TENNESSEE VALLEY AUTHORITY

6N 38A Lookout Place
August 31, 1989

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

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 1 - DOCKET NO. 50-327 - FACILITY OPERATING LICENSE DPR-77 - LICENSEE EVENT REPORT (LER) 50-327/89021, REVISION 1

The enclosed LER revision provides further details of an event concerning operability of the Diesel Generator Board Room 1A-A carbon dioxide fire protection system when a fire door failed to close during surveillance testing. This event was originally reported in accordance with 10 CFR 50.73, paragraph a.2.i.B.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

W D Byrd for
J. R. Bynum, Vice President
Nuclear Power Production

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NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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TITLE (4) Diesel generator board room fire protection system inoperable when fire door was inoperable because of inadequate technical review of a surveillance test deficiency

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 NAMES	DOCKET NUMBER(S)
0 7	1 3	8 9	8 9	— 0 2 1	— 0 1	0 8	3 1	8 9	Sequoyah, Unit 2	0 5 0 0 0 3 2 8
										0 5 0 0 0

OPERATING MODE (9): 1

POWER LEVEL (10): 1 0 0

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

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 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)
Geoffrey A. Hipp, Compliance Licensing Engineer	6 1 5 8 4 3 - 7 7 6 6

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)

YES (If yes, complete EXPECTED SUBMISSION DATE) — X NO

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR

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

This report describes an event concerning the operability of the diesel generator (D/G) board room 1A-A carbon dioxide (CO_2) fire protection system when fire door 0-DOR-410-D24A failed to close during performance of Surveillance Instruction (SI) 237.2. This event was discovered on July 13, 1989, when the shift operations supervisor (SOS) would not accept work request (WR) B252362 as complete because it referenced a deficiency found during the performance of SI-237.2, but the same SI was not reperformed as a postmaintenance test (PMT). Further investigation determined the deficiency had been evaluated by an SOS on June 1, 1989, as not affecting technical specification operability of the D/G building CO_2 system since the fire door was left closed. However, Surveillance Requirement (SR) 4.7.11.3.2.b.1 requires the fire door release mechanisms to be capable of both manual and automatic actuation for CO_2 system operability. The fire door was declared inoperable by the SOS on July 13, 1989, and limiting condition for operation (LCO) 3.7.11.3 action was entered. The fire door was repaired, applicable portions of SI-237.2 were reperformed, and the LCO action was exited on July 14, 1989. The root cause of this event was an inadequate technical evaluation of the SI-237.2 deficiency. Corrective actions to prevent recurrence include revising several procedures, issuing an information letter, and reviewing this LER with the appropriate personnel.

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

Description of Event

This report described an event concerning the operability of the diesel generator (D/G) board room 1A-A carbon dioxide (CO_2) fire protection system (EIIS Code KQ) when fire door O-DOR-410-D24A failed to close upon actuation of electromagnetic door holder switch XX-39-34 during performance of Surveillance Instruction (SI) 237.2, "Diesel Generator Building CO_2 Fire Protection System Test (System 39)." The following description of events is presented in chronological order for clarity.

On June 1, 1989, with both units in Mode 1, at 100 percent power, 2,235 pounds per square inch gauge (psig), 578 degrees Fahrenheit (F), a work request (WR B252362) was written during the performance of SI-237.2 as the result of a test deficiency (DN-4). The deficiency stated that fire door O-DOR-410-D24A between D/G board rooms 1A-A and 2A-A failed to close automatically upon actuation of electromagnetic door holder switch XX-39-34. The test director notified the shift operations supervisor (SOS) of the deficiency at 2157 on June 1, 1989. The SOS contacted the fire protection unit (FPU) for advice, telling them that the fire door was currently closed but failing to make clear that the door had failed to close during the SI. The FPU advised the SOS to maintain the fire door in the closed position and that a breaching permit and fire watch would therefore not be required. Based on this advice, the SOS determined that a potential reportable occurrence (PRO) report was not required and that no limiting condition for operation (LCO) action need to be entered. The SOS did not recognize that surveillance requirement (SR) 4.7.11.3.2.b.1 requires the fire door release mechanisms to be capable of both manual and automatic actuation for CO_2 system operability. The SOS also looked at unvalidated as-designed logic prints stamped "Information Only" that were located in the Technical Support Center and incorrectly concluded that electromagnetic door holder Switch XX-39-34 does not close Fire Door O-DOR-410-D24A as the SI specified. The test director evaluated the deficiency based on the technical advice of the SOS and FPU and completed SI-237.2 on June 2, 1989, leaving WR B252362 to address the deficiency.

