

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) PLANT E. I. HATCH, UNIT 1		DOCKET NUMBER (2) 0 5 0 0 0 3 2 1	PAGE (3) 1 OF 5
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TITLE (4)
BLOWN FUSE RESULTS IN UNPLANNED, AUTOMATIC ACTUATIONS OF ENGINEERED SAFETY FEATURES

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQ NUM	REV	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
0 4	1 5	9 3	9 3	0 0 5	0 0	0 5	1 5	9 3	PLANT HATCH, UNIT 2		0 5 0 0 0 3 6 6
									0 5 0 0 0		

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)

OPERATING MODE (9) 5	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL 0 0 0	20.405(a)(1)(i)	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(c)
	20.405(a)(1)(ii)	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	OTHER (Specify in Abstract below)
	20.405(a)(1)(iii)	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)	
	20.405(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME STEVEN B. TIPPS, MANAGER NUCLEAR SAFETY AND COMPLIANCE, HATCH	TELEPHONE NUMBER AREA CODE 912	367-7851
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COMPLETE ONE LINE FOR EACH FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORT TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORT TO NPRDS
X	I L	F U	B 5 6 9	Yes					

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (16)

On 4/15/93 at 0755 CDT, Unit 1 was in a refueling outage with the reactor core partially loaded with fuel and the reactor vessel head removed. At that time, Instrument and Control technicians were performing surveillance procedure 57SV-D11-008-1S, "REACTOR BUILDING EXHAUST VENT RADIATION MONITOR INSTRUMENT FT," when fuse 1D11-A-F14B blew. This resulted in initiation of the 'B' trains of both units' Standby Gas Treatment (SBGT) Systems, isolation of the 'B' dampers of both units' Secondary Containments, and closure of several Group 2 Primary Containment Isolation System (PCIS) valves. Subsequently, when the technicians attempted to exit the procedure, the removal of a jumper resulted in initiation of the 'A' trains of both units' SBGT systems, isolation of the 'A' dampers of both units' Secondary Containments and isolation signals being sent to other Group 2 PCIS valves per design.

The cause of this event was a blown fuse. No reason for the fuse blowing could be found.

Corrective actions for this event included replacing the blown fuse, replacing several relays in the logic powered through this fuse, and examining some of the wiring in the logic which is powered by this fuse. All of these actions are complete.

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PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor
Energy Industry Identification System codes are identified in the text as (EIIS Code XX)

DESCRIPTION OF EVENT

On 4/15/93 at 0755 CDT, Unit 1 was in a refueling outage with the reactor core partially loaded with fuel and the reactor vessel head removed. At that time, Instrument and Control (I&C) technicians were performing surveillance procedure 57SV-D11-008-1S, "REACTOR BUILDING EXHAUST VENT RADIATION MONITOR INSTRUMENT FT." This surveillance functionally tests the operation of several instruments which monitor radiation in the Reactor Building (EIIS Code NG) ventilation system. A high radiation signal from certain combinations of these monitors causes initiation of both units' Standby Gas Treatment (SBGT, EIIS Code BH) systems, isolation of Secondary Containment (EIIS Code NG), and closure of several Group 2 Primary Containment Isolation System (PCIS, EIIS Code JE) valves. In this event, I&C technicians were working on the 'B' channel logic which controls these systems and had placed a jumper in the 'A' logic channel to prevent actuations from occurring in the 'A' trains of these systems.

At 0755 CDT, with this surveillance underway, fuse 1D11-A-F14B blew. When the fuse blew, the 'B' logic systems powered through the fuse assumed the tripped state per design, causing initiation of the 'B' trains of both units' SBGT systems, closure of the 'B' Secondary Containment isolation dampers, and closure of some Group 2 PCIS valves. Since the plant was in a refueling outage at the time of the event, many Group 2 PCIS valves were in off-normal positions and others were tagged out of service. Therefore, the extent of the actuations was not immediately evident to Control Room personnel. Further, since no valid SBGT initiation signal was present, Control Room personnel did not know what had caused the actuations. Licensed personnel directed that all work on surveillances and functional tests in the Control Room be suspended until the nature of each ongoing work activity could be reviewed. When the I&C surveillance procedure was reviewed, it was determined that performance of this surveillance had not been responsible for the event. Thus, the I&C technicians were permitted to resume work. Minutes later, however, the I&C technicians encountered difficulty and found it necessary to "back out" of their procedure. At approximately 0840 CDT, when they removed the jumper which had been installed earlier, the 'A' logic systems powered through the blown fuse assumed the tripped state per design, causing the 'A' trains of both units' SBGT systems to start, the 'A' dampers of both units' Secondary Containments to isolate, and associated Group 2 PCIS valves to receive isolation signals.

