

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9008310218 DOC.DATE: 90/08/27 NOTARIZED: NO DOCKET #
 FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
 AUTH.NAME AUTHOR AFFILIATION
 POWELL,D.R. Florida Power & Light Co.
 HARRIS,K.N. Florida Power & Light Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-011-01:on 900609,hi-hi steam generator water level
 turbine trip & subsequent reactor trip.

W/9 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 2
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL		RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	
	PD2-2 LA	1	1	PD2-2 PD	1	1
	EDISON,G	1	1			
INTERNAL:	ACNW	2	2	AEOD/DOA	1	1
	AEOD/DSP/TPAB	1	1	AEOD/ROAB/DSP	2	2
	NRR/DET/ECMB 9H	1	1	NRR/DET/EMEB9H3	1	1
	NRR/DLPQ/LHFB11	1	1	NRR/DLPQ/LPEB10	1	1
	NRR/DOEA/OEAB11	1	1	NRR/DREP/PRPB11	2	2
	NRR/DST/SELB 8D	1	1	NRR/DST/SICB 7E	1	1
	NRR/DST/SPLB8D1	1	1	NRR/DST/SRXB 8E	1	1
	REG FILE 02	1	1	RES/DSIR/EIB	1	1
	RGN2 FILE 01	1	1			
EXTERNAL:	EG&G BRYCE,J.H	3	3	L ST LOBBY WARD	1	1
	NRC PDR	1	1	NSIC MAYS,G	1	1
	NSIC MURPHY,G.A	1	1	NUDOCS FULL TXT	1	1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,
 ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION
 LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED
 TOTAL NUMBER OF COPIES REQUIRED: LTTR 31 ENCL 31

AD 4/2/90



AUG 27 1990

L-90-288
10 CFR 50.73

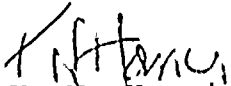
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 90-11-01
Date of Event: June 9, 1990
Hi-Hi Steam Generator Water Level Turbine Trip And
Subsequent Reactor Trip Due to Failure of a Switch in a
Feedwater Valve Controller Hand/Auto Station

The attached Licensee Event Report is revision 1 to LER 50/250-90-011-00. This LER is being submitted pursuant to the requirements of 10 CFR 50.73 to provide the results of the vendor analysis of the failed switch and to provide additional information on the cooldown event that accompanied the reactor trip.

Very truly yours,


K. N. Harris
Vice President
Turkey Point Plant Nuclear

KNH/DPS/dps

attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II,
USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

03285

9008310218 900827
PDR ADQCK 05000250
S PDC

TF22
1/1

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Turkey Point Unit 3										DOCKET NUMBER (2) 0 5 0 0 0 2 5 10										PAGE (3) 1 OF 6																																																						
TITLE (4) Hi-Hi Steam Generator Water Level Turbine Trip and Subsequent Reactor Trip Due To Failure Of A Switch In A Feedwater Valve Controller Hand/Auto Station																																																																										
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			0 9			9 0			9 0			0 1			1 1			0 1			0 8			2 7			9 0															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)																																																											
POWER LEVEL (10) 0 12 6															20.402(b)															20.406(a)															<input checked="" type="checkbox"/> 90.73(a)(2)(iv)															73.71(b)														
															20.406(a)(1)(i)															90.36(a)(1)															<input type="checkbox"/> 90.73(a)(2)(v)															73.71(c)														
															20.406(a)(1)(ii)															90.36(a)(2)															<input type="checkbox"/> 90.73(a)(2)(vi)															OTHER (Specify in Abstract below and in Text, NRC Form 308A)														
															20.406(a)(1)(iii)															90.73(a)(2)(iii)															<input type="checkbox"/> 90.73(a)(2)(vii)(A)																													
															20.406(a)(1)(iv)															90.73(a)(2)(ii)															<input type="checkbox"/> 90.73(a)(2)(vii)(B)																													
															20.406(a)(1)(v)															90.73(a)(2)(iv)															<input type="checkbox"/> 90.73(a)(2)(viii)																													
															20.406(a)(1)(vi)															90.73(a)(2)(v)															<input type="checkbox"/> 90.73(a)(2)(ix)																													
LICENSEE CONTACT FOR THIS LER (12)																																																																										
NAME D. R. Powell, Superintendent of Licensing																				TELEPHONE NUMBER AREA CODE 3 0 5 2 4 6 - 6 5 5 9																																																						
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																																										
CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NPPDS				CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NPPDS																																																						
X		S J		F C I O		X 9 9 9		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 words, i.e., approximately fifteen single-space typewritten lines) (16)

On June 9, 1990, at 0648 EDT, with Unit 3 in Mode 1 (Power Operation) at 26 percent power and Unit 4 in Mode 1 at 100 percent power, Unit 3 experienced a Hi-Hi steam generator water level turbine trip and subsequent reactor trip. All safety systems performed as designed. After the trip, the operators stabilized the unit in Mode 3 (Hot Standby) by using applicable procedures. The cause of this event was a malfunction of the 3C feedwater regulator hand/auto station open pushbutton switch for valve controller FC-3-498F. The switch is a momentary action switch designed to spring back to the "no contact" position upon release. The switch was found sprung back to the "no contact" position, but the switch contacts were still closed. This resulted in a full open demand signal causing the 3C feedwater regulating valve to fully open. The failed 3C feedwater regulating valve hand/auto station and the hand/auto station for the 3B feedwater regulating valve were replaced with hand/auto stations having new style switches. The hand/auto station for the 3A feedwater regulating valve had been replaced in June, 1989. On June 9, 1990, at 0716 EDT, the NRC was notified of this event in accordance with 10 CFR 50.72(b)(2)(ii).

