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October 27, 2000

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

Docket No. 50-277 and 50-278
SUBJECT: Licensee Event Report, Peach Bottom Atomic Power Station Units 2 and 3

This LER reports the plant being in a degraded condition potentially outside of the plant design basis. The degraded condition potentially affected the Emergency Diesel Generators (EDG) design capability. Specifically, the degraded condition involves a reduced flow rate of Emergency Service Water being available to cool the EDG, due to leakage past a check valve into the Service Water system The LER is being submitted pursuant to the requirements of 10 CFR 50.73 (a)(2)(ii).

Reference:	Docket Nos. 50-277 and 50-278
Report Number:	2-00-004
Revision Number:	00
Event Date:	09/28/00
Report Date:	10/27/00
Facility:	Peach Bottom Atomic Power Station Unit 2 & 3 1848 Lay Road, Delta, PA 17314

Sincerely,

Gordon L. Johnston, Plant Manager

GLJ/dmw

enclosure

cc: N. J. Sproul, Manager, Financial Controls and Co-owner Affairs
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CCN 00-14082

IE22

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001
Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to the industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an 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.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Peach Bottom Atomic Power Station Units 2 and 3	0500 277	1 of 4

TITLE (4)
This LER reports the Emergency Diesel Generators being in a degraded condition potentially outside of the design basis

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
									Peach Bottom	0500 278
09	28	00	00	004	00	10	27	00	Facility Name	Docket Number

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more) (11)							
			20.2201(B)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
POWER LEVEL (10)	0		20.2203(a)(1)		20.2203(a)(3)(i)	X	50.73(a)(2)(ii)		50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		or in NRC Form 336A

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (include area code)
Donna Wielgopolski	717.456.4634

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
B	BI	V	C665						

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)

On September 28, 2000, data from an in-service surveillance test indicated a check valve did not prevent reverse flow from the safety related Emergency Service Water (ESW) system into the non-safety related Service Water (SW) system. This reduced the flow to each of the Emergency Diesel Generators (EDG) resulting in a reduction in the calculated allowable maximum heat sink temperature to maintain the EDG operable. No other supported ESW systems were impacted by this degradation.

The last successful surveillance test on the check valve was completed on September 25, 1998. Because an evaluation could not determine when the check valve failed, an engineering analysis was performed of the as-found condition, from September, 1998 to September, 2000. Furthermore, because this condition coexisted with the EDG heat exchanger cross flow issue reported in LER 2-00-002, the analysis of accident scenarios conservatively considered both degraded EDG conditions for the two year period. This design basis analysis determined the calculated allowable heat sink temperature to be less than or equal to 78.5 degrees Fahrenheit. Since September, 1998, the actual heat sink temperature periodically exceeded this calculated maximum allowable heat sink temperature. Therefore, because the time of the check valve failure is indeterminate, the degraded condition resulted in a condition potentially outside of design basis.

The EDG degradation is attributed to an ESW component failure, that was corrected promptly.

Requirements of the Report

This LER is being submitted pursuant to the requirements of 10 CFR 50.73 (a)(2)(ii) for the potential impact on the Emergency Diesel Generators (EDG) (EIIS:LB) capability to perform their mitigating function. This condition existed when actual heat sink (EIIS: BI, BS) temperature exceeded the calculated heat sink temperature limits, thereby placing the plant outside of its design basis. It should be noted that the analysis conservatively assumed that the degraded ESW flow condition coexisted with the EDG heat exchanger cross flow issue reported in LER 2-00-002, from September 1998 to August 2000.

Unit Conditions at Time of Event

At the time of discovery for this condition, Unit 2 was in Mode 5 (refuel) (EIIS: EA). Unit 3 was in Mode 1 (RUN) at approximately 100 percent power (EIIS:EA). No other systems, structures, or components were inoperable during the test performance which contributed to this condition.

Description of the Event

Peach Bottom Atomic Power Station Units 2 and 3 have four emergency buses for each unit and four EDG. Each EDG supplies power to an emergency bus on each unit. Therefore, an event affecting one or more EDG impacts both units.

On September 28, 2000, a surveillance test was performed on the ESW to SW check valve (reference component number: CHK-2-33-514). The results of this test indicated that safety related ESW flow was being diverted through this check valve into the non-safety related SW system. The purpose of this check valve is to prevent this condition from occurring during ESW system operation when ESW system pressure is greater than SW system pressure.