At this point, the I&C technicians stopped their work activity and consulted with other technicians who had previously observed a similar set of actuations (See LER 50-321/1992-016 dated 07/10/92). These technicians recommended that fuse 1D11-A-F14B be checked. When the fuse was checked, it was found to have blown. The fuse was subsequently replaced, the various logic trips were reset, and the SBGT systems were secured by 1010 CDT. When the trips were reset,

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licensed personnel observed that several Group 2 PCIS valves returned to their pre-event condition. As stated previously, other valves which could potentially have been affected by this event were either tagged out of service or were already closed due to activities associated with the ongoing refueling outage. When performance of the surveillance procedure was resumed at 1915 CDT on 4/15/93, no further problems were encountered and the Reactor Building vent radiation monitoring system (EIIIS Code IL) was satisfactorily functionally tested.

CAUSE OF EVENT

The cause of this event was a blown fuse. Fuse 1D11-A-F14B supplies power to several relays in both the 'A' and 'B' logic systems whose contacts provide initiation signals to the above named systems. When the fuse blew, these relays assumed the tripped state per design, resulting in actuations in the 'B' trains of both units' SBGT systems, Group 2 PCIS valve isolations, and closure of the 'B' Secondary Containment isolation dampers. Components controlled by the 'A' logic systems were not affected because the surveillance procedure in use at the time required the installation of a jumper to prevent actuations in the 'A' logic. However, when the jumper was later removed, the 'A' logic systems tripped.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This event is reportable per 10 CFR 50.73 (a)(2)(iv) because several unanticipated actuations of Engineered Safety Features (ESFs) occurred in response to a blown fuse.

The Standby Gas Treatment Systems are designed to limit the release of radioactive material to the environment following leakage of radioactive material into the Secondary Containment. The SBGT systems automatically filter the air from the Secondary Containment following an accident and discharge it via the Main Stack (EIIIS Code VL). Each unit's SBGT system consists of two identical, redundant, 100 percent capacity air filtration trains containing the necessary heaters, filters and exhaust fans. When an SBGT system initiation signal is received, the normal building ventilation systems automatically isolate to allow the SBGT system to maintain a negative pressure on the reactor building and refueling floor. This prevents unfiltered air from leaking out of Secondary Containment into the atmosphere.

The Group 2 Primary Containment Isolation System is designed to isolate certain Primary Containment Isolation Valves to provide protection against accidents involving release of radioactive materials from the fuel or nuclear process barriers. Group 2 systems are generally those systems whose lines do not communicate directly with the reactor vessel, but penetrate the Primary Containment and communicate with the free space inside it.

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In this event, a blown fuse resulted in an actuation signal for the 'B' logic systems of the PCIS, the SGBT system, and the Secondary Containment isolation dampers. Subsequently, the removal of a jumper resulted in further actuations of the 'A' logic channels in these systems. All these systems performed as designed given the signal generated when the fuse blew. Had a design basis accident occurred during the event, the affected systems would have already initiated their safety functions and been performing as required.

Based on this analysis, it is concluded that this event had no adverse impact on nuclear safety. This analysis is applicable to all power levels.

CORRECTIVE ACTIONS

Corrective actions for this event included:

1. Replacing the blown fuse and returning affected systems to their pre-event conditions.
2. Replacing relays in the circuit which are powered through fuse 1D11-A-F14B. Georgia Power Company committed to this action in LER 50-321/1992-016 and completed the action following this event. In conjunction with the relay replacement, wiring in this circuit was visually inspected for shorts, loose connections and chafed insulation. No problems were identified during this inspection.

ADDITIONAL INFORMATION

1. Other Systems Affected: No systems other than those mentioned in this report were affected by this event.
2. Previous Similar Events: Events reported in the past two years in which blown fuses resulted in unplanned automatic actuations of engineered safety features are described in the following LERs:

- 50-321/1991-016, dated 09/30/91
- 50-321/1991-021, dated 10/25/91
- 50-321/1991-023, dated 11/12/91
- 50-321/1992-016, dated 07/10/92
- 50-366/1991-010, dated 05/13/91
- 50-366/1991-011, dated 05/15/91
- 50-366/1991-017, dated 06/28/91
- 50-366/1992-018, dated 10/26/92

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Corrective actions for these events included replacing failed fuses, counseling personnel in cases where personnel error contributed to a fuse failure, training personnel in cases where personnel error contributed to a fuse failure, conducting an engineering evaluation of fuse design and application, and using improved electrical jumpers. These corrective actions would not have prevented this event because, with one exception, they applied to other circuits and components which were not involved in this event. Additionally, neither personnel error nor jumper design was involved in this event. The inspection of components committed to in LER 50-321/1992-016 was scheduled to have been carried out during the current refueling outage, but as of the time of the event, had not yet been done. Therefore, that corrective action could not have prevented this event because it had not yet been completed.

3. Failed Components Identification:

Master Parts List Number: 1D11-A-F14B
 Manufacturer: Bussman
 Type: Fuse, One Ampere
 Model Number: KTK-R
 Manufacturer Code: B569
 EIIS System Code: IL
 EIIS Component Code: FU
 Root Cause Code: X
 Reportable to NPRDS: Yes