

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 3
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TITLE (4)
Improper Connection of Control Element Assembly Cable Resulted in Reactor Trip

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)
0	6	3	0	8	6	0	7	3	N/A		0 5 0 0 0
0	6	3	0	1	3	0	7	3	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) 1	20.402(b)	20.406(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 1 0 0	20.406(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	73.71(c)
	20.406(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.406(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	
	20.406(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	
	20.406(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME T. Payne, Instrument And Controls Assistant Maintenance Superintendent	TELEPHONE NUMBER AREA CODE: 5 0 4 4 6 4 - 3 1 3 9
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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)

<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 1141 hours on June 30, 1986 Waterford Steam Electric Station Unit 3 was operating at 100% reactor power (with the exception of two power reductions, Waterford operated at 100% power for the month of June) when operations personnel received a reactor trip due to a low Departure from Nucleate Boiling Ratio. Coincident with the trip, an Emergency Feedwater (BA) Actuation occurred. The A, A/B, and B pumps started as designed, however, water levels in the Steam Generators (AB) remained above the injection setpoint. Upon receiving the reactor trip, operations personnel immediately entered procedure OP-902-000, "Emergency Entry Procedure", and OP-902-001, "Uncomplicated Reactor Trip Recovery Procedure". Plant conditions were stabilized in mode 3 (hot standby).

The trip was due to an unlocked cable connector for Control Element Assembly (CEA)(AA) number 35. The loose connection caused the indicated position of CEA number 35 to fluctuate. Therefore, penalty factors were calculated by the Control Element Assembly Calculator (CEAC)(JC) of sufficient magnitude to generate a Core Protection Calculator (CPC)(JC) trip.

To prevent this event from recurring, maintenance personnel have revised procedure MI-13-523, "Control Element Assembly and Incore Nuclear Instrumentation Connection and Verification" such that each connector will be verified locked following reconnection of CEAs.

Since all plant protective systems functioned as designed, this event did not pose a threat to the health and safety of the public.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 6	0 1 3	0 0	0 2	OF	0 3

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

At 1141 hours on June 30, 1986 Waterford Steam Electric Station Unit 3 was operating at 100% reactor power (with the exception of two short term power reductions, Waterford operated at approximately 100% reactor power for the month of June) when operations personnel received a reactor trip on Core Protection Calculators (CPC)(JC) channels A,C, and D due to a low Departure from Nucleate Boiling Ratio (DNBR) (Channel B was bypassed). Also, coincident with the reactor trip, an Emergency Feedwater (BA) Actuation Signal occurred. The A, A/B, and B Emergency Feedwater Pumps started as designed, however, water levels in the Steam Generators (AB) remained above the injection setpoint (the pumps were running in the recirculation mode). (Due to the shrinkage of water level in the Steam Generators after a reactor trip, it is common for the Emergency Feedwater pumps to receive a start signal). Operations personnel immediately entered procedures OP-902-000, "Emergency Entry Procedure", and OP-902-001, "Uncomplicated Reactor Trip Recovery Procedure". Plant conditions were stabilized in mode 3 (hot standby).

Immediately proceeding the trip a Control Element Assembly (CEA) (AA) deviation alarm annunciated. A post trip review determined that the indicated position of CEA number 35 fluctuated from 133 to 148 inches withdrawn. The position of the CEA, as indicated by a reed switch (ZIS), is fed to the Control Element Assembly Calculators (CEAC)(JC). The CEACs sort the CEA positions and then determine CEA deviations. Penalty factors, if any, are calculated based on the deviations. The penalty factors are fed to the CPCs where, if significant, a reactor trip signal is generated. In the above event, the indicated position of CEA number 35 resulted in a deviation penalty factor of a sufficient magnitude to generate a reactor trip.

Maintenance personnel have attributed the trip to an unlocked cable connector. (Since this is not a routine maintenance item, this condition may have existed since the reinstallation of the electrical cable for CEA number 35 following the outage in March 1986). When connecting the CEA cables the connector must be twisted such that it will lock in place. Since the connection was not properly secured, the connector may have vibrated such that some of the electrical signals associated with the loose connection were erroneous. Twisting the connector to the locking position has proven to be difficult. In some instances the connector appears to be properly locked during

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		YEAR 86	SEQUENTIAL NUMBER -013	REVISION NUMBER -00			
							03 OF 03

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

reconnection, however, an examination after the reconnection proves otherwise. Therefore to assure all cables are properly connected and locked into place, procedure MI-13-523, "Control Element Assembly and Incore Nuclear Instrumentation Connection and Verification", has been revised such that maintenance personnel will be required to verify that all of the cable connectors are locked into place following reconnection of the CEAs.

In addition to that described above, operations personnel observed that during the transient the subcooling/superheat indication remained constant. The problem was attributed to a stuck pen on recorder RC-IVR-0101AS1 and 2 (TR). Maintenance personnel re-aligned the pen and recalibrated the recorder. The recorder is currently performing satisfactorily.

Although the unlocked connector resulted in a reactor trip, all plant protective systems functioned as designed. Therefore, the event did not pose a threat to the health and safety of the public.

SIMILAR EVENTS

Waterford has not experienced a reactor trip due to a CEA connector, however, on May 9, 1986 a trip occurred due to a faulty reed switch for CEA number 35.

PLANT CONTACT

T. Payne, Instrument and Controls Assistant Maintenance Superintendent, 504/464-3139



LOUISIANA
POWER & LIGHT/

WATERFORD 3 SES • PO. BOX B • KILLONA, LA 70066-0751

July 30, 1986

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QA

Director, Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

ATTENTION: Document Control Desk

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

Dear Sir:

Attached is Licensee Event Report Number LER-86-013-00 for Waterford 3.
This Licensee Event Report is submitted per 10CFR50.73(a)(2)(iv).

Very truly yours,

R.P. Barkhurst
Plant Manager - Nuclear

RPB/LWL/wp

Attachment

cc: R.D. Martin, G.W. Knighton, J.H. Wilson, NRC Resident Inspectors Office,
INPO Records Center (J.T. Wheelock), B.W. Churchill, W.M. Stevenson

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