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May 3, 1991

U.S. Nuclear Regulatory Commission
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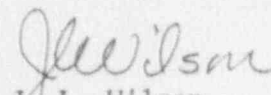
Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 1 - DOCKET
NO. 50-327 - FACILITY OPERATING LICENSE DPR-77 - LICENSEE EVENT REPORT
(LER) 50-327/91006

The enclosed LER provides details concerning the discovery that seven
sprinkler heads in the Unit 1 reactor building annulus had not been
visually inspected as required by the Technical Specification (TS)
Surveillance Requirement 4.7.11.2.c.2. This event is being reported in
accordance with 10 CFR 50.73(a)(2)(i) as an operation prohibited by TSs.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


J. L. Wilson

Enclosure
cc: See page 2

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U.S. Nuclear Regulatory Commission
May 3, 1991

cc (Enclosure):

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

Sequoyah Nuclear Plant, Unit 1

DOCKET NUMBER (2) | PAGE (3)

050003 | 27 | 10F | 06

TITLE (4) The Reactor Building Annulus fire protection system was not properly verified as required by TS because of a failure to update the associated procedure as a result of a modification.

| EVENT DAY (5) | | | LER NUMBER (6) | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|-----|------|-------------------|-----------------|-------------------|-----|----------------------|-------------------------------|-----------------------|
| MONTH | DAY | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAMES | DOCKET NUMBER(S) |
| 0 | 4 | 03 | 9 | 1 | 0 | 0 | 6 | | |
| OPERATING MODE (9) THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following)(11) | | | | | | | | | |
| POWER LEVEL (10) 1 0 0 | | | 20.402(b) | | 20.405(c) | | 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 (Specify in |
| | | | 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 |
| C. H. Whittemore, Compliance Licensing Engineer | 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 NPDs | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDs |
|-------|--------|-----------|--------------|--------------------|-------|--------|-----------|--------------|--------------------|
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SUPPLEMENTAL REPORT EXPECTED (14)

| 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 April 3, 1991, at 1430 Eastern daylight time with Unit 1 at 100 percent power, SQN entered Limiting Condition for Operation (LCO) 3.7.11.2 for Unit 1 when it was discovered that seven sprinkler heads in the Unit 1 Reactor Building Annulus had not been inspected, as required by TS. In June 1988, Work Plan (WP) 418-01 added seven sprinkler heads to the existing 45 in the annulus and relocated 10 existing sprinkler heads. The surveillance instruction (SI) that implements the surveillance requirement was not updated to indicate the additional sprinkler heads, and therefore, these sprinkler heads had not been verified since the implementation of the WP in 1988. Immediate corrective action for this event was to enter the LCO 3.7.11.2 and establish continuous fire watches in the Unit 1 annulus. The sprinkler system was walked down, the SI performed, and a pressure test was conducted as a post maintenance test. The SI was revised to reflect the current number of sprinkler heads. The LCO was exited at 2040 on April 4, 1991.

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| Sequoyah Nuclear Plant Unit 1 | | YEAR | NUMBER | NUMBER | | | |
| | | 05 | 00 | 03 | 2 | 7 | 9 |

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

DESCRIPTION OF EVENT

At 1430 Eastern daylight time (EDT) on April 3, 1991, with Unit 1, operating in Mode 1 (100 percent power, 2,235 pounds per square inch gauge and 578 degrees Fahrenheit), SQN Operations personnel entered Limiting Condition for Operation (LCO) 3.7.11.2 for Unit 1 when it was determined that several Fire Protection Suppression System (EIIIS Code KP) sprinkler heads in the Unit 1 Reactor Building annulus had not been visually inspected. This condition was identified through the corrective action for a previous event (LER 50-327/91001) involving workplans (WPs) that were field complete, but for which impacted procedures had not been revised.

In June 1988, a modification to the Unit 1 Reactor Building annulus fire protection suppression sprinkler system was initiated that added seven sprinkler heads, raising the number of sprinkler heads from 45 to 52. Also included in the WP was the relocating of 10 original sprinkler heads. The WP was reviewed by the site Fire Protection Engineer on July 1, 1988, at which time the need for Surveillance Instruction (SI)-241 "Visual Inspection of Spray and/or Sprinkler System Spray Headers, Nozzles and Nozzle Spray Area" to be revised was identified. SI-241 implements SR 4.7.11.2.c.2, which requires the dry pipe, spray and sprinkler headers to be visually inspected to verify their integrity. WP 418-01 was field complete on August 18, 1988, and the system was declared operable. SI-241 was to be revised prior to WP closure. Following field completion, the closure of the WP was not expediently pursued. At the time this modification was completed, the site modification procedure Administrative Instruction (AI)-19 (Part IV), "Plant Modifications: After Licensing," ensured the affected procedures were subsequently revised and/or generated by keeping the WP open until actions identified in the WP were complete. However, there were no specified timeframes for completing those actions. The failure to close the WP in a timely manner led to the failure to have the associated procedures (surveillance instruction) and secondary drawings revised. Therefore, the mechanical drawings and surveillance instruction continued to indicate that only 45 sprinkler heads were installed.

