) | | | |
|---|---|---|---|---|
| 5 | 20.402(b) | 20.405(c) | 50.73(a)(2)(iv) | 73.71(b) |
| POWER LEVEL (10) 0 0 | 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) | X 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) |
|---|---|
| C. M. Whitemore, Compliance Licensing | 6 1 5 8 4 3 - 7 2 1 0 |

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 November 10, 1991, at approximately 1815 Eastern standard time (EST) with Unit 2 in Mode 5 and Unit 1 in a refueling outage, it was discovered while performing a verification of containment integrity surveillance that three Unit 2 one-half-inch essential raw cooling water (ERCW) test connection valves (normally closed) were partially open. This surveillance instruction requires these valves to be closed and secured to maintain containment integrity. The test personnel reported to the assistant shift operations supervisor that they closed and locked the valves and that the test connection caps were in place and not leaking. The reason for the valves being partially open cannot be determined. The last known manipulation of the valves documents the valves as being closed, locked, and verified. No evidence has been identified to indicate that the valves were opened for any reason since the last official manipulation. The locking devices were found to be loosely installed. The approved method for securing locked valves as delineated in operating procedures has been discussed, and the sensitivity of the personnel raised as to the proper method for ensuring valves are locked appropriately.

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

I. PLANT CONDITIONS

Unit 2 was in Mode 5, and Unit 1 was in a refueling outage.

II. DESCRIPTION OF EVENT

A. Event

On November 10, 1991, at approximately 1815 Eastern standard time (EST) during the performance of a routine containment integrity surveillance, three Unit 2 one-half inch test connection valves (EIIS Code TV) on the supply line to the lower compartment coolers essential raw cooling water (ERCW) system (EIIS Code BI) were found to be partially open. This surveillance instruction (SI) requires these valves to be closed and secured. In addition, the locking devices were found to be easily removed without unlocking and removing the locks. At 1854 EST, the Unit 2 assistant shift operations supervisor (ASOS) was informed of the situation. The ASOS instructed the test personnel to close and lock the valves. The assistant unit operators (AUOs) closed the valves, securely locked the valves, and reported their actions and observations to the ASOS. The AUOs reported that the test connection caps were in place and not leaking.

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

None.

C. Dates and Approximate Times of Major Occurrences

| | | |
|---|---|---|
| 1. | September 4, 1991 | A routine surveillance to verify the operability of ERCW check valves was performed. After performance of the SI, the test valves were closed and relocked. The valves were independently verified closed and capped. Unit 2 was operating at 100 percent power. |
| 2. | November 7, 1991 | Unit 2 reactor trip (LER 50-328/91006) |
| 3. | November 8, 1991 at 2002 EST | Unit 2 enters Mode 5 |
| 4. | November 10, 1991, at 1815 EST | A routine containment integrity surveillance was being performed when test valves on three of the four ERCW supply penetrations to the lower compartment coolers were found to be partially open. |
| 5. | November 10, 1991, at 1910 EST | The valves were closed and relocked. |

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D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

The event was discovered during a routine performance of a containment integrity surveillance.

F. Operator Actions

The test personnel (AUOs) that discovered the conditions immediately informed the Unit 2 ASOS. The ASOS instructed the AUOs to immediately close and secure the valves. The AUOs closed the valves, relocked them, and reported their actions and observations. The test connection caps were intact and not leaking.

G. Safety System Responses

None.

III. CAUSE OF THE EVENT

A. Immediate Cause

The immediate cause of this event was the failure to effectively lock the three normally closed isolation valves.

B. Root Cause

The root cause of this event could not be determined. The valves were properly closed, and independently verified at the completion of a routine surveillance to verify the operability of ERCW check valves on September 4, 1991. This was the last known manipulation of these valves. The potential exists that these valves were inadvertently "bumped" during other activities in the general area, but because of their physical location, this did not seem probable.

C. Contributing Factors

Locking devices on the three valves were found to be loosely installed and allowed movement of the valve's handle. The locking device used to lock these valves in position is difficult to use. These valves were locked with chains and master locks. The valves are one-half inch Kerotest globe valves with six-inch tee handles. The chain is usually wrapped around the tee handle and then back around the valve body. The size of the chain links and the

configuration of the valve make it very difficult to lock the valves in any position without some movement. Care must be taken to wrap the chain around this type valve and secure the handle in such a manner as to prevent unauthorized or inadvertent movement.

During review of the procedures that require manipulation of these valves, it was noted that not all the procedures required the valves to be locked. While TVA does not consider this to be a contributing factor, TVA will revise the procedures to require the valves to be locked (with a second-party verification) as an enhancement to the overall containment integrity program.

IV. ANALYSIS OF THE EVENT

Although this condition was discovered while performing a routine containment integrity surveillance during a shutdown, the previous documented movement and closure of these valves was during the performance of a routine surveillance verifying the operability of ERCW check valves. It is assumed that these valves could have been open from sometime on or after September 4, 1991, to November 10, 1991; Unit 2 was operating in Mode 1 at full power until November 7, 1991.

The containment is designed to assure radioactive effluents are not released outside of the containment vessel in excess of 10 CFR 100 limits under design basis accident conditions. For purposes of integrity, the containment may be considered as the containment vessel and containment isolation system. This structure and system are directly relied upon to maintain containment integrity.

The containment isolation provisions for the four ERCW supply to upper compartment cooler penetrations consist of an outboard motor-operated valve, an inboard check valve and an inboard one-half inch test connection isolation valve. On three of the penetrations, the test connection valves were found to be not fully closed, thereby indicating the potential for degradation of containment integrity. Although the test connections with the partially open valves were capped and exhibited no visual leakage against ERCW system pressure, no credit can be taken for the caps because the caps are not constructed of the same quality level as the containment penetrations and are not considered as allowable containment isolation barriers. With these three containment test connections not fully closed, the inboard side of the containment penetrations were effectively open to the containment atmosphere assuming that ERCW system pressure would not have been available during a prescribed accident condition. The two-inch outboard motor-operated containment isolation valves normally would close on a phase B containment isolation signal. However, a single failure of either train A or B power could leave these outboard valves open. Hence, two one-half inch diameter paths for containment leakage could potentially be created. However, for a containment atmosphere leakage path to exist, loss of the ERCW inside the penetration and Class B and C piping inside and outside containment, respectively, must also be assumed.

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While this condition constituted some degradation of the containment integrity provisions for the subject penetrations, it is considered very unlikely that any containment atmosphere leakage would have occurred as a result of the numerous other barriers that were in place, i.e., threaded caps, ERCW water filled penetration and lines, outboard motor-operated valves and ERCW filled pressurized, Class C piping outside containment. Further, any postulated leakage would have been filtered by either the annulus emergency gas treatment system or auxiliary building gas treatment system. Therefore, this event is not considered to have resulted in any adverse safety consequences.

V. CORRECTIVE ACTIONS

A. Immediate Corrective Action

The ASOS was informed, the valves were closed, and the locking devices were securely reinstalled.

B. Corrective Actions to Prevent Recurrence

1. Operations' personnel are responsible for locking, unlocking, and manipulating these valves. The approved method for securing locked valves as delineated in operating procedures has been discussed, and the sensitivity of the personnel raised as to the proper method for ensuring valves are locked appropriately.

VI. ADDITIONAL INFORMATION

A. Failed Components

None.

B. Previous Similar Events

None.

III. COMMITMENTS

None.

PLO90204/290