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Robert A. Fenech
Vice President, Sequoyah Nuclear Plant

April 23, 1993

U.S. Nuclear Regulatory Commission
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Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2 -
DOCKET NOS. 50-327 AND 50-328 - FACILITY OPERATING LICENSES DPR-77 AND
DPR-79 - LICENSEE EVENT REPORT (LER) 50-327/93008

The enclosed LER provides details concerning the inoperability of an
emergency gas treatment system decay cooling valve.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B)
as a condition prohibited by technical specifications.

Sincerely,

Robert A. Fenech

Enclosure
cc: See page 2

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U.S. Nuclear Regulatory Commission
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cc (Enclosure):

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Sequoyah Nuclear Plant, Unit 1										DOCKET NUMBER (2) PAGE (3) 050003 12 7 11 OF 01 6														
TITLE (4) An Emergency Gas Treatment System (EGTS) Decay Cooling Valve Failed to Open as Required During a Surveillance Requirement Test Because of Miscalibrated Flow Switches																								
EVENT DAY (5)					LER NUMBER (6)					REPORT DATE (7)					OTHER FACILITIES INVOLVED (8)									
					[SEQUENTIAL] [REVISION]					FACILITY NAMES					DOCKET NUMBER(S)									
MONTH DAY YEAR YEAR					NUMBER NUMBER					MONTH DAY YEAR					Sequoyah, Unit 2					050003 12 8				
0 3 2 6 9 3 9 3					0 0 8 0 0 0 4 2 3 9 3										050003 11									
OPERATING MODE (9) 5					THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following)(11)																			
POWER					20.402(b)					20.405(c)					50.73(a)(2)(iv)					73.71(b)				
LEVEL					20.405(a)(1)(i)					50.36(c)(1)					50.73(a)(2)(v)					73.71(c)				
(10) 10 10 10					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														
C. H. Whittemore, Compliance Licensing										AREA CODE 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 TO NPRDS					REPORTABLE					CAUSE SYSTEM COMPONENT MANUFACTURER TO NPRDS					REPORTABLE									
A B H F S F C O 1					Y																			
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)														
YES (If yes, complete EXPECTED SUBMISSION DATE) X NO																								

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

On March 26, 1993, at 0706 Eastern standard time, it was determined that the flow switches controlling the operation of the emergency gas treatment system (EGTS) decay cooling valves had been miscalibrated since April 1992. The EGTS cleanup subsystem functional test was being performed when it was discovered that one of the decay cooling valves did not open. Investigation into the failure of the valve to open revealed that a flow switch was calibrated incorrectly. Further investigation revealed that because of a personnel error, incorrect scaling values had been inadvertently incorporated into the flow-switch calibration procedure in March 1992 and subsequent performance of the calibration surveillance instruction on April 1, 1992, miscalibrated the flow switch setpoints. Operation with an inoperable technical specification component is a condition prohibited by TSs. Corrective actions included revising the procedure to incorporate the correct scaling setpoints and recalibrating the switches. The EGTS cleanup subsystem functional test verifying the valve operability will be performed before entry into Mode 4.

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TEXT CONTINUATION

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Sequoyah Nuclear Plant, Unit 1		YEAR NUMBER NUMBER	
	050003 27 19 3	008 000	2 OF 6

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

I. PLANT CONDITIONS

Unit 1 was in Mode 5 in a forced outage.

II. DESCRIPTION OF EVENT

A. Event

On March 26, 1993, at 0706 Eastern standard time (EST), it was determined that the emergency gas treatment system (EGTS) decay cooling valve flow switches had been miscalibrated since April 1, 1992, because of an incorrect procedure.

On March 18, 1993, an EGTS A-train decay cooling valve would not open as required during the performance of the EGTS (EIIS Code BH) cleanup subsystem functional tests. A work request was initiated to identify the problem and correct the situation. Subsequent investigations revealed that the flow switches (EIIS Code FS) controlling the operation of the valves (EIIS Code FCV) had been miscalibrated. Initially, it was thought that the flow switches had been calibrated on March 16, 1993, using incorrect scaling setpoints when the unit was in Mode 5. However, upon further investigation, it was revealed that the incorrect scaling setpoint values had been incorporated into the flow-switch calibration procedure in March 1992. The subsequent performance of the calibration surveillance instruction (SI) on April 1, 1992, left the flow-switch setpoints miscalibrated and the decay cooling valve inoperable.

The flow switches have been correctly calibrated in accordance with the newly-revised calibration procedure, which incorporated the correct setpoint values.

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

None.

C. Dates and Approximate Times of Major Occurrences

March 12, 1992 During preparation of a procedure change to the flow switch calibration instruction, a personnel error occurred when the procedure writer failed to incorporate a previously approved outstanding change to the scaling setpoints. Consequently, an incorrect scaling setpoint from an earlier version of the procedure was reincorporated.

March 23, 1992 The EGTS filter A-train SI test was performed and the decay cooling valves were successfully tested (correct setpoints were still effectively controlling the flow switches because the periodic calibration SI for the flow switches had not been performed).