SI-241 does not uniquely identify the sprinkler heads by number or location, the procedure only states a total number of sprinkler heads to be visually inspected. Therefore, the physical drawings of the system must also be used to perform the surveillance activity. After the modification (WP 418-01) was implemented the next performance of SI-241 was started on October 7, 1989, and completed on December 11, 1989. Since the procedure and secondary drawings had not been revised, this performance technically verified the existence and acceptability of only 45 sprinkler heads in the Unit 1 annulus. This performance did not note a discrepancy of 52 sprinkler heads physically installed versus the fact that the procedure and drawings required only 45 heads. The personnel performing the surveillance considered 45 to be the minimum number needed to be operable; additional heads would not be considered a deficiency or discrepancy. Subsequent surveillance activities also documented only 45 sprinkler heads.

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| Sequoyah Nuclear Plant Unit 1 | 0500031217 | 006 | 003 OF 06 |

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

DESCRIPTION OF EVENT

In the fall of 1989, Nuclear Engineering established a configuration control tracking system which represents the latest as-constructed condition of the plant. This tracking system is the Design Change Document Tracking System (DCDTS) and controls the use of unrevised drawings by indicating on "Change Paper" that part of the drawing has been revised. This provides the user of any drawing the latest as-built configuration information. The physical drawing of the sprinkler system presently has "Change Paper" indicating 52 sprinkler heads installed in the Reactor Building annulus.

In October 1989, a failure to demonstrate operability of spray and/or sprinkler systems as required by TSs was identified. This event was reported in LER 50-327/89027. The cause of the event was determined to be an inadequate procedure in that SI-241 was not unitized and did not indicate that portions of the SI could not be performed in operating modes because of high radiation levels in certain areas. The corrective action was to separate SI-241 into three parts: SI-241.0 for common, Unit 1 and Unit 2 accessible equipment; 241.1 for inaccessible Unit 1 equipment; and SI-241.2 for inaccessible Unit 2 equipment. However, the development of SI-241.1 was deficient. An inadequate review of the drawings and change paper allowed the technical discrepancy to be transferred from SI-241 to SI-241.1 in that the correct number of sprinkler heads in the annulus was not identified. SI-241.1 was issued on May 27, 1990.

Upon discovery of this condition during review of open WP's as a result of LER 50-327/91001, fire watches were established in the Unit 1 annulus as required by TS action statement 3.7.11.2. The Unit 1 annulus was walked down by the fire protection Engineer and the Systems Engineer who was the former Modifications cognizant engineer. Fifty-two sprinkler heads were verified to be installed (one head was determined to be deficient and was replaced), the applicable portion of the SI was performed to document the walkdown and a pressure test was performed to further verify the integrity of the system. The surveillance instruction SI-241.1 was revised on April 4, 1991, to include the additional sprinkler heads. LCO 3.7.11.2 was exited at 2040 EDT on April 4, 1991.

CAUSE OF EVENT

The cause of this event is the failure to update SI-241 in a timely manner to reflect the correct number sprinkler heads for the area involved. The root cause of this event is that at the time the modification was completed, no mechanism existed for ensuring procedures requiring revision as a result of a modification were updated in a timely manner. As described in LER 50-327/91001, the weakness in AI-19 regarding outstanding procedure changes had been previously recognized and corrected; AI-19 currently requires outstanding procedure changes to be punch-listed in the affected procedures and also provides timeframes for closure of a WP when it is field complete. When a procedure is identified as requiring a revision that doesn't affect operability of the plant, a "Punchlist" form is inserted in the front of the affected procedure. The

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

CAUSE OF EVENT

punchlist is a mechanism that informs the user of the procedure that an activity has impacted the procedure as written and that a revision is required before the procedure can be performed.

