

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Waterford Steam Electric Station Unit 3	DOCKET NUMBER (2) 0 5 0 0 0 3 8 2	PAGE (3) 1 OF 0 4
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TITLE (4)
ESF Ventilation Actuations
Due to Voltage Fluctuations on a Vital Uninterruptable Bus

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)
04	17	88	88	008	000	05	17	88	N/A		0 5 0 0 0
									N/A		0 5 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

OPERATING MODE (9) 6	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)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)	
	20.405(a)(1)(v)	50.73(a)(2)(iv)	<input type="checkbox"/>	50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME D.W. Vinci, Maintenance Superintendent	TELEPHONE NUMBER AREA CODE: 5 0 4 4 6 4 - 3 1 3 3
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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)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At 0547 hours on April 17, 1988, and 2217 hours on April 20, 1988, Waterford Steam Electric Station Unit 3 was shutdown in the refueling mode when a voltage fluctuation on the 'A' train Vital Uninterruptable Bus, Power Distribution Panel (PDP) 390-SA, resulted in an automatic start of the 'A' train Control Room and Fuel Handling Building Emergency Filtration Units and isolation of the 'A' train supply and return valves to the non-safety Component Cooling Water header. The affected equipment was returned to normal and an investigation was begun. These events are reportable as Engineered Safeguards Features (ESF) actuations.

Troubleshooting has not definitely determined a root cause for these events. The cause is suspected to be related to maintenance activities associated with loads supplied by PDP 390-SA. If a root cause is determined for these events, it will be described in a revision to this report. The affected equipment operated as designed and was restored to its normal operating condition immediately after each event. There was no effect on 'B' safety train components. Thus, there was no safety significance to these events.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

At 0547 hours on April 17, 1988, and 2217 hours on April 20, 1988, Waterford Steam Electric Station Unit 3 was shutdown in the refueling mode when a voltage fluctuation on the 'A' train Vital Uninterruptable Bus, Power Distribution Panel (PDP) (EIIS Identifier EF-PL) 390-SA, resulted in an automatic start of the 'A' train Control Room Emergency Filtration Unit (EIIS Identifier VI-AHU), Fuel Handling Building (FHB) Emergency Filtration Unit (EIIS Identifier VG-AHU), and isolation of the 'A' train supply and return valves to the non-safety Component Cooling Water (CCW) header (EIIS Identifier CC-ISV). The affected equipment was immediately returned to normal after each event. These events are reportable as Engineered Safeguards Features (ESF) actuations.

An investigation of the cause of the events was begun by Maintenance Engineers. Initial troubleshooting determined that grounds exist in loads supplied by the 'A' train 480 VAC safety bus, 3A31-S (EIIS Identifier ED-BU). Recorders were set up to monitor the 50N1 Ground Fault Relays (EIIS Identifier ED-BKR-50) in the 3A31-S Bus feeder breakers to the Motor Control Centers (MCC) (EIIS Identifier ED-MCC). This identified grounds in the Polar Crane (EIIS Identifier LR-CRN) and 3A314-S MCC Receptacle Circuits. Testing was also begun on the 'A' train Static Uninterruptable Power Supply (SUPS) (EIIS Identifier EF) to determine the affect on the SUPS output due to voltage fluctuations in the power supply to the SUPS.

The 'A' train SUPS normally receives 480 VAC three-phase power from the 3A312-S MCC and rectifies this to 140 VDC. This is auctioneered with DC power supplied by the 3A-DC-S Bus (EIIS Identifier EJ-BU) and then inverted to 120 VAC single phase power which supplies PDP 390-SA. In each event, the "480V MCC Breaker Trip/Trouble" alarm actuated shortly prior to the "120 VAC Supply 3A-S (SUPS) Trouble" alarm and the ESF actuation. The 480 VAC MCC Breaker Trouble Alarm and the 120 VAC Supply 3A-S Trouble Alarm are received when a alarm device actuates on a 3A31-S Bus MCC Feeder Breaker or the SUPS respectively.

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

An Elgar (vendor) Field Service Engineer and Maintenance Engineers tested the SUPS on April 24, 1988. A sustained loss and rapid on-off cycling of one of three 480 VAC phases in the normal power supply and a total loss of the normal power supply to the SUPS were performed. The output of the SUPS was maintained within design limits during this testing.

Since the SUPS was found to be fully functional, it is unlikely that a fault in the 480 VAC 'A' safety train switchgear would propagate through the SUPS to cause the PDP 390-SA voltage fluctuations. Likewise, a fault on a load supplied by PDP 390-SA is not likely to actuate a 3A31-S Bus MCC Feeder Breaker protective device without tripping at least one of the several circuit breakers or protective devices between the 120 VAC and 480 VAC switchgear. Actuation of the 480 VAC MCC Breaker Trouble Alarm was observed to occur during troubleshooting on April 27, 1988, and April 29, 1988, due to the actuation of the 50N1 Ground Fault Relay in the Polar Crane Feeder Breaker. This, however, did not result in a SUPS Trouble Alarm or any ESF actuations.

Maintenance Engineers determined that the PDP 390-SA voltage fluctuations were most probably caused by a short circuit in a PDP 390-SA load. Investigation of outage maintenance activities revealed there were several work packages in progress on PDP 390-SA loads at the time of these events. Since this bus is a 120 VAC single phase ungrounded system, a short in a load circuit would cause a voltage fluctuation on the bus. Both voltage fluctuations were only momentary, indicating incidental short circuiting. Since the bus voltage restored quickly without tripping a protective device, further troubleshooting was unable to determine an exact root cause for either event.

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

The cause is suspected to be related to outage maintenance activities. If these voltage fluctuations are observed to recur, Operations personnel have been instructed to immediately take note of current maintenance activities which may have caused the event. Since it has been determined that there is potential for causing an inadvertent ESF actuation when working on the output of the safety-related SUPS and its loads, a change is being incorporated into Maintenance Directive Number 12 to classify the safety-related SUPS as high-risk equipment and to provide appropriate precautions. An engineering evaluation is in progress to verify that the observed behavior was within design tolerances for the breakers and buses involved.

The affected equipment operated as designed and was restored to normal operating conditions immediately after each event. There was no effect on 'B' safety train components. Due to the nature of the actuations which occurred, this event would probably not have caused a plant trip or transient had it occurred at power. Thus, there was no safety significance to these events.

SIMILAR EVENTS

LER 87-022

PLANT CONTACT

D.W. Vinci, Maintenance Superintendent, 504/464-3138



LOUISIANA
POWER & LIGHT / WATERFORD 3 SES • P.O. BOX 8 • KILLONA, LA 70066-0751

May 17, 1988

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QA

U.S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, D.C. 20555

SUBJECT: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Reporting of Licensee Event Report

Attached is Licensee Event Report Number LER-88-008-00 for Waterford Steam Electric Station Unit 3. This Licensee Event Report is submitted pursuant to 10CFR50.73(a)(2)(iv).

Very truly yours,

N.S. Carns
Plant Manager - Nuclear

NSC/WEM:rk

Attachment

cc: R.D. Martin, NRC Resident Inspectors Office, INPO Records Center (J.T. Wheelock), E.L. Blake, W.M. Stevenson, D.L. Wigginton

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