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Joseph R. Bynum
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February 14, 1991

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) 50-327/91001

The enclosed LER provides details concerning the failure to calibrate sequence timers for the electrical board room air-handling units and main control room air-handling units within the required frequency of Technical Specification (TS) Surveillance Requirement (SR) 4.8.1.1.2.d.10. This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(b) as an operation prohibited by TSs.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

for J. R. Bynum

Enclosure
cc: See page 2

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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 1 | DOCKET NUMBER (2): 0 5 0 0 0 3 2 7 | PAGE (3): 1 OF 0 7

TITLE (4): Electrical board room and main control room air handling unit sequence timers not calibrated within the required frequency because of nontechnical specification classification

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)
									SQN Unit 2	0 5 0 0 0 3 2 8
0 1	1 5	9 1	9 1	0 0 1	0 0	0 2	1 4	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)			
1	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10): 1 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)	XX 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)
Gregory S. Kniedler, Compliance Licensing Engineer	6 1 5 8 4 3 - 7 4 6 1

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 January 15, 1991, at 0800 EST with Units 1 and 2 at 100 percent power, TVA determined that sequence timers for the electrical board room and main control room (MCR) air handling units (AHUs) had not been calibrated within the required frequency. During the 1987 and 1988 timeframe, the electrical board room and the MCR AHU sequence timers were classified as nontechnical specification (non-TS). Preventive maintenance (PM) procedures were written for the electrical board room AHU Sequence Timers 2A and 2B, but the performance of the PM for 2B was delayed while waiting for spare parts to be made available. The timers for the electric board room AHUs were subsequently calibrated and are currently within calibration. Calibration procedures for the MCR AHU sequence timers were not issued as a result of not closing the WP in a timely manner. The root cause of the timers not being calibrated within the TS required frequency was the initial failure to recognize these timers as being within the scope of the D/G sequence timer surveillance requirement. On January 15, 1991, the MCR AHU sequence timers were determined to be in calibration. Corrective actions include revising appropriate surveillance instructions to include the electrical board room and MCR AHU sequence timers and reviewing unclosed workplans for procedure impact.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Sequoyah Nuclear Plant Unit 1	0 5 0 0 0 3 2 7	9 1	-- 0 0 1	-- 0 0	0 2 OF 0 7

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

DESCRIPTION OF EVENT

On January 15, 1991, at 0800 Eastern standard time (EST), with Units 1 and 2 both operating in Mode 1, (100 percent power, 2,235 pounds per square inch gauge, and 578 degrees Fahrenheit), TVA determined that emergency diesel generator (D/G) (EIIS Code EJ) sequence timers for the electrical board room air handling units (AHUs) and main control room (MCR) AHUs may not have been calibrated within the required frequency of Technical Specification (TS) Surveillance Requirement (SR) 4.8.1.1.2.d.10. The deficiency was discovered during an audit performed by SQN Site Quality. The engineering change notices (ECNs) associated with the installation of the electrical board room and MCR AHU sequence timers were prepared and implemented during Sequoyah's Nuclear Recovery Program. The sequence timers enable loading of the AHUs to the emergency D/Gs following a loss of alternating current power and prevent the AHUs from overloading the D/Gs when other major sequence loads are being loaded. Review of documentation determined that the Sequence Timers 2A and 2B for the electrical board room AHUs had been calibrated in July and September 1989, and again in March and February 1990, respectively, and are therefore, currently in frequency. Reviews determined that the sequence timers for the MCR AHUs had not been calibrated since initial installation in 1988. Calibration was verified on January 15, 1991.

Electrical Board Room AHU Sequence Timers

Engineering Change Notice 6715 dated October 17, 1986, added the electrical board room AHU sequence timers to protect the Unit 2 D/Gs from overloading. The A-A AHU is loaded to the 2A-A D/G and the B-B AHU is loaded to the 2B-B D/G. Implementing workplan (WP) 12227 was prepared in accordance with Administrative Instruction (AI) 19 (Part IV), "Plant Modifications: After Licensing," and WP 12279 was prepared to perform the design required postmodification test (PMT) including the calibration of the sequence timers. These WPs were completed by June 10, 1987.