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

- April 1, 1992 SI periodic calibration of the flow switches was performed. The decay cooling valve flow switches were recalibrated, using the original incorrect scaling setpoint values.
- March 16, 1993 SI periodic calibration of the flow switches was performed, using incorrect scaling setpoints.
- March 18, 1993 An EGTS decay cooling valve failed to open during performance of the EGTS cleanup subsystem functional test. A work request was initiated to identify the problem and correct the condition. (Since both units were in Mode 5, no limited condition for operation (LCO) action was required, i.e., the EGTS cleanup system is only required operable in Modes 1, 2, 3, and 4.)
- March 19, 1993 A flow-switch setpoint discrepancy was discovered in the SI periodic calibration procedure for flow switches. A procedure control form (PCF) was issued to revise setpoints to the correct values. The calibration procedure was revised to accurately reflect the correct setpoint scaling values.
- March 26, 1993 Initially, it was thought that the miscalibration of the flow switches had occurred on March 16, 1993. An incident investigation was initiated when it was determined that the miscalibration of the switches had actually occurred in 1992.
- March 31, 1993 The SI periodic calibration of flow switches was performed, recalibrating the flow switches to the correct setpoint.

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

The EGTS decay cooling valve failed to open during performance of a technical specification surveillance required functional test. A setpoint discrepancy was discovered by the Technical Support engineers in their investigation of the valve failing to open.

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

F. Operator Actions

Not applicable - no operator action was required. Since both units were in Mode 5, no LCO action was required, i.e., EGTS cleanup system is only required in Modes 1, 2, 3, and 4.

G. Safety System Responses

Not applicable - no safety system response was required.

III. CAUSE OF EVENT

A. Immediate Cause

The immediate cause of this event was the long-term inoperability of the decay cooling valve during operating modes where the valve was required to be operable. The reason the valve did not operate as required was because the flow switch controlling the valve's operation had been miscalibrated in a nonconservative direction. The flow switch had been miscalibrated as a result of an incorrect procedure.

B. Root Cause

The root cause of the incorrect procedure was a personnel error that was made during preparation to revise the calibration procedure for the flow switches.

C. Contributing Factors

None.

IV. ANALYSIS OF EVENT

The safety function of the EGTS is to remove airborne particulates and vapors that may contain radionuclides from air drawn from the annulus. The EGTS is not used during normal plant operation, except for surveillance or postmodification testing operations.

During the performance of the EGTS cleanup subsystem functional test, the decay cooling valve failed to open. This valve and another in series are supposed to open and, using the operating air cleanup unit, draw air from the nonoperating air cleanup unit to remove decay heat (generated from the capture of radionuclides) from the unit filters. Since the first valve did not open, there was no air-flow path to achieve the desired cooling.

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

The maximum temperature expected in the air cleanup unit as a result of decay heat is 154 degrees Fahrenheit (F) (originally calculated at 200 degrees F). This is below the maximum temperature (300 degrees F) of charcoal as recommended by American Society of Mechanical Engineers N509 (1989 version) to prevent desorption of iodine and also well below the charcoal ignition temperature of 620 degrees F. Since the maximum expected temperature is well below 300 degrees F, the air cleanup unit would still have been able to perform its air cleanup function. Therefore, the plant's ability to mitigate any design basis accident was not challenged as a result of the failure of the decay cooling valves to open. It has been determined that there was no adverse consequences to plant personnel or to the public as a result of this event.

V. CORRECTIVE ACTION

A. Immediate Corrective Actions

The surveillance instruction governing the calibration of the flow switches was revised to indicate the correct setpoint values. The flow switches were correctly calibrated. The personnel involved have been counseled, with emphasis added to ensure that previous revisions are not dropped or overlooked.

B. Corrective Action to Prevent Recurrence

1. Personnel in the various plant sections that are qualified reviewers and/or procedure sponsors will be advised, through a training letter presented by their appropriate supervisor, that outstanding PCFs and instruction change forms (ICFs) are to be appropriately incorporated in procedure revisions.
2. A representative sample of procedures containing outstanding changes (ICFs and/or PCFs) will be reviewed to verify that the changes have been incorporated into the most recent version.

VI. ADDITIONAL INFORMATION

A. Failed Components

The flow switch failed to perform its intended function and caused the EGTS decay cooling valve to open. The failure was the result of an incorrect procedure caused by personnel error.

B. Previous Similar Events

A search of the nuclear experience review and LER databases was conducted to identify any previous or similar events with corrective actions that could have prevented the event.

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

Several items were identified where personnel error caused a procedure revision to be incorrect or inadequate (e.g., a component inadvertently omitted in a revision). However, no previous event was identified where a pending revision was overlooked and not incorporated. Also, no previous event was identified where a corrected setpoint was omitted from a new revision. The LERs and their associated corrective actions involving personnel error and procedure revisions were reviewed, and a determination was made that the present event could not have been prevented by any of the previous corrective actions. A most recent event, LER 50-327/93006, concerning valves that were inadvertently omitted from a procedure during a revision process that changed the procedure's format, is similar to the present event in that an inaccuracy was introduced during a procedure revision. Corrective actions from this previous event, coupled with corrective actions from this event, should prevent recurrence.

VII. COMMITMENTS

1. Personnel in the various plant sections that are qualified reviewers and/or procedure sponsors will be advised, through a training letter presented by their appropriate supervisor, that outstanding procedure control forms and instruction change forms are to be appropriately incorporated in procedure revisions. This will be accomplished by June 10, 1993.
2. A representative sample of procedures containing outstanding changes (ICFs and/or PCFs) will be reviewed to verify that the changes have been incorporated into the most recent version. This will be accomplished by June 30, 1993.
3. The EGTS clean-up subsystem functional test will be performed, verifying the operability of the decay cooling valves, before entry into Mode 4.