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December 27, 2001

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

Docket No. 50-277
SUBJECT: Licensee Event Report, Peach Bottom Atomic Power Station Unit 2

This LER reports the entry of Unit 2 into Mode 2 with the E-2 emergency diesel generator being inoperable. The LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(i)(B). In accordance with NEI 99-04, the regulatory commitment contained in this correspondence is to restore compliance with the regulations. The specific methods that are planned to restore and maintain compliance are discussed in the LER.

Reference: Docket No. 50-277
Report Number: 2-01-005
Revision Number: 00
Event Date: 10/27/01
Discovery Date: 10/30/01
Report Date: 12/27/01

Facility: Peach Bottom Atomic Power Station Unit 2
1848 Lay Road, Delta, PA 17314-9032

Sincerely,



Gordon L. Johnston, Plant Manager

GLJ/wrn/CR 81006

enclosure

cc: PSE&G, Financial Controls and Co-owner Affairs
R. R. Janati, Commonwealth of Pennsylvania
INPO Records Center
H. J. Miller, US NRC, Administrator, Region I
R. I. McLean, State of Maryland
A.C. McMurtray, US NRC, Senior Resident Inspector
A.F. Kirby III, Atlantic City Electric

CCN 01-14111

IE22

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1) Peach Bottom Atomic Power Station, Unit 2	DOCKET NUMBER (2) 05000 277	PAGE (3) 1 OF 4
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TITLE (4)
E-2 Diesel Generator Not Operable During Unit 2 Entry Into Mode 2

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	27	01	01	005	00	12	27	01	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) 2	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)									
POWER LEVEL (10) 0	<input type="checkbox"/>	20.2201(b)	<input type="checkbox"/>	20.2203(a)(3)(ii)	<input type="checkbox"/>	50.73(a)(2)(ii)(B)	<input type="checkbox"/>	50.73(a)(2)(ix)(A)		
	<input type="checkbox"/>	20.2201(d)	<input type="checkbox"/>	20.2203(a)(4)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(x)		
	<input type="checkbox"/>	20.2203(a)(1)	<input type="checkbox"/>	50.36(c)(1)(i)(A)	<input type="checkbox"/>	50.73(a)(2)(iv)(A)	<input type="checkbox"/>	73.71(a)(4)		
	<input type="checkbox"/>	20.2203(a)(2)(i)	<input type="checkbox"/>	50.36(c)(1)(ii)(A)	<input type="checkbox"/>	50.73(a)(2)(v)(A)	<input type="checkbox"/>	73.71(a)(5)	OTHER Specify in Abstract below or in NRC Form 366A	
	<input type="checkbox"/>	20.2203(a)(2)(ii)	<input type="checkbox"/>	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(v)(B)	<input type="checkbox"/>			
	<input type="checkbox"/>	20.2203(a)(2)(iii)	<input type="checkbox"/>	50.46(a)(3)(ii)	<input type="checkbox"/>	50.73(a)(2)(v)(C)	<input type="checkbox"/>			
	<input type="checkbox"/>	20.2203(a)(2)(iv)	<input type="checkbox"/>	50.73(a)(2)(i)(A)	<input type="checkbox"/>	50.73(a)(2)(v)(D)	<input type="checkbox"/>			
	<input type="checkbox"/>	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)(B)	<input type="checkbox"/>	50.73(a)(2)(vii)	<input type="checkbox"/>			
<input type="checkbox"/>	20.2203(a)(2)(vi)	<input type="checkbox"/>	50.73(a)(2)(i)(C)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)	<input type="checkbox"/>				
<input type="checkbox"/>	20.2203(a)(3)(i)	<input type="checkbox"/>	50.73(a)(2)(ii)(A)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)	<input type="checkbox"/>				

LICENSEE CONTACT FOR THIS LER (12)

NAME William R. Nelle - Regulatory Assurance	TELEPHONE NUMBER (Include Area Code) (717) 456-3422
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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 15 single-spaced typewritten lines) (16)

During testing of the E-2 emergency diesel generator (EDG) on 10/30/01, the diesel tripped due to low jacket coolant pump discharge pressure. Investigation revealed that the low-pressure condition was due to the gravity feed block valve on a line from the diesel generator coolant expansion tank being in the closed position. With the valve in this position, the jacket coolant pump did not have sufficient net positive suction pressure available for the pump to operate properly. As a result, adequate cooling of the diesel could not be assured. Upon discovery of the condition, the block valve was reopened and the impact of the low-pressure condition was thoroughly evaluated. The EDG was subsequently tested and declared operable on 10/31/01 at 0535 hours. This condition was determined to be reportable because the evaluation determined that the E-2 EDG was inoperable on 10/27/01 when Unit 2 entered Mode 2 (Startup) following forced outage 2F0102. Technical Specification limiting condition for operation (LCO) 3.8.1.c requires that four diesel generators be operable to supply the Unit 2 onsite Class 1E AC Electrical Power Distribution system when in Mode 2. The entry into this mode without satisfying LCO 3.8.1.c is not permitted by Technical Specification LCO 3.0.4 and is reportable in accordance with 10CFR50.73(a)(2)(i)(B). The cause of the valve being closed was due to personnel error and was most likely associated with the manual adjustment of coolant levels in the expansion tank due to known leaks in the system. Actions are being taken to include the valve in the locked valve program to ensure the component is maintained in the correct position.

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Unit Conditions Prior to the Event

The condition was discovered on 10/30/01 with Unit 2 in Mode 1 (Run) at 50% reactor power. The reportable condition occurred on 10/27/01 at 1801 hours when the unit entered Mode 2.

Prior to discovering the condition, the unit was in Mode 4 (cold Shutdown) at 0% reactor power and preparations were underway for restart following forced maintenance outage 2F0102.

