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Vice President
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December 5, 1990

U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Attention: Document Control Desk

Gentlemen:

SUBJECT: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-29
SDC Isolation Due To Blown
Fuse
LER 90-023
AECM-90/0213

Attached is Licensee Event Report (LER) 90-023 which is a final report.

Yours truly,

WTC

RR/WTC:cg
Attachment

cc: Mr. D. C. Hintz (w/a)
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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Grand Gulf Nuclear Station - Unit 1	0 5 0 0 0 4 1 6	1 OF 0 4

TITLE (4)
Shutdown Cooling Isolation Due To A Blown Fuse

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)
1 1	0 5	9 0	9 0	0 2 3	0 0	1 2	0 5	9 0	NA	0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)					
POWER LEVEL (10)	0 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
Riley Ruffin / Licensing Specialist	6 0 1 — 4 3 7 — 2 1 6 7

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	
D	J M	F U B	5 6 9	N							

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 November 5, 1990, during restoration of the Division II (16AB) bus an isolation of shutdown cooling occurred. During the bus outage temporary power was supplied to various loads, and jumpers were installed to prevent adverse impacts on outage operations. Upon removal of the jumper, which was installed to prevent the shutdown cooling isolations, a fuse in the isolation circuitry blew resulting in a shutdown cooling isolation. The fuse was replaced and shutdown cooling was restored after approximately 25 minutes.

The cause of the blown fuse, as determined by plant personnel, was a short which occurred during the removal of the jumper.

The System Operating Instructions will be changed prior to the next planned bus outage (15AA and 16AB). Additionally, surveillances which test the shutdown cooling isolation logic response times will be changed prior to performance. These procedures will require the breakers to the isolation valves to be open prior to jumper installation and removal.

The reactor coolant temperature increased from approximately 91 to 94 degrees F. The lack of shutdown cooling for approximately 25 minutes caused no adverse safety consequences.

NRC Form 366A
(9-83)

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

A. Reportable Occurrence

On November 5, 1990, an isolation occurred on the Residual Heat Removal (EIIS Code: BO; RHR) System. This isolation occurred on the common suction path to the shutdown cooling modes of the Division I and Division II RHR Systems. This single failure caused two independent trains, which are utilized to remove residual heat during shutdown, to be declared inoperable. The condition is reported pursuant to 10CFR50.73(a)(2)(vii)(B).

B. Initial Conditions

The plant was in Operational Condition 5, Refueling, at the time of the occurrence.

C. Description of Occurrence

As a part of the refueling outage activities, a Division II bus outage was performed. In order to prevent an adverse impact on outage operations, plant procedures required temporary power to be supplied to various loads and jumpers to be installed to prevent isolations.

Due to the bus outage, the power supply to relay 1B21K124D was deenergized. A loss of power to this relay would cause contacts on 1B21K124D to open, thus causing one of the two shutdown cooling common suction path isolation valves (1E12F008) to close. To prevent the isolation from occurring, a jumper was installed around the 1B21K124D contacts.

On November 5, 1990, during restoration of the Division II bus, the previously installed jumper, around the 1B21K124D contact, was removed. Prior to removing the jumper, relay 1B21K124D was verified to be energized. Following the removal of the jumper, the 1E12F008 valve closed, isolating shutdown cooling. It was determined that a blown fuse (EIIS Code: JM) deenergized the isolation logic resulting in a shutdown cooling suction isolation. The fuse was replaced and shutdown cooling was restored after approximately 25 minutes.

D. Apparent Cause

Following the event, an investigation was initiated to determine the cause of the blown fuse. The jumper along with the banana jacks were inspected to determine whether an arc occurred during the removal of the jumper from the jacks. Even though there was no evidence of arcing on the banana jacks or the jumper, the cause of the blown fuse, as determined by plant personnel, was a short which occurred during the evolution.

Plant personnel understood the sensitivity of this evolution, and took precautions, (i.e., installed a jumper), to mitigate the possibility of an isolation. Operations personnel considered opening the breaker for the 1E12F008 valve prior to removing the jumper, but this action would have caused the plant to enter an action statement of Technical Specification 3.3.2 which would have required the plant to isolate the shutdown cooling suction line within one hour or initiate actions to establish secondary containment integrity within one hour. Given the alternatives, the decision was made to proceed without opening the breaker.

E. Supplemental Corrective Actions

System Operating Instructions will be changed prior to the next planned bus outage (15AA and 16AB). The instructions will require the breakers to the shutdown cooling isolation valves to be open prior to installing and removing jumpers in the circuitry. The amount of time required to open the breaker and perform the jumper installation/removal would be less than the time limit required by the Technical Specification Action Statement. Therefore, by preplanning the evolution, the jumper installation or removal would not impact plant operations.

Additionally, Time Response Surveillances, which test the shutdown cooling isolation logic and require jumper installations during shutdown cooling operation, will be changed to require the associated isolation valve breaker to be open prior to the installation and removal of jumpers in the circuit.

A similar shutdown cooling isolation was reported in LER 87-020. In that event, a jumper was being installed in the shutdown cooling isolation logic during a Time Response Surveillance Test when one of the two isolation valves (1E12F009) in the shutdown cooling suction path isolated. The initial cause of the isolation was a blown fuse. The cause of the blown fuse was undetermined.

NRC Form 366A (9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

F. Safety Assessment

The lack of shutdown cooling for approximately 25 minutes caused no adverse safety consequences. The reactor head was removed with the upper containment pool flooded. The reactor coolant temperature increased from approximately 91 degrees F to 94 degrees F. During refueling operations the spent fuel and upper containment pool are common via the fuel transfer canal. Therefore, the Alternate Decay Heat Removal mode of the RHR System remained capable of supplying cooling to the vessel via suction from the spent fuel pool and discharging it into the low pressure coolant injection discharge piping.

Additionally, the isolated valve (1E12F008) could have been manually opened to provide suction from the vessel if it had been necessary.