The cause of the lack of identification of the deficient condition during the SI-241 performance that was completed on December 11, 1989, are 1) SI-241 series of procedures are cumbersome and ambiguous to the extent that specific training is required for adequate performance, 2) the Fire Operations personnel were performing the procedure for the first time, 3) the drawings used to accomplish SI-241 are difficult to read, and 4) the Fire Operations personnel involved did not appear to be knowledgeable of the drawing control process. In summary, adequate tools and training were not provided to ensure proper performance.

The cause of SI 241.1 being deficient was an inadequate review during the development of the procedure that allowed a technical discrepancy, the incorrect number of sprinkler heads in the Unit 1 annulus, to be transferred from SI-241 to SI-241.1.

ANALYSIS OF EVENT

The fire protection system is designed to provide fire protection in those plant areas where a fire could affect the ability to achieve and maintain safe shutdown of the plant. The reactor building annulus sprinkler system is periodically inspected in accordance with TSs to ensure that the equipment is in place and in good operating condition.

Although the system became technically inoperable on July 6, 1990, because of the missed surveillance and remained inoperable until April 4, 1991, the fire suppression system in the Unit 1 annulus is considered to have been capable of performing its function throughout this period. This is based on the performance of SI-241.1 on April 4, 1991. During this performance, the effected sprinkler heads were found fully acceptable with the exception of one sprinkler head. This one sprinkler head was found to be the wrong type (i.e., did not have water diverting shield) however, any resulting performance consequences are considered to be extremely slight. Therefore, there was no danger to the health or safety of the plant or public.

CORRECTIVE ACTION

The immediate corrective action for this event included establishing fire watches in the Unit 1 annulus as required by TS action statement 3.7.11.2. The Unit 1 annulus was walked down by the fire protection Engineer and the Systems Engineer who was the former Modifications cognizant engineer. Fifty-two sprinkler heads were verified to be installed (one head was determined to be deficient and was replaced), the applicable portion of the SI was performed to document the walkdown and a pressure test was performed to further verify the integrity of the system. The surveillance instruction SI-241.1 was revised on April 4, 1991, to include the correct number of sprinkler leads. The LCO 3.7.11.2 was exited at 2040 EDT on April 4, 1991. A review of the Unit 2 procedure (SI-241.2) was performed and was verified to be correct.

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CORRECTIVE ACTION

Enhancements to the work plan governing procedures have been implemented since the occurrence of this event, which help to minimize recurrence. AI-19, Part IV, and Part VI, "Modifications: Permanent Design Change Control Program," have been revised to provide a mechanism for ensuring applicable procedures are updated.

Specific training in using DCDTS will be provided to the Fire Operations' foremen by June 14, 1991.

The mechanical drawings necessary for the performance of the SI-241 series will be evaluated for legibility and a plan formulated to revise and/or correct the drawings as appropriate. This will be accomplished by October 1, 1991.

The review of WPs that were placed in a work complete status for procedure impact and corrective actions are being tracked by LER 50-327/91001. A review will be made of the performance history of any TS SIs identified from this review of WPs that are closed to determine if the TS performance intervals have been met. This will be completed by August 16, 1991.

SI-241.0, 241.1, and 241.2 will be revised to remove ambiguities and make the procedures more user-friendly. This will be accomplished by September 20, 1991.

The individual that performed the inadequate review for the development of SI-241.1 was qualified and certified to perform the review, however, the individual is no longer employed at TVA. Therefore, no further corrective action is required.

ADDITIONAL INFORMATION

A previous event on October 27, 1989, and reported in LER-1-89027 identified a missed surveillance of a spray and/or sprinkler system. The cause of this event was reported to be an inadequate procedure (SI-241), in that it was not unitized and did not indicate that portions of the SI could only be performed in nonoperating modes resulting in the SI not being appropriately scheduled during outages. The corrective action was to separate the SI-241 into three procedures 241.0 for common equipment including Unit 1 and Unit 2 accessible areas 241.1 for inaccessible Unit 1 equipment and 241.2 for inaccessible Unit 2 equipment. This was accomplished in May 1990.

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COMMITMENTS

1. The mechanical drawings necessary for the performance of the SI-241 series will be evaluated for legibility and a plan formulated to revise and/or correct the drawings as appropriate. This will be accomplished by October 1, 1991.
2. The Fire Operations' personnel will be trained on use of DCDTS by June 14, 1991.
3. The SI performance history, of any TS SIs identified from the review of WPs that are not closed, will be reviewed to determine if the TS performance intervals have been met. This will be accomplished by August 16, 1991.
4. SI-241.0, 241.1, and 241.2 will be revised to remove ambiguities and make the procedures user-friendly. This will be accomplished by September 20, 1991.