During the review of WP 12227 for procedure impacts, the load sequence timers for the electrical board room AHUs were classified as non-TS because the electrical board room AHUs are not TS required equipment and were initially part of the random loads of the D/Gs. Random loads on the D/G are baseline loads in the design of the D/G loading. The D/G loading calculation changed only the electrical board room and MCR AHUs from being random loads (hence baseline loads) to loads that are sequenced onto the D/Gs after more critical loads have been sequenced onto the D/Gs. The initial testing of the electrical board room AHU sequence timers was conducted in accordance with the PMT specified in WP 12279. Electrical Board Room AHU Sequence Timers 2B and 2A were tested on March 4, 1987, and June 9, 1987, respectively. Because the AHUs were not TS equipment, the calibration requirements for the electrical board room AHU sequence timers were placed in Maintenance Instruction (MI) 13.1.3, "Setpoint Verification and Calibration of Time Delay Relays Associated with Load Shedding Logic," (rather than a periodic surveillance instruction [SI]) which was issued on May 19, 1987. An additional modification, ECN 7216, was issued on September 2, 1987, to change the time interval for the electrical board AHU sequence timers from 220 seconds to 240 seconds. WP 12656 implemented this change and resulted in the electrical board AHU Sequence Timers 2A and

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

2B being tested on September 11, 1987, and September 10, 1987, respectively. Preventive Maintenance (PM) Packages 2613 and 2614, which would require performance of MI-13.1.3, for electrical board AHU Sequence Timers 2B and 2A respectively were placed in the PM program on November 10, 1988, for periodic (every 18 months) performance.

PM 2614 for the electrical board room AHU Sequence Timer 2A was conducted on July 26, 1989, and PM 2613 for the electrical board room AHU Sequence Timer 2B was conducted on September 28, 1989. Both of the electrical board room AHU sequence timers were determined to be within calibration. TS 4.8.1.1.2.d.10 requires calibration of sequence timers on an 18-month basis from the last calibration, but not to exceed the maximum allowable extension as specified in SR 4.0.2. Therefore, based on the performance of the PMT in WP 12656, the electrical board AHU sequence timers should have been calibrated before July 29, 1989. Electrical board room AHU Sequence Timer 2A was calibrated within frequency while electrical board room AHU Sequence Timer 2B was out of calibration frequency from July 30, 1989, to September 28, 1989. The performance of PM 2613 for electrical board room AHU Sequence Timer 2B had been delayed while waiting for spare parts to be made available before the performance of the PM. A delay of this nature would not have been allowed for regulatory-based frequency procedures, specifically SIs.

Subsequent to performance of the PMs, a modification was performed in February and March 1990 under WP 1724-01, which changed the electrical board room AHU sequence timers from pneumatic to electronic timers. The calibration of the electrical board room AHU sequence timers was performed under this modification with electrical board room AHU Sequence Timer 2B tested on February 16, 1990, and electrical board room AHU Sequence Timer 2A tested on March 17, 1990. Accordingly, both sequence timers are presently in calibration as a result of the performance of WP 1724-01.

MCR AHU Sequence Timers

ECN L7152A, dated April 30, 1988, added MCR AHU sequence timers to provide overload protection for the Unit 1 D/Gs. WP 7152-01 was prepared to implement ECN L7152A. During the review of WP 7152-01 it was determined that a procedure to calibrate the MCR AHU sequence timers was required. However, because of the precedent set relative to the electrical board room AHU sequence timers being considered non-TS and the goal to remove non-TS items from SIs, it was similarly decided to put the calibration of the MCR AHU sequence timers into the MI calibration program instead of the SI program.

The PMT was completed on September 20, 1988. The WP was field complete and the system was declared operable, but the WP was not closed because the affected procedures for the MCR AHU sequence timers had not yet been revised. At the time when this change was completed, the site modifications procedure, AI-19, 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 not specified timeframes for completing those actions. After the WP was field complete and the system declared operable, no significant effort was made to close the WP. The failure to close the WP in a timely manner led to failure to generate or revise a procedure, and thus resulted

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

in failure to calibrate MCR AHU sequence timers within the required frequency. (The described weakness in AI-19 regarding outstanding procedure changes was recognized before the discovery of this condition; AI-19 currently requires outstanding procedure changes to be punchlisted in the effected procedures and also provides timeframes for closure of WP once it has been field complete.)

