

LICENSEE EVENT REPORT (LER)

APPROVED OMF NO. 3190-0104
EXPIRES - 8/31/85

FACILITY NAME (1) Peach Bottom Atomic Power Station - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 1 2 1 7 1 7				PAGE (3) 1 OF 0 1 4	
TITLE (4) Failure to Comply With Cable Separation Criteria In FSAR															
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 NAME				DOCKET NUMBER (2)		
0 1	1 5	8 5	8 5	0 2 3	0 0 1 1	2 1	8 5						0 5 0 0 0 1 2 1 7 1 7		
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)													
N															
POWER LEVEL (10)		73.71M													
0 0 0		73.71M													
		OTHER (Specify in Abstract below and in Test, NRC Form 366A)													
LICENSEE CONTACT FOR THIS LER (12)															
NAME										TELEPHONE NUMBER					
W. C. Birely, Senior Engineer, Licensing Section										2 1 5 8 4 1 7 5 0 4 8					
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)															
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC						
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH DAY YEAR			
YES (If you complete EXPECTED SUBMISSION DATE)										NO					

ABSTRACT (Limit to 1000 words, i.e., approximately fifteen single-spaced typewritten lines) (16)

Abstract: 2-85-23

On October 22, 1985, it was determined that the installation of a modification on Unit 2 was not in conformance with the electrical separation criteria contained in the Final Safety Analysis Report. A review of a modification to implement a requirement of 10CFR 50.48, Appendix R following its completion revealed that the cables for two isolation valves of the same penetration shared common cable trays. This is not in conformance with the electrical separation criteria in the FSAR. Under an improbable set of circumstances, a hot short within the cable tray may cause the opening of both valves and thus the loss of containment isolation through a one-inch bypass line. The cause of this event is the failure of the responsible engineer to properly evaluate the effect of the inboard isolation bypass valve on containment isolation capability in the safety evaluation. The design modification has been revised to ensure the electrical separation of the two cables. The modification will be complete on Unit 2 by December 31, 1985. Solenoid valve, SV-2-14-015A, has been temporarily disconnected to prevent spurious operation until the rerouting of its cable is complete.

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U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMS NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	DIVISION NUMBER			
Peach Bottom Atomic Power Station - Unit 2	0 5 0 0 0 2 1 7 1 7	8 5	- 0 2 1 3	- 0 1 0	0 2	OF	0 4

TEXT (If more space is required, use additional NRC Form 366a (17))

Description of the Event:

On October 22, 1985, it was determined that the installation of a modification on Unit 2 was a reportable occurrence since it was not in conformance with the electrical separation criteria contained in the Final Safety Analysis Report (FSAR).

Modification 1029B was undertaken to bring both Peach Bottom Units 2 and 3 into compliance with the fire protection requirements of 10 CFR 50.48, Appendix R by providing for the safe shutdown of the plant in the event of a fire. As part of the modification, the power source to the core spray "A" loop outboard isolation valve (MO-2-14-012A) was designed to be changed from Division I, Channel C, to Division I, Channel A. This change was made on January 15, 1985 during the last refueling outage on Unit 2 which ended on July 24, 1985.

A question concerning the effect of this change on containment isolation capability arose during an internal Engineering and Research Department review of a revision of the MOD 1029B safety evaluation subsequent to the completion of this portion of the modification on Unit 2. The core spray "A" loop inboard isolation valve (AO-2-14-013A) is a testable check valve. Valve AO-2-14-015A is a one-inch, air-operated valve used to equalize pressure around the inboard check valve during testing. This valve opens when its pilot solenoid valve (SV-2-14-015A) is energized by momentarily depressing a pushbutton in the Control Room. The power source for the solenoid valve is Division I, Channel A.