On September 28, 2000, Unit 3 was operating at 100 percent power, while Unit 2 was in Mode 5. The initial surveillance test (reference test: ST-O-033-400-2) was completed unsatisfactorily at 0430, and as an immediate corrective action the manual block valve (reference component number: HV-2-33-503) between the ESW and the SW system was closed to maintain the ESW system operable. The surveillance test was re-performed the same day with the manual block valve open. This second test confirmed that there was diversion of ESW flow into the SW system.

Subsequent troubleshooting performed to quantify the amount of ESW flow redirection into the SW system determined that each EDG had a reduction of approximately 50 gallons per minutes (gpm) below the minimum allowable flow rate of 714 gallons per minute (reference procedure: RT-O-33-600-2). This reduction in flow reduced the total amount of heat that could be removed from the EDG, while they are

loaded. Based on this information, maximum allowable heat sink temperatures were recalculated for the most restrictive accident scenarios on the EDG. The most restrictive heat sink values calculated for the EDG were for the LOCA/LOOP event. Under this accident scenario, the heat sink temperature would be required to be less than or equal to 78.5 degrees Fahrenheit to maintain all 4 EDG operable. This value accounts for the air coolant and the jacket coolant heat exchangers exhibiting cross flow conditions on each EDG before a manual valve was closed on August 1, 2000, to significantly reduce this cross flow condition (Reference: LER 2-00-002). Subsequent to August 1, 2000 the calculated maximum allowable heat sink temperature increases to 89.5 degrees Fahrenheit to maintain all 4 EDG operable. No other ESW supported loads were impacted by the decreased flowrates.

During this period of degraded performance from September 1998 to September 2000, actual heat sink temperatures were reviewed to determine if the calculated values were exceeded. It was determined from this review that the actual heat sink temperature periodically exceeded the calculated maximum allowable value frequently during the summer of 1999, and briefly during the summer of 2000.

On September 29, 2000, the check valve was disassembled, and it was noted that the disc nut retaining pin was missing and the disc nut backed off sufficiently to prevent the seating of the check valve. The check valve was repaired by installing new check valve internals, including a differently designed disc nut retaining pin. The surveillance test was re-performed satisfactorily, and the check valve was returned to service later that same day.

Cause of the Event

The cause of the check valve degradation has been determined to be corrosion and eventual failure of the disc nut retaining pin which is designed to prevent the disc nut from unthreading and loosening the check valve disc.

The cause and the corrective actions of the air coolant and jacket coolant heat exchanger cross flow condition are addressed in LER 2-00-002. This LER does not change the causes or corrective actions associated with that issue. This LER does evaluate the impact associated with the two degraded conditions existing concurrently.

Analysis of the Event

A conservative evaluation was performed, assuming that the check valve was in a degraded condition from September 25, 1998, when the test was last satisfactorily performed, to September 28, 2000, when the valve was repaired. During this period, the actual heat sink temperature periodically exceeded the

calculated maximum heat sink temperature, with the most significant potential impact occurring in the summer of 1999, when high river temperatures were experienced. This resulted in a potential degradation of EDG capability. Based on engineering judgement, if an event had occurred during these periods of high heat sink temperatures, the EDGs would have continued to supply the required loads, but the engine would have operated at elevated temperatures. In this condition, compensatory actions such as load balancing or increasing cooling water flow, could have been employed to limit the impact on the affected EDG. No accidents or events occurred requiring EDG operation during the period when the EDG were in a degraded condition. Therefore, there was no actual impact to the plant.

Furthermore, a PSA analysis was performed to conservatively evaluate the degraded period. The results of this PSA analysis concluded that there was minimal effect on core damage frequency as a result of this condition coupled with the air jacket coolant and jacket coolant heat exchanger cross flow condition. The PSA analysis evaluated all events based on the following: 1) the limited impact on the capability of the affected EDG; and 2) the conclusion that the affected EDG would continue to operate at higher operating engine temperatures when heat sink temperatures were greater than the calculated temperatures. These conditions represent a degradation of the EDG and not a failure of the EDG's function.

Corrective Actions

The immediate corrective actions for the degraded ESW system included replacement of the check valve internals on September 29, 2000 with a redesigned disc nut retaining pin to reduce susceptibility to corrosion. The check valve was re-tested satisfactorily on September 29, 2000.

Previous Events

There was one previous event identified where the EDG were rendered inoperable due to actual heat sink temperatures being greater than the calculated heat sink temperatures. This condition existed concurrently with the failed ESW check valve. The analysis performed for this LER conservatively accounted for the heat exchanger cross flow issue concurrently existing with the degraded check valve for the period of September, 1998 to August, 2000. (Reference: LER 2-00-002)