Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

Joseph R. Bynum
Vice President, Nuclear Operations

MAR 21 1991

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

Dear Sir:

TVA - BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 2 - DOCKET NO. 50-260 - FACILITY OPERATING LICENSE DPR-52 - REPORTABLE OCCURRENCE REPORT BFRO-50-260/91002

The enclosed report provides details concerning the unplanned engineered safety feature actuations due to radiation monitors downscale caused by degraded radioactive bug source in the radiation monitor detectors. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv).

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. R. Bynum

Enclosure
cc: see page 2

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U.S. Nuclear Regulatory Commission

MAR 21 1991

cc (Enclosure):
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NRC Resident Inspector, BFN

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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)	DOCKET NUMBER (2)	PAGE (3)
Browns Ferry Nuclear Plant Unit 2	0 5 0 0 0 2 6	0 1 OF 0 3

TITLE (4) Unplanned Engineered Safety Feature actuation due to Radiation Monitors downscale caused by degraded radioactive bug source in the radiation monitor detectors

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)
									Browns Ferry Unit 1	0 5 0 0 0 2 5 9
0 2	2 3	9 1	9 1	0 0 2	0 0	0 3	2 1	9 1	Browns Ferry Unit 3	0 5 0 0 0 2 9 6

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following)(11)			
POWER LEVEL (10)	0 0	20.402(b)	20.405(c)	x 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)	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)
Clare Hsieh, Engineer, Compliance Licensing	2 0 5 7 2 9 - 2 0 4 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)		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 February 23, 1991 at 0210 hours, the two reactor building ventilation radiation monitors simultaneously had radiation count rates below their respective downscale trip setpoints. This condition resulted in an unplanned automatic actuation of engineered safety features.

The root cause of this event was the lack of a program to control the degraded (low radiation count rate) bug sources in the radiation monitor detectors. (A bug source is a vendor installed source for ensuring an on-scale radiation reading).

The bug source for the 2-RM-90-142 detector was readjusted to obtain count rates above the downscale trip setpoint. Even though sufficient counts could be attained with the adjustment of the 2-RM-90-143 bug source, the 2-RM-90-143 detector assembly was replaced to ensure a higher count rate could be detected. Periodic adjustments of the bug source in the radiation monitor detector will be proceduralized.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Browns Ferry Unit 2	0 5 0 0 0 2 6	9 1	-- 0 0 2	-- 0 0	0 2 OF 0 3

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

DESCRIPTION OF EVENT

On February 23, 1991 at 0210 hours, after two days of troubleshooting on an intermittent radiation downscale trip condition on reactor building ventilation radiation monitor [IL] 2-RM-90-142, an unplanned downscale trip was received on reactor building ventilation radiation monitor 2-RM-90-143. These two downscale trips resulted in the actuation of several engineered safety features (ESFs), including Standby Gas Treatment system [BH], Control Room Emergency Ventilation system [VI], Primary Containment isolation [JM], Refueling Zone isolation [VG], and Unit 2 Reactor Zone isolation [VA]. The affected components responded as expected to the downscale trips.

Investigation of this event determined that the radiation count rates of the bug source (a vendor installed source for ensuring an on-scale radiation reading) in the radiation detector assembly of 2-RM-90-142 and 2-RM-90-143 had decreased below their respective downscale trip setpoints. Work orders were initiated to readjust the bug source within the lead foil wrap of the detectors in order to bring the activity level of the detectors to above the downscale setpoints. The adjustment of the source at the 2-RM-90-142 detector was completed at approximately 0800 hours. Even though sufficient counts could be attained with the adjustment of the 2-RM-90-143 bug source, the 2-RM-90-143 detector assembly was replaced to ensure a higher count rate could be detected.

Unit 1 and Unit 3 were shutdown and defueled at the time of this event. Unit 2 was in refueling operation. No movement of fuel occurred during this event. The unplanned actuations of the ESF systems are reportable in accordance with 10 CFR 50.73(a)(2)(iv).

ANALYSIS OF EVENT

The radiation monitors are designed to fail in the safe condition and cause the completion of actuation logic for certain ESF systems on a high radiation or two downscale radiation signal to the primary containment isolation trip logic. Since the actuation logic of the ESF systems performed as designed, there were no significant safety concerns associated with the event.

The systems affected during this event are designed to shutdown the reactor, contain and process any radioactive releases, and to fulfill their safety functions upon receiving radiation trip signal. The systems responded correctly to the downscale radiation trips; therefore, plant safety was not adversely affected. The plant's safe shutdown capabilities would not have been diminished had the unit been in power operation.

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

CAUSE OF EVENT

The root cause of this event was the lack of a program to control in a timely manner the degraded (low radiation count rate) bug sources in the radiation monitor detectors before these sources reach their radioactive half-life and caused the instruments to fall below their downscale trip setpoints.

CORRECTIVE ACTIONS

As a result of this event, the bug source for 2-RM-90-142 detector was readjusted to obtain count rates well above the downscale trip setpoint. This higher count rate was accomplished by repositioning the bug source within the lead foil wrap of the detector. Even though sufficient counts could be attained with the adjustment of the 2-RM-90-143 bug source, the 2-RM-90-143 detector assembly was replaced to ensure a higher count rate could be detected.

Periodic adjustments of the bug source in radiation monitor detector will be proceduralized. This procedure should also improve the process of calibration/adjustment on the radiation monitor bug sources. Additionally, other radiation monitor detectors in the refuel/reactor zones have been checked for their bug source activities and proper adjustments of the sources were made where needed.

PREVIOUS SIMILAR EVENTS

ESF Actuations from refuel/reactor zone radiation monitors in the past have been attributed to electromagnetic interference, failure of undersized relays, and personnel errors, but not for a degraded bug source in the radiation detector.

COMMITMENTS

Periodic adjustments of the bug source in the radiation detector monitor will be proceduralized by June 14, 1991.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].