As a result of MOD 1029B, the motor-operated outboard isolation valve and the solenoid pilot valve were powered from the same channel which is permissible since the solenoid valve must be energized to open. However, an evaluation of the routings of the control cables for these two valves determined that the cables shared common cable trays in the cable spreading room. The proximity of these cables in the trays along with 120 VAC power cables raised the possibility, although extremely unlikely, that a hot short combined with multiple cable failures within the trays could cause a simultaneous opening of both the motor-operated outboard isolation valve directly and the air-operated

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U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMS NO. 3100-0104

EXPIRES 6/21/88

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TEXT (If more space is required, use additional NRC Form 366a (1))

equalizer/bypass valve by energizing its pilot solenoid valve. This would result in the loss of containment isolation through the one-inch bypass line. Although containment isolation capability had been addressed in previous revisions of the MOD 1029B safety evaluation, the effect of the one-inch equalizer/bypass valve, AO-2-14-015A, had not been considered. It was decided to change the design to separate the cables by running the cable for the SV-2-14-015A valve in a dedicated conduit thus eliminating the possibility of a hot short.

The EIIS code for the affected system is JM.

Consequences of the Event:

For both valves to open simultaneously due to a hot short, a 120 VAC cable in the common tray would have to experience a high impedance fault to ground which would limit the current to below the rating of the supply fuse. This sustained overcurrent would then have to cause the failure of the cable jacket exposing the 120 VAC conductors without shorting them together. The bare conductors would then have to burn through the jackets of the control cables of both valves energizing both the pilot solenoid valve to the AO-2-14-015A valve and the open contactor to the MO-2-14-012A valve without blowing any supply fuses. Cable separation tests performed for Limerick simulated this type of failure in cable trays. The results showed that currents of at least 100A are needed for more than an hour before the cable jacket of the faulted cable will fail and that shorting of the conductor inside the cable will occur before jacket failure. This will cause the supply fuse to blow, interrupting the fault current.

In summary, it is extremely improbable for a hot short in the common cable trays to cause the spurious, simultaneous opening of both valves and thereby violate containment isolation. If this should occur, an additional motor-operated valve (MO-2-14-11A) is available on the same penetration and could be operated from the control room to establish containment isolation.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMC NO. 3100-0104

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TEXT (If more space is required, use additional NRC Form 300a (17))

Cause of the Event:

The cause of this event was personnel error. The responsible engineer for the design change failed to properly evaluate the effect of the equalizer/bypass valve, AO-2-14-015A, on containment isolation capability in the safety evaluation. Engineering groups knowledgeable of containment isolation criteria were not consulted during preparation of the safety evaluation.

Corrective Actions:

The cable to SV-2-14-015A was temporarily disconnected to prevent any spurious operation due to hot shorts until a modification is completed to reroute the control cable for the equalizer/bypass valve pilot solenoid by placing the cable in a dedicated conduit. This modification will provide the required separation and will be complete by December 31, 1985 on Unit 2.

The safety evaluation has been revised and issued to specify the required separation between the cables in question. The revised safety evaluation has been reviewed and accepted by the engineering groups responsible for containment isolation criteria.

The responsible engineer, as well as all engineers in the Electrical Engineering Division performing safety evaluations, have been instructed to consult with the appropriate knowledgeable engineering groups on any modifications concerning areas requiring additional expertise.

Previous Similar Occurrences:

None.

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November 21, 1985

Docket No. 50-277

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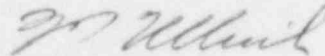
SUBJECT: Licensee Event Report
Peach Bottom Atomic Power Station - Unit 2

This LER deals with the failure to conform with electrical separation criteria in the Final Safety Analysis Report.

Reference:	Docket No. 50-277
Report Number:	2-85-23
Revision Number:	00
Event Date:	January 15, 1985
Discover Date:	October 22, 1985
Report Date:	November 21, 1985
Facility:	Peach Bottom Atomic Power Station RD 1, Box 208, Delta, PA 17314

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(ii).

Very truly yours,



W. T. Ullrich
Superintendent
Nuclear Generation Division

cc: Dr. Thomas E. Murley, Administrator, Region I, USNRC
T. P. Johnson, NRC Resident Inspector

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