The SI-237.2 package was reviewed by the foreman on June 9, 1989, and by the electrical maintenance manager on June 12, 1989. The SI package was transferred to the SI review room on June 14, 1989, and was classified as completed on June 16, 1989.

In parallel, WR B252362 was forwarded to the work control group (WCG) on June 2, 1989, and reviewed by the WCG Unit 1 manager on June 3, 1989. The WCG senior reactor operator (SRO) contacted the unit assistant shift operations supervisor (ASOS) to discuss why no LCO was identified on the WR as applicable. The unit ASOS indicated that, as long as the fire door stayed closed, no LCO action was required. The WCG SRO assigned a nonurgent priority to the WR and passed it on to the system evaluator. The system evaluator processed the WR upon his return to the office on June 13, 1989. After review by Quality Assurance on June 26, 1989, the WR was classified as "available to work" on June 27, 1989. The WR was worked on July 12, 1989, by maintenance support personnel who realigned the door-holding device to prevent the door hanging open. SI-261, "Visual Inspection of Technical Specification Fire Doors on a Periodic Basis," was performed as a postmaintenance test (PMT).

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

Description of Event (Continued)

The event being reported by this LER was discovered on July 13, 1989, with Unit 1 in Mode 1 at 100 percent power, 2,235 psig, 578 degrees F, and Unit 2 in Mode 2 at 1 percent power, 2,235 psig, 548 degrees F, when the SOS declined to accept WR B252362 as complete because it referenced a deficiency found during the performance of SI-237.2, but that same SI was not reperformed as a PMT. After investigating the circumstances, fire door 0-DOR-410-D24A was declared inoperable, and LCO 3.7.11.3 action was entered at 1450 on July 13, 1989. The WR was replanned to add the applicable steps of SI-237.2 and transferred to electrical maintenance. At the same time, the completed SI-237.2 package status was reclassified to indicate open technical specification (TS) deficiencies and the package was retrieved from the SI review room to close DN-4 based on the expected WR completion. The appropriate portion of SI-237.2 was successfully reperformed at 2200 on July 14, 1989. The Unit 1 and 2 ASOSs were notified at 2237, the LCO action was exited, and the WR was signed off as complete. A PRO was initiated to document the incident.

Cause of Event

The root cause of this event was personnel error, i.e., an inadequate technical evaluation by the SOS of the DN-4 deficiency noted during the performance of SI-237.2. A more thorough evaluation of the deficiency would likely have resulted in entry into LCO 3.7.11.3 action on June 1, 1989, and more expeditious handling of the WR to repair the fire door.

Several contributing causes of the event have also been identified. SI-237.2 did not distinguish TS acceptance criteria from non-TS acceptance criteria, i.e., did not clearly state that failure to meet the specific criteria caused the low-pressure CO_2 system to be inoperable. The technical review of the SI-237.2 package after initial completion was also inadequate in that the SI package was initially classified as complete with open deficiencies that were later determined to be TS deficiencies. In addition, the WR was not processed in a timely manner and was not planned adequately because it failed to include SI-237.2 as a PMT. Another contributing cause was the less than adequate communication between the SOS and the FPU when evaluating the DN-4 deficiency. More effective communication would likely have resulted in recognizing the applicability of TS 3.7.11.3 on June 1, 1989. One last contributing cause of the event was the SOS utilizing logic prints that were unvalidated instead of validated electrical schematics.

Analysis of Event

This event is considered to represent operation prohibited by TSs and is therefore reportable in accordance with 10 CFR 50.73, paragraph a.2.i.B.

