

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Peach Bottom Atomic Power Station - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 2 7 7				PAGE (3) 1 OF 015		
TITLE (4) Reactor Scram During Intermediate Range Monitor Testing																
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)			
06	19	87	87	007	02	11	23	87					0 5 0 0 0			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8: (Check one or more of the following) (11)														
N		20.402(b)				20.406(c)				<input checked="" type="checkbox"/> 60.73(a)(2)(iv)				73.71(b)		
POWER LEVEL (10)		20.406(a)(1)(i)				60.36(c)(1)				60.73(a)(2)(v)				73.71(a)		
01010		20.406(a)(1)(ii)				60.36(c)(2)				60.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 365A)		
		20.406(a)(1)(iii)				60.73(a)(2)(i)				60.73(a)(2)(vii)(A)						
		20.406(a)(1)(iv)				60.73(a)(2)(ii)				60.73(a)(2)(vii)(B)						
		20.406(a)(1)(v)				60.73(a)(2)(iii)				60.73(a)(2)(x)						
LICENSEE CONTACT FOR THIS LER (12)																
NAME W. C. Birely, Senior Engineer - Licensing Section										TELEPHONE NUMBER AREA CODE 215 841-5048						
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
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

Abstract: 2-87-07, Rev. 2

On June 19, 1987, with Unit 2 in the Refueling Mode with the core off loaded, a full scram signal was generated by the Reactor Protection System (RPS) logic. The scram occurred during the performance of the surveillance test procedure for verification of Intermediate Range Monitor (IRM) operability. The test involves the verification of proper IRM input to the RPS, and proper operation of IRM alarms and indicators. The scram was caused by procedural deficiencies, combined with personnel error. Procedural revisions are being made and disciplinary guidelines have been exercised as part of the efforts to prevent recurrence. The unplanned RPS actuation makes this event reportable.

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U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 365A's) (17)

Unit Conditions Prior to the Event:

Unit 2 was in the Refueling Mode, with all fuel offloaded from the reactor core and all control rods inserted.

Description of the Event:

At 0349 hours on June 19, 1987, Unit 2 received a full scram signal. The scram was caused by procedural deficiencies, combined with personnel error during the performance of a surveillance test of the Intermediate Range Monitors (IRMs). There are eight IRMs, each indicating reactor power, up to 20% of rated thermal power, by measuring neutron flux in the core. The IRMs also provide input to the Reactor Protection System (RPS) logic: IRMs A, C, E, G to RPS Channel 'A'; and IRMs B, D, F, H to RPS Channel 'B'. When RPS Channels 'A' and 'B' each initiates a (half) scram signal a full scram results. The events leading to the scram are described below.

At 0200 hours, operators began performing ST 3.2.3, the "IRM Functional and Calibration Check". This test was performed as a prerequisite for the reloading of the fuel into the core. The purpose of this procedure is to verify the operability of the IRM circuitry and input to the RPS. This is accomplished by testing each IRM function, monitoring and verifying the response, and resetting the alarms and resulting scram signals. These sequences are repeated for each of the eight IRMs.

The IRMs are provided with a DOWNSCALE alarm. When the measured neutron flux falls below the setpoint (2.5/125ths of scale) on an IRM, a light on both the 20C05A panel and the IRM drawer, both located in the control room, will light. When any of the eight IRMs provides a DOWNSCALE alarm, a common annunciator is illuminated.

This test was conducted by the extra Licensed Operator (LO), LO No. 1, and the Unit 2 LO, LO No. 2. LO No. 1 operated the IRM drawers while reading and initialing all steps, including those verified by LO No. 2. LO No. 2 was located at the 20C05A panel, responsible for all panel and alarm observations and resets. LO No. 1 began testing IRM A, and reached step 12. The chart recorder for IRM A did not respond to inputs from the IRM drawer,



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

and was removed for testing and repair. The LOs resumed the procedure, and tested the next five IRMs (B thru F). After completing the testing of IRM F, LO No. 1 recognized that the DOWNSCALE annunciator was illuminated. He also observed that the IRM-G drawer indicated DOWNSCALE as well. This prompted concern as to the validity of the results of the previous testing. After discussion with shift supervision, it was decided to repeat the steps necessary to verify the proper operation of the downscale alarms for each IRM (B thru F). IRM G was BYPASSED to clear the downscale alarm, and the applicable steps (24 thru 28) were repeated for IRM F, then for IRM B. When the retest for IRM B was completed, the Auto Scram and alarm were not reset, thus leaving RPS Channel 'B' with a scram signal (half-scram). With the recorder returned to service, IRM A was targeted for testing, the Channel 'A' BYPASS joystick was moved from IRM G to IRM A, and testing resumed. When no response was observed on IRM A as an upscale signal was input, a zero signal was input to check the DOWNSCALE alarm. Since the IRM A drawer was not in the OPERATE mode, the RPS Channel 'A' auto scram signal was generated. Since IRM A was BYPASSED, the RPS scram logic was not satisfied. LO No. 2 noted that IRM G showed a DOWNSCALE alarm. He moved the BYPASS joystick from IRM A to IRM G to clear this alarm so that IRM A response could be verified. By removing IRM A from BYPASS, the half scram signal from RPS Channel 'A' combined with the one already in place on RPS Channel 'B' causing the full reactor scram.