The issue of placing the MCR AHU sequence timers into a procedure was revisited during the maintenance review of WP 1724-01 in February of 1990, which changed the electrical board room AHU sequence timers from pneumatic to electronic timers. Although the WP did not involve the MCR AHU sequence timers, it was recognized at this time that the MCR AHU sequences timers were similar in function to the electrical board room AHU sequence timers. On February 6, 1990, MI-13.1.3 was punchlisted to indicate needed revisions to include the MCR AHU sequence timers. Data packages to perform the calibration of the MCR AHU sequence timers were written in October 1990, but were not entered into the PM system because of an administrative requirement in Site Standard Practice [SSP] 6.3, "Preventive Maintenance," to have a unique identification number (UNID); UNIDs had not been specified for the timers in the MCR AHU sequence timer design change output documents. Once it was identified that UNIDs did not exist, a memorandum was written requesting UNIDs for these timers in addition to other components. Procedures were prepared but were not issued during this timeframe. Again, the timers were not considered to be TS equipment and accordingly, the described actions were being tracked and accomplished in a manner commensurate with the perceived significance. (At the time ECN L7152A was issued the ECN process did not assign UNID numbers; however, this has been corrected by Revision 8 of Sequoyah Engineering Procedure (SQEP) 26, "Design Change Control," which requires UNID numbers to be assigned to new devices.)

Immediate corrective action was to check the calibration of the MCR AHU sequence timers. Calibration checks of the MCR AHU Sequence Timers A and B were performed on January 15, 1991, and both sequence timers were determined to be in calibration.

CAUSE OF EVENT

The root cause of the timers not being calibrated within the TS required frequency is considered to be the initial failure to recognize these timers as being within the scope of the D/G sequence timer SR. Because the AHUs were not TS required components, the timers were not considered within the scope of the D/G TS SR; the focus was on the effect of the timers on AHU function rather than the effect of the timers on D/G function, i.e., sequencing of loading for D/G protection. Accordingly, calibration requirements were placed in nonregulatory-based processes.

With regard to the MCR AHU sequence timers, several contributing factors were also identified. Delays occurred in implementing the calibration requirements in the MI and PM process because of a weakness in the modification process at the time the WP was implemented. Following field completion and establishment of system operability, remaining activities for WP closure, such as nonoperability procedures and secondary drawing revisions were not required to be accomplished in a timely manner. This

weakness had been identified before the identification of this issue and the modification process (AI-19) relative to procedure revisions had been revised to require the punchlisting of affected procedures.

Notice of Violation 50-327, 328/88-09-01 identified the installation of A307 medium strength bolts in the movable incore transfer device instead of the A325 high strength bolts required by Engineering Change Notice L6447. In TVA's response to the notice of violation dated July 1, 1988, TVA attributed the cause of installing A307 medium strength bolts "to inadequate configuration control created by delays in the WP closure process." As a result, TVA committed to review the backlog of WPs that were at that time field complete for more than 90 days and were not yet closed to determine if procedure changes were outstanding. Based on the results of this review, a plan of action would be formulated to revise the affected procedures. The corrective action for the notice of violation addressed only the existing backlog of WPs that were field complete. This commitment was completed on August 1, 1988. The WP 7152-01 was field complete on September 18, 1988, and accordingly, was not field complete at the time the commitment was made or at completion of the commitment on August 1, 1988. AI-19, Part IV, was revised on July 13, 1989, to ensure that identified procedure changes in future WPs are punchlisted in the affected procedure(s). The subject WP fell in a "hole" between the corrective actions taken, i.e., since not field complete was not addressed in the backlog review, and because it was an existing WP, procedures were not punchlisted. In developing the corrective actions for Notice of Violation 88-09-01, it was not recognized that this hole existed.

