

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Waterford 3 Steam Electric Station	DOCKET NUMBER (2) 0 5 0 0 0 3 8 2	PAGE (3) 1 OF 0 4
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TITLE (4) Loss of 4.16 KV Bus Resulting in Automatic Start of EDG and 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 9	2 9	8 5	8 5	0 4 0	0 0	1 0	2 9	8 5	N/A		0 5 0 0 0
									N/A		0 5 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)										
	20.402(b)			20.405(c)			X 50.73(a)(2)(iv)			73.71(b)	
	20.405(a)(1)(i)			50.36(e)(1)			50.73(a)(2)(v)			73.71(c)	
	20.405(a)(1)(ii)			50.36(c)(2)			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)			50.73(a)(2)(viii)(A)				
	20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)				
POWER LEVEL (10) 0 9 2	20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(ix)				

LICENSEE CONTACT FOR THIS LER (12)									
NAME T. Smith, Maintenance Superintendent								TELEPHONE NUMBER 5 0 4 4 6 4 - 3 1 3 8	

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs		
B	J/K	I/S/C	W 1 2 0	Y							

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)

ABSTRACT

At 1108 hours on September 29, 1985 Waterford 3 Steam Electric Station was at 92% reactor power when Operations personnel attempted to transfer plant auxiliaries from the Startup Transformer to the Unit Auxiliary Transformer. Upon turning the transfer switch for Unit Auxiliary Transformer A to the "UAT" position, 4.16 kV breaker EBKR-2A-1 closed and immediately tripped. Since the startup breaker was opened during the transfer process, the 4.16 kV bus experienced an undervoltage condition. Immediately thereafter Emergency Diesel Generator A started and supplied power to the appropriate safety bus. Coincident with the above event Main Feedwater Pump B experienced an overspeed condition and subsequently tripped. The water level in Steam Generator number 2 decreased until, at 1109 hours, the low level reactor trip and Emergency Feedwater Actuation Signal setpoint was reached. Plant conditions were subsequently stabilized in mode 3 (hot standby).

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APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

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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)

NARRATIVE

At 1108 hours on September 29, 1985 Waterford 3 Steam Electric Station was at 92% reactor power when Operations personnel attempted to transfer plant auxiliaries from the Startup Transformer to the Unit Auxiliary Transformer as described in procedure OP-6-001, "Plant Distribution Systems". Upon turning the transfer switch for Unit Auxiliary Transformer A to the "UAT" position, 4.16 kV breaker EBKR-2A-1 closed and immediately tripped. Since power was no longer being supplied to the 4.16 kV bus (the 4.16 kV breaker for the Startup Transformer opens when the transfer switch is turned to the "UAT" position), all loads associated with the bus were deenergized. Due to the undervoltage condition Emergency Diesel Generator A started and supplied power to the 4.16 kV safety bus. However, since the non-safety bus remained deenergized, all loads associated with the non-safety bus tripped.

Coincident with the above event, at 1108 hours, Main Feedwater Pump B experienced an overspeed condition and subsequently tripped. The water level in Steam Generator number 2 started to decrease until, at 1109 hours, the low level reactor trip and Emergency Feedwater Actuation Signal setpoint was reached. Operations personnel immediately entered Emergency Procedure OP-902-000, "Emergency Entry Procedure" and OP-902-001, "Uncomplicated Reactor Trip Recovery Procedure". Plant conditions were subsequently stabilized in mode 3 (hot standby).

Following the reactor trip plant personnel reviewed all available data in an effort to determine the cause of the overspeed condition on Main Feedwater Pump B. An investigation of the feedwater pump governing control system revealed that the governor cup valve seat was slightly smaller than required. Therefore, as the cup valve moved up and down to establish control oil pressure, the cup valve seat would follow. As the seat lifts, control oil pressure increases, and the speed sensing governor senses an increase in turbine speed. Due to the undersized cup valve seat, a small increase in turbine speed demand will result in a much larger than expected response. Since Heater Drain Pump A and C tripped due to the loss of the 4.16 kV non-safety bus, the decrease in feedwater flow caused an increase in speed of both feedwater pumps (the Feedwater

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

Control System was in automatic throughout the event). Therefore, due to the undersized cup valve seat, the increase in speed demand precipitated the B Feedwater Pump trip.

SAFETY CONSEQUENCES AND IMPLICATIONS

The above events resulted in a loss of the 4.16 kV and associated auxiliaries, along with an automatic actuation of the Reactor Protective System. Since all automatic features functioned as designed, the above event in no way endangered the health and safety of plant personnel and the general public.

CORRECTIVE ACTION

Strip chart recorders were installed on the Unit Auxiliary Transformer to determine the cause of the 4.16 kV breaker trip. The results revealed that the breaker was receiving a valid interlock trip signal. However, the source of the trip signal could not be ascertained. As part of the system design, an interlock feature ensures proper breaker alignment during the transfer process. Initially, Plant personnel suspected that the interlock timing was too short. However, an increase in the interlock time from .5 second to 1 second did not alleviate the problem. Plant personnel subsequently removed the trip logic for the problem breaker and the transfer was made satisfactorily. The trip logic was reinstated following the transfer, however, testing could not be completed because plant loads are being supplied via the unit Auxiliary Transformer. Further testing, along with necessary repairs, will be completed at the next available opportunity.

The undersized cup valve seat described above has been replaced.

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SIMILAR EVENTS

NONE

PLANT CONTACT

T. Smith, Maintenance Superintendent, 504/464-3138



LOUISIANA
POWER & LIGHT

142 DELARONDE STREET
P. O. BOX 6008 • NEW ORLEANS, LOUISIANA 70174 • (504) 366-2345

October 29, 1985

W3P85-3256
A4.05
QA

Director, Office of Nuclear Reactor Regulation
ATTENTION: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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

Dear Sirs:

Attached is Licensee Event Report Number LER-85-040-00 for the Waterford 3 Steam Electric Station. This Licensee Event Report is submitted per 10CFR50.73(a)(2)(iv).

Very truly yours,

K.W. Cook
Nuclear Support & Licensing Manager

KWC:GEW:sms

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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