The unplanned actuation of the RPS makes this event reportable. The EIIS code for the affected system is IG for the Incore/Excore Monitoring System (IRMs).

Consequences of the Event:

The consequences of this event are considered to be minimal. All safety systems functioned as designed, and no equipment failure occurred as a result of the event. The failsafe operation of the RPS was demonstrated during this event.

Cause of the Event:

The root causes of this event fall into two general categories, procedural deficiency and personnel error. Deficiencies in the

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

procedure include incomplete prerequisites, incomplete signoffs for verification of steps, and insufficient guidance for a failed step. The prerequisites do not require clearing of alarms and scrams before beginning the test. The lack of this prerequisite can introduce uncertainty during testing and re-evaluation. During alarm and annunciator resets throughout the procedure, one signoff exists for multiple actions. This also introduces the possibility of error, considering the repetitive nature of this procedure.

With regard to personnel error, several operator actions contributed to the event. First, the operators deviated from the procedure during the re-testing and re-verifying of the IRMs, after recognizing the DOWNSCALE annunciator. The operators should have recognized that the DOWNSCALE annunciator did not clear during the testing of IRMs B, C, D, E and F. After recommending the retesting, shift supervision allowed the operators to perform the retest without a properly revised procedure. During the re-testing, operators maintained a narrow view of the situation. While concentrating on the IRM G DOWNSCALE alarm, they failed to consider other plant implications, such as the RPS conditions. Finally, communication between the operators, which is heavily depended on, broke down. LO No. 1 proceeded through the test, without ensuring that LO No. 2 properly completed each step.

Corrective Actions:

Operators identified the cause and reset the scram. Performance of the procedure was suspended.

Action Taken to Prevent Recurrence:

The procedure for testing the IRMs, ST 3.2.3, is undergoing revision, and will be implemented by November 30, 1987. The previous commitment date of August 31, 1987 for implementation of the revision was postponed due to administrative difficulties in processing and approving the revised procedure. The revision will address the points of concern described in the "Cause of the Event" section of this report. Prerequisites will include a list of alarms and conditions to be verified prior to beginning the test. A caution statement will define when continuation of testing is appropriate when an expected response is not received.

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The procedure will be broken into two procedures. Each procedure test only the 'A' or 'B' Channel of the RPS logic, and will not allow concurrent testing on the other RPS logic channel. All alarms and conditions which require verification will have separate sign-off blanks. If unexpected responses are observed, procedural guidance will be provided.

Philadelphia Electric Company Disciplinary Guidelines have been implemented toward the operators involved. Plant management issued oral warnings to the LOs, and the shift supervisor on duty was counseled about the event. A memo was issued from the Operations Engineer to the operating staff by July 17, 1987. This memo described the event and factors which contributed to the cause of the event. The memo refers to the Policy for Use of Procedures which will be established by the plant staff to provide direction on use of procedures, and conformance to the policy will be required. This policy will be implemented as part of the Operations "Administrative Manual" and "Watch Standards Manual" which are being instituted prior to restart.

Previous Similar Events:

Peach Bottom LER 03-86-13 concerns operator error while performing this procedure.



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November 23, 1987

Docket No. 50-277

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Washington, DC 20555

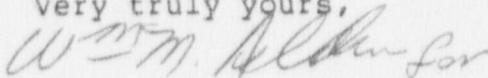
SUBJECT: Licensee Event Report  
Peach Bottom Atomic Power Station - Unit 2

This revised LER concerns a full scram of Unit 2 caused by personnel error, combined with a deficient test procedure.

Reference:	Docket No. 50-277
Report Number:	02-87-07
Revision Number:	02
Event Date:	June 19, 1987
Report Date:	November 23, 1987
Facility:	Peach Bottom Atomic Power Station RD 1, Box 208, Delta, PA 17314

This LER was revised to update and revise commitments which were made in the "Action Taken to Prevent Recurrence" section of the report. The changes are indicated by a vertical bar in the margin. This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(iv).

Very truly yours,



R. H. Logue  
Assistant to the Manager  
Nuclear Support Department

cc: W. T. Russell, Administrator, Region I, USNRC  
T. P. Johnson, NRC Resident Inspector

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