The fire protection system is described in Section 9.5.1 of the Updated Final Safety Analysis Report (UFSAR). The fire protection system is designed to achieve several objectives, such as to provide fire protection in those plant areas where a fire could affect the ability to achieve and maintain safe plant shutdown; to provide fixed water and CO_2 suppression systems based on the Analysis of Fire Hazards; and to protect safety-related equipment in the auxiliary, control, reactor, and D/G buildings and in the essential raw cooling water pumping station against failure of fire protection system components.

Analysis of Event (Continued)

The D/G auxiliary boards are described in Section 8.3.1.1 of the UFSAR. They are located in separate rooms on a unit and train basis. Interconnecting doorways are protected by self-closing fire resistant doors. Fire door 0-DOR-410-D24A separates D/G board rooms 1A-A and 2A-A. In the event of a fire, the fire detector would actuate switch XX-39-34, which would deenergize the electromagnetic door holder, and close the fire door. Because actuation of switch XX-39-34 did not close the door from the 1A-A board room, a fire in this room could have spread to the 2A-A board room, thereby rendering two D/Gs inoperable. UFSAR, Section 8.3, states the onsite alternating current power is analyzed for a single failure of a D/G set; thus, the loss of two D/Gs would exceed the limits of the UFSAR analysis. However, fire door 0-DOR-410-D24A was closed manually and maintained closed administratively, thereby maintaining compartmentation to keep from spreading a fire. Although the D/G building CO_2 system was technically inoperable from June 1, 1989, to July 14, 1989, the CO_2 system remained functional because 0-DOR-410-D24A had been placed in the closed position and remained closed. Alternate fire suppression or a continuous fire watch would not have been required for this configuration. On July 13, 1989, when the event was discovered, LCO 3.7.11.3 action was entered; and the next day, the fire door was repaired, and the D/G building CO_2 system restored to operable status.

Corrective Action

Both immediate and long-term corrective actions have been developed to address the event described in this report. As immediate corrective action, maintenance planning replanned WR B252362 to include the applicable portions of SI-237.2, and maintenance personnel reperformed these portions to complete the WR on July 14, 1989. In addition, on July 3, 1989, prior to this event being discovered, the WCG established tighter controls on WR processing by utilizing clerical assistance to load WRs into the tracking system, assigning system evaluators primary and secondary system coverage to ensure WRs are processed when the primary system evaluator is out of the office, and ensuring the WRs are reviewed by the unit manager within 24 hours after the WR is written. As a result, WRs are currently being processed in a more timely manner. The SOS and test personnel involved in this event have been counselled regarding the personnel errors made and consequences of those errors. In addition, a project is underway to upgrade control room logic prints. Currently, eight systems have been validated and placed in the control room. An information letter has been issued to operations and fire protection personnel to update them on the logic print upgrade status and reiterate that only validated logic prints are to be consulted. This information letter also reviewed the event described in this LER to reinforce the importance of effective communication between groups when making operational decisions.

Several long-term corrective actions have been initiated to prevent recurrence of this event including revisions to three procedures to enhance and clarify the processes described to achieve better compliance by personnel henceforth. Administrative Instruction (AI) 47, "Conduct of Testing," will be revised by October 1, 1989, to enhance and clarify the deficiency evaluation process by clearly defining TS acceptance criteria. SI-237.2 will be revised by July 1, 1990, to identify TS implications associated with acceptance criteria. SQM2, "Maintenance Management System," will be revised by October 1, 1989, to enhance and clarify the planning of a WR to include reperformance of the applicable portion of the SI when the deficiency is a TS deficiency.

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Additional Information

No previous events were identified that reported fire door O-DOR-410-D24A inoperable because of failure to close upon actuation of door holder switch XX-39-34.

Commitments

1. AI-47, "Conduct of Testing," will be revised by October 1, 1989, to enhance and clarify the deficiency evaluation process by clearly defining TS acceptance criteria.

2. SI-237.2 will be revised by July 1, 1990, to identify TS implications associated with acceptance criteria.

3. SQM2, "Maintenance Management System," will be revised by October 1, 1989, to enhance and clarify the planning of a WR to include reperformance of the applicable portion of the SI when the deficiency is a TS deficiency.

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