ANALYSIS OF EVENT

This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(b) as an operation prohibited by TSs.

The D/Gs are used as emergency power and are described in the Updated Final Safety Analysis Report (UFSAR), Section 8.3. In the event of a loss of offsite power, loads on the 6.9 kilovolt (kV) shutdown boards would be shed following loss of voltage on the boards. The D/Gs automatically start and tie onto the boards upon sustained loss of board voltage and after reaching rated speed the sequence loads begin tying back onto the boards. Timers are provided to both ensure appropriate return of required safe shutdown and/or accident mitigation equipment and to prevent overloading of the D/Gs during the high current starts of associated equipment. The electrical board room and MCR AHUs are attendant equipment to maintain long-term operability of safe shutdown and/or accident mitigation equipment. Overload protective sequencing timers were added to prevent the AHUs from loading onto the D/Gs at times when other major sequence loads are being loaded. The sequence timers require calibration to ensure appropriate sequencing to protect the D/Gs, and therefore require calibration in the frequency specified by SR 4.8.1.1.2.d.10.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Sequoyah Nuclear Plant Unit 1	0 5 0 0 0 3 2 7	9 1	-- 0 0 1	-- 0 0	0 6 OF 0 7

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

The electrical board room AHU Sequence Time 2B was not within calibration frequency for the time frame of July 1989 to September 1989. However, upon testing of the electrical board room AHU Sequence Timer 2B in September 1989, it was found to be within calibration. Upon the identification that the MCR AHU sequencer timers had not been calibrated within the required frequency, work orders were issued that performed testing of the sequence timers' calibrations. It was determined that the MCR AHU Sequence Timers A and B were within calibration. Therefore, had a loss of offsite power occurred, the subject timers would have performed as required and this event would not have had an adverse effect on the health and safety of the public.

CORRECTIVE ACTION

For immediate corrective action, documentation associated with the electrical board room AHU sequence timers was reviewed to determine whether the sequence timers were in calibration and within the required calibration frequency. The result of the review indicate that the sequence timers were in calibration and were within the required calibration frequency. Review of documentation associated with the MCR AHU timers determined that calibration of the timers were not in frequency and work orders were performed on January 15, 1991, to verify the calibration of these timers. The successful performance of the work orders verified that the sequence timers were still in tolerance from the initial PMT performed in September 1988.

Long-term corrective action will be to place the electrical board room and MCR AHU sequence timers into the SI program by April 1, 1991. The placement of the sequence timers into the SI program and the performance of the SIs will ensure TS SR 4.8.1.1.2.d.10 is met. Because a potential exists for unclosed WPs, which were field complete after the closure of the commitment made in Notice of Violation 50-327/89-01 to have outstanding procedures that were not punchlisted, a review of unclosed WPs for procedure impact will be performed by March 1, 1991. A review of identified procedures from this action will be performed and an action plan developed to address procedures that need revised or generated by May 1, 1991. In addition, WP 7152-01 will be closed by March 8, 1991.

ADDITIONAL INFORMATION

There have been 25 LERs and one NRC violation that were a result of an inappropriate or nonexisting SI. The majority of the previous 25 LERs was a result of the TS review to ensure that TS SRs were included in SIs. However, none of the previous events have been identified as being caused by not recognizing a component to be within the scope of a TS SR or by failure to revise or generate a procedure following field completion of a WP.

As previously described in the Cause of Event, Notice of Violation 50-327, 328/88-09-01 identified an incident where there existed inadequate configuration control created by delays in the WP closure process.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Sequoyah Nuclear Plant Unit 1	0 5 0 0 0 3 2 7	9 1	-- 0 0 1	-- 0 0	0 7 OF 0 7

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

COMMITMENTS

1. TVA will review WPs that are not closed for procedure impact by March 1, 1991.

2. TVA will close WP 7152-01 by March 8, 1991.

3. TVA will review the procedures identified as a result of the review of WPs that are not closed and develop an action plan to address procedures requiring revision or generation by May 1, 1991.

4. TVA will place the electrical board room and MCR air handling unit sequence timers into the SI program by April 1, 1991.

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