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December 22, 1994

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Docket Nos. 50-278

SUBJECT: Licensee Event Report
Peach Bottom Atomic Power Station - Units 3

This LER is submitted to report a potential Technical Specification violation associated with the Average Power Range Monitor Rod Block setpoints.

Reference:	Docket Nos. 50-278
Report Number:	3-94-006
Revision Number:	00
Discovery Date:	11/10/94
Reportability Date:	11/28/94
Report Date:	12/22/94
Facility:	Peach Bottom Atomic Power Station RD1, Box 208, Delta, PA 17314

This LER is being submitted voluntarily.

Sincerely,

J. M. Elnitsky for G. D. E.

GDE/GAJ:gaj
enclosure

cc: R.A.Burricelli, Public Service Electric & Gas
R. R. Janati, Commonwealth of Pennsylvania
INPO Records Center
T. T. Martin, US NRC, Administrator, Region I
R. I. McLean, State of Maryland
W. L. Schmidt, US NRC, Resident Inspector
A. F. Kirby III, DelMarVa Power
H. C. Schwemm, VP - Atlantic Electric

CCN 94-14177

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NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104

EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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

TITLE (4): Average Power Range Moniotr Flow Biased Setpoints on Rod Block Being Non Conservative

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	1 0	9 4	9 4	0 0 6	0 0	1 2	2 3	9 4		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
N		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
1 1 0 1 0		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(c)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
Anthony J. Wasong, Manager - Experience Assessment	7 1 1 7 4 5 1 6 - 1 7 0 1 4

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 11/10/94, a Shift Engineer identified that the flow input signals to the Average Power Range Monitors (APRM) were reading higher than actual core flow conditions. This condition affected the conservatism associated with the Scram and Rod Block flow biased setpoints. It is possible that the flow biased APRM Rod Block setpoint may have exceeded the Technical Specification limit. The flow biased APRM Scram setpoints remained in compliance. This event was caused by a change in plant operating strategy that impacted the initial drive flow to core flow correlation established at rated power and flow conditions. The change in operating philosophy allowed entrance into the MELLLA region of the power flow map. The vendor did not advise the station of the non-conservative impact on APRM flow biased setpoints while in the MELLLA region. No information was provided that indicated a need to re-establish a drive flow to core flow correlation when the MELLLA region was initially entered. The modification team failed to identify this issue due to the subtle nature of this phenomenon. Following discovery of this condition, all APRMs were adjusted to ensure that the normal APRM flow biased setpoints were re-established. An evaluation was performed which verified that this condition does not exist on Unit 2. Additional controls will be created to ensure that these limits can not be exceeded. One previous similar event has been identified.

Requirements of the Report

This LER is being submitted voluntarily due to a potential violation of the Technical Specifications (Tech Spec) when a non conservative Average Power Range Monitor flow biased signal was identified.

Unit Conditions at Time of Discovery

Unit 3 was in the "RUN" mode at 100 % of thermal reactor (EIIS:EA) power. There were no systems, structures, or components that were inoperable that contributed to the event.

Description of the Event

On 11/10/94 at approximately 0600 hours, during post load drop recovery activities, a Shift Engineer (Utility : Non Licensed) identified that the flow input signals to the Average Power Range Monitors (APRM) (EIIS:IG) were reading higher than actual core flow conditions. This condition affected the conservatism associated with the Scram and Rod Block flow biased setpoints. The mismatch of the flow signals was identified since the Shift Engineer was performing a specific status check of the APRM flow biased signal to verify operation of a component which was recently repaired and returned to service.

In response to the incorrect flow signals, all APRM channel gains were increased to compensate for the non conservative flow biased setpoints. Subsequently, the APRM drive flow summers were adjusted to reflect actual total core flow conditions. This ensured that the normal APRM Rod Block and Flux Scram setpoints were re-established.

It is possible that the flow biased APRM Rod Block setpoint may have exceeded the Tech Spec limit while the flow biased APRM Scram setpoints remained in compliance. This is due to the fact that the difference between the Tech Spec APRM Flux Scram setpoint and actual calibration setpoint is greater than the difference associated with the Rod Block setpoints. This allows more margin for non conservative setpoint drift in the APRM Flux Scram setpoint verses the Rod Block setpoint.

