

LICENSEE EVENT REPORT (LER)

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) Peach Bottom Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 2 7 7 1				PAGE (3) 1 OF 0 3								
TITLE (4) Two automatic reactor shutdowns as a result of a main generator trip due to an actuation of the negative sequence current protective relay																						
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	0	6	9	6	9	6	0	1	0	0	1	1	0	5	9	6	0	5	0	0	0	0
OPERATING MODE (9) 1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																				
POWER LEVEL (10) 0 8 8		20.402(b)				20.405(c)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)		73.71(b)										
		20.405(a)(1)(i)				50.36(c)(1)				<input type="checkbox"/> 50.73(a)(2)(v)		73.71(c)										
		20.405(a)(1)(ii)				50.36(c)(2)				<input type="checkbox"/> 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)				<input type="checkbox"/> 50.73(a)(2)(viii)(A)												
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				<input type="checkbox"/> 50.73(a)(2)(viii)(B)												
		20.405(a)(1)(v)				50.73(a)(2)(iii)				<input type="checkbox"/> 50.73(a)(2)(ix)												
LICENSEE CONTACT FOR THIS LER (12)																						
NAME George Lengyel										TELEPHONE NUMBER AREA CODE 7 1 7 4 5 6 - 7 1 0 1 4												
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)

This LER is being submitted to report two automatic reactor shutdowns which occurred on 10/6/96 and 10/15/96 as a result of a main generator trip and lockout due to the actuation of the negative sequence current protective relay. No evidence of an actual main generator negative sequence current event was identified. During testing of the negative sequence relay instrumentation circuitry, all electrical connections were checked. Loose connections on the current transformer were identified and corrected which were believed to have caused the relay to actuate. No other potential causes were identified. Subsequently, on 10/15/96, Unit 2 automatically shutdown again as a result of a main generator trip and lockout due to the actuation of the negative sequence current protective relay. The negative sequence relay was replaced with a newer design, the trip function was defeated based on an engineering analysis, and additional monitoring equipment was installed. Unit 2 was subsequently returned to service on 10/18/96 with no anomalies identified per the monitoring program. The investigation into the cause of the actuation of the negative sequence relay is continuing. The negative sequence relay has been sent to General Electric Co. for a detailed analysis. No actual safety consequences occurred as a result of these events. All plant systems responded as designed during both events. No previous similar LERs were identified.

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TEXT CONTINUATION

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FACILITY NAME (1)

DOCKET NUMBER (2)

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Peach Bottom Unit 2

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

Requirements of the Report

This report is submitted pursuant to 10 CFR 50.73(a)(2)(iv) due to unplanned Engineered Safety System actuations.

Unit Conditions at Time of Events

On 10/6/96, Unit 2 was in Mode 1 (RUN) operating at approximately 88 percent reactor power. On 10/15/96, Unit 2 was in Mode 1 operating at approximately 98 percent reactor power.

There were no other systems, structures, or components that were inoperable that contributed to the event.

Description of the Events

This LER is being submitted to report two automatic reactor shutdowns which occurred on 10/6/96 and 10/15/96 as a result of a main generator trip and lockout due to the actuation of the negative sequence current protective relay. Following the first event, an investigation was performed that determined no actual negative sequence current condition had occurred. The investigation evaluated other potential causes such as generator design parameters and instrumentation. The negative sequence relay was removed and tested with no abnormalities identified. During testing of the negative sequence relay instrumentation circuitry, all electrical connections were checked. Loose connections on the current transformer were identified and corrected which were believed to have caused the relay to actuate. No other potential causes were identified. Additionally, temporary monitoring equipment was installed on the negative sequence relay circuitry and continuously monitored during power ascension. No abnormalities were detected or identified.

Subsequently, on 10/15/96, Unit 2 automatically shutdown again as a result of a main generator trip and lockout due to the actuation of the negative sequence current protective relay. A review of the previous testing plan and techniques was performed. Previous and additional tests were conducted with no anomalies identified. The negative sequence relay was replaced with a newer design, the trip function was defeated based on an engineering analysis, and additional monitoring equipment was installed. Unit 2 was subsequently returned to service on 10/18/96 with no anomalies identified per the monitoring program.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

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Cause of the Events

The investigation into the cause of the actuation of the negative sequence relay is continuing. The negative sequence relay has been sent to General Electric Co. for a detailed analysis.

Analysis of the Events

No actual safety consequences occurred as a result of these events. All plant systems responded as designed during both events. No evidence of an actual main generator negative sequence current event was identified. The negative sequence relay provides primary protection for minor imbalances on the system and backup protection for a major fault. The negative sequence relay is not an Engineered Safety Feature.

Corrective Actions

The negative sequence relay was replaced with a newer design and Unit 2 has been returned to service without further incident.

The trip function of this relay, which normally actuates at nine percent negative sequence current, has been disabled. The five percent negative sequence current alarm has been maintained. Procedural guidance has been established to remove the generator from service if a true abnormal negative sequence condition exists. This procedural guidance is based on other available indications of excessive negative sequence current such as increases in generator rotor heating, core monitoring anomalies and/or bearing vibration. Other generator protective relaying remains available to trip the generator in the event of a major electrical fault.

The investigation into the cause of the actuation of the negative sequence relay is continuing. The relay has been sent to General Electric Co. for a detailed analysis. Significant results of this investigation will be reported in a revision to the LER as appropriate.

Previous Similar Events

No previous LERs were identified in which an automatic reactor shutdown occurred as a result of a main generator trip and lockout due to negative sequence protective relay actuation.