Description of the Event

On 10/27/01 at approximately 1801 hours a condition prohibited by Technical Specifications occurred when Unit 2 was placed in Mode 2 without all four emergency diesel generators (EDG) (EIIS:EK) being operable.

This event was discovered on 10/30/01 at 0159 hours when the E-2 EDG was undergoing testing in accordance with procedure ST-O-052-122-2 "E-2 Diesel Generator RHR Pump Reject Test". During the test, the diesel generator was being loaded onto the E-22 Bus and an alarm was received for "Jacket Coolant Low Pressure". Minutes later the alarm for the "AUX Jacket Coolant Pump" was received and the Auxiliary Jacket Coolant Pump started. After a brief period, the diesel tripped on low jacket coolant pressure. This trip is a protective feature of the diesel control logic and functioned as designed.

The cause of the trip was promptly investigated and a walkdown of the alignment of the jacket and air coolant loops revealed that manual valve HV-0-52E-10025B, "E-2 D/G Coolant Expansion Tank 0BT097 Gravity Feed Block Valve" (EIIS:V), was in the closed position. This valve is required to be in the open position.

Engineering evaluation demonstrated that the subject valve has to be open in order for the EDG to be operable. Because the E2 EDG was successfully tested on 10/12/01 and the exact time the valve was closed could not be identified, it was determined that EDG was not operable when Unit 2 entered Mode 2 (Startup).

Unit 2 entered mode 2(Startup) from Mode 4 (Cold Shutdown) at 1801 hrs on 10/27/01. In accordance with Technical Specification LCO 3.8.1.c, four diesel generators are required to be operable in Mode 2 to supply the Unit 2 onsite Class 1E AC Electrical Power Distribution system. With the E-2 EDG inoperable, entry into Mode 2 without satisfying LCO 3.8.1.c is not permitted by Technical Specification LCO 3.0.4. This LCO prohibits entry into Modes 1, 2 and 3 when an LCO is not met. This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(i)(B).

Analysis of the Event

Peach Bottom Atomic Power Station Units 2 and 3 have four emergency buses per unit and four shared EDGs. Each of the EDGs has a cooling water system which consists of two cooling loops: the jacket water cooling loop which removes the excess heat of combustion and the air cooler coolant loop which removes the excess heat of compression. A 100 gallon expansion tank provides a positive static suction head for the pumps in each loop as well as maintaining each cooling loop and the associated components full of water. Both of the loops include an engine driven pump and an auxiliary AC motor driven pump, which is provided should the engine driven pump fail.

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Each of the cooling loops is monitored by pressure instrumentation which provides alarms and automatically starts the auxiliary pump on low pressure. If the low pressure condition persists, the diesel control logic will trip the diesel. This protective feature is bypassed under conditions indicative of a loss of coolant accident.

The impact of the valve in the line from the expansion tank being in the closed position was analyzed by station engineering with support from Exelon subject matter experts and the diesel generator manufacturer. The analysis revealed that with the valve closed, both the jacket and air coolant pumps would not have sufficient net positive suction pressure available for proper operation and the E-2 EDG was not operable. This conclusion also encompasses situations where the diesel trip on low pressure is bypassed.

No actual safety consequences occurred as a result of this event. The other three EDGs were not affected and were operable. In addition, the required number of qualified circuits between the offsite transmission network and the Unit 2 onsite Class 1E AC Electrical Power Distribution System were operable. If an accident had occurred with the E-2 EDG unavailable, sufficient AC power and equipment were still available to ensure safe shutdown of the plant. Therefore, the actual and potential consequences of this event were minimal.

Cause of the Event

The E-2 EDG was inoperable due to valve HV-0-52E-10025B being in the closed position which isolated the diesel generator coolant expansion tank from the suction of the air and jacket coolant pumps. The valve is located approx 8 ft. above the floor and is beneath the coolant expansion tank in the E-2 bay of the diesel generator building.

A root cause investigation of the incident was performed and entailed a thorough evaluation of maintenance, testing and operations activities that occurred during the period of 10/12/01 through 10/30/01. The successful testing of the E-2 EDG on 10/12/01 provided confirmation that the valve was in the correct position prior to that date. During the testing, the EDG was fully loaded and was run for approximately two hours. Engineering's analysis determined that the test could not have been successfully completed if the valve was closed.

The investigation included consideration of tasks that involved the diesel cooling loops as well as all other known tasks that were performed in the diesel generator building during the period. This was to account for the potential that work was performed on the wrong component or EDG. The investigation included interviews of operations and other station personnel that were in the vicinity of the valve.

Exelon's corporate security organization also investigated the incident and concluded that the closure of the valve was not an intentional act to adversely impact the operation of the EDG.

Based on these investigations, it was determined that the cause of the mispositioning of the valve was due to personnel error that most likely occurred during make-up or draining of coolant from the expansion tank.

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Minor coolant leaks in the jacket coolant system existed at the time which required manual action to maintain the level in the tank within prescribed limits. A contributing factor was that the valve was not included in the locked valve program. Given the impact of closure of the valve on the system, combined with the fact that it is infrequently manipulated, the valve should have been controlled as a locked valve.

Corrective Action Completed

The valve was reopened. Engineering thoroughly evaluated the operation of the E-2 EDG for the brief period with low coolant pressure and concluded that there was no impact on the machine. Following this, the EDG was successfully tested and declared operable on 10/31/01 at 0535 hours.

Corrective Actions Planned

Actions are being taken by the station to address the human performance aspects of this event.

To prevent errors from occurring in the future, valve HV-0-52E-10025B will be added to the locked valve program along with the corresponding valves on the other three EDGs.

Previous Similar Occurrences

There have been no similar events identified where a valve in the EDG subsystems was incorrectly positioned such that it resulted in the EDG being inoperable.