Cause of the Event

This event was caused by a change in plant operating strategy that impacted the initial drive flow to core flow correlation established at rated power and flow conditions. The change in operating philosophy allowed entrance into the Maximum Extended Load Line Limit Analysis (MELLLA) region of the power flow map.

The "APRM-Rod Block-Technical Specification Improvement (ARTS)/MELLLA" program was installed on Unit 3 during the fall of 1993 refueling outage and on Unit 2 during the

fall of 1994 outage. This program allows for more efficient use of fuel by allowing access to higher rod lines thus reducing core flow requirements. Prior to the installation of the Unit 3 ARTS/MELLLA modification in the fall of 1993, total core flow to RECIRC drive flow correlations were done at the 100 % core flow and 100 % power condition (100 % rod line). This comparison is used to establish the APRM flow signal used for the Rod Block and Scram functions as specified in the Tech Specs. Since the plant did not operate above the 100 % rod line, this single comparison was acceptable and conservative.

However, after the installation of the Unit 3 ARTS/MELLLA modification, reactor operation above the 100 % rod line was allowed. The relationship between drive flow and core flow becomes less conservative with increasing rod line, i.e. it requires more drive flow for a given amount of core flow as rod line increases. Therefore, a second RECIRC drive flow to core flow correlation within the flow bias instruments was needed to ensure that the flow bias signal used for the APRM Rod Block and APRM Flux Scram setpoints was correct while in the MELLLA region.

The vendor did not advise the station of the non-conservative impact on APRM flow biased setpoints while in the MELLLA region. No information was provided that indicated a need to re-establish a drive flow to core flow correlation when the MELLLA region was initially entered. The PECO Energy modification team failed to identify this issue due to the subtle nature of this phenomenon.

Existing surveillance tests were reviewed and it has been determined that routine surveillance tests would not have found this issue. The condition was identified because the Shift Engineer was performing a specific status check of the APRM flow bias signal to verify operation of a component which was recently repaired and returned to service.

Analysis of Event

No actual safety consequences occurred as a result of this event.

Had a transient occurred which caused an increase in reactivity while in the MELLLA region, the flow bias trip level settings may have been affected. The consequences are considered minimal due to the fact that the APRM flow biased Scram was within Tech Spec limits. Therefore, the Tech Spec Safety Limit for the RPS system was unaffected. It was possible for certain evolutions (i.e. load drop below 75 % core flow within the MELLLA region) that the flow biased Rod Block trip level settings could have been non conservative. This would not impact overall plant safety but could have resulted in a loss of margin of safety as defined in the Safety Analysis Report. It is possible that the Tech Spec flow biased APRM Rod Block setpoint may have been exceeded while the flow biased APRM Scram setpoints remained within the Tech Spec limit. The station was unable to determine with certainty that these limits were exceeded.

Corrective Actions

Following discovery of this condition, all APRM channel gains were increased to compensate for the non conservative flow biased setpoints. Subsequently, the APRM drive flow summers were adjusted to reflect actual total core flow conditions. This ensured that the normal APRM Rod Block and Flux Scram setpoints were re-established.

An evaluation was performed which verified that this condition does not exist on Unit 2. ARTS/MELLLA was just installed on Unit 2 during the recent Refueling Outage (Fall of 1994) and plant operations had not yet fully entered the MELLLA region of the power flow map due to thermal limit constraints. The Reactor Engineers have been made aware of this event to ensure that Unit 2 does not get into this condition. Additional controls will be created to ensure that these limits can not be exceeded.

In addition, procedural enhancements will be made as necessary to ensure that the flow bias signal is monitored and maintained conservative with plant conditions.

The event has been discussed with the involved individuals and the pertinent information from this event will be provided to the appropriate station engineering personnel to emphasize the importance of correlating core flow to drive flow and how it is affected by changes in plant conditions.

Previous Similar Events

One previous similar event (LER 2-87-31) has been identified. The 1987 event involved a less than adequate procedure review for a modification. The corrective actions taken were specific in nature and would not have prevented this event. The corrective actions specified above will prevent future concerns.