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 3	0 5 0 0 0 2 5 0	9 0	0 1 1	0 1	0 2	OF	0 1

TEXT (If more space is required, use additional NRC Form 364A's) (17)

I. EVENT DESCRIPTION

On June 9, 1990, at 0637 EDT, Unit 3 was paralleled to the Florida Power and Light grid. At 0646 EDT, while increasing power in accordance with procedure 3-GOP-301, "Hot Standby to Power Operation," with feedwater still in manual control, a reactor control operator noticed an increase in "C" steam generator (JB) (SG) water level, feedwater flow, and demand signal to main feedwater regulating valve FCV-498 (SJ) (FCV). The operator attempted, without success, to override the opening signal to the valve by depressing the close pushbutton switch.

On June 9, 1990, at 0648 EDT, with Unit 3 in Mode 1 (Power Operation) at 26 percent power, a Unit 3 Hi-Hi steam generator turbine trip and subsequent reactor trip occurred due to the failure of feedwater valve hand/auto control station 3C in the valve full open demand position. After the trip, the operators stabilized the unit in Mode 3 (Hot Standby) by using applicable procedures.

On June 9, 1990, at 0716 EDT, the NRC was notified of this event in accordance with 10 CFR 50.72(b) (2) (ii).

II. EVENT CAUSE

The cause of this event was a malfunction in the 3C feedwater regulator hand/auto station open pushbutton switch (SJ) (FCO). The switch is a momentary action pushbutton switch designed to spring back to the "no contact" position upon release. The pushbutton was found sprung back indicating "no contact," but the contacts were still closed. The resulting high demand signal forced the 3C feedwater regulating valve fully open. The failure occurred while the operator was increasing feed flow to steam generator 3C. Testing showed the failure to be intermittent and internal to the switch. The failed switch was sent to the manufacturer for failure analysis. The vendor stated that no gross defects were noted and that the failure of the switch was caused by end of life (worn out).

III. EVENT SAFETY ANALYSIS**A. Reactor Trip**

A reactor (AA) (RCT) trip due to a turbine (TA) (TRB) trip at power is a previously analyzed event. As a result of these analysis, plant procedures are developed to provide operator guidance in responding to these transient conditions and to assure that the plant is stabilized in a safe condition. The unit was stabilized in Mode 3 in accordance with these approved plant procedures. All safety related equipment operated per design.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 3	0 5 0 0 0 2 5 0	9 0	— 0 1 1	— 0 1	0 3	OF	0 6

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

B. June 9, 1990, Post Trip Cooldown

The reactor engineering group examined post trip cooldown reactivity to ensure the minimum shutdown margin was maintained. The reactor engineering group determined that the reactivity insertion due to the post trip cooldown did not cause a violation of the shutdown margin requirement.

C. Analysis to Determine Fuel Cycle 12 Shutdown Margin Minimum Temperature For Units 3 and 4

A subsequent detailed Post Trip RCS Cooldown Analysis for the Unit 3 and Unit 4 Cycle 12 fuel load assuming end of life temperature coefficients was performed. (Fuel cycle 12 is the current cycle for Unit 3 and Unit 4.) This report determined the conservative worst case (end of fuel cycle with most reactive rod stuck in the fully withdrawn position) limiting average RCS temperature to be 518 degrees Fahrenheit for Unit 3 and 512 degrees Fahrenheit for Unit 4. The beginning of cycle or mid fuel cycle limiting average RCS temperature value would be lower.

D. Evaluation of June 9, 1990, Cooldown Using Most Recently Determined Shutdown Margin Minimum Temperature

Had this event occurred at end of core life with the most reactive control rod stuck in the fully withdrawn position, the minimum shutdown margin would not have been violated. Since this event occurred early in core life (second month after refueling) with all rods fully inserted, the minimum shutdown margin was maintained. See Section V. of this LER for additional information on the cooldown.

IV. CORRECTIVE ACTIONS

On June 9, 1990, the failed hand/auto station was replaced with a hand/auto station having new style switches. The 3B feedwater regulator hand/auto station was also replaced with the new hand/auto station having the new style switches. The 3A feedwater regulator hand/auto station had already been replaced in June, 1989. In addition, the Unit 4 feedwater regulator hand/auto switches will be replaced during the upcoming dual unit outage currently scheduled to begin in November, 1990.

The failed switch was sent to the Vendor for failure analysis. The vendor stated that no gross defects were noted and that the failure was caused by end of life. FPL is currently reviewing the failure data of these switches to determine a periodicity for a regularly scheduled replacement of these switches and other switches of the same type used in other safety related systems. This review is scheduled to be completed by October 31, 1990.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 3	0 5 0 0 0 2 5 0	9 0	— 0 1 1	— 0 1	0	4	OF 0 6

TEXT (If more space is required, use additional NRC Form 364A's) (17)

V. ADDITIONAL INFORMATION**A. Similar Events**

A similar sticking of the 3B feedwater regulator hand/auto station switch occurred on February 26, 1989. No corrective actions were taken at that time because the problem could not be duplicated when the switch was test operated.

B. Equipment Failures

Feedwater regulator hand/auto station open pushbutton switch

Manufacturer: Jayel Products Inc.
Manufacturer Part Number: C10520-1-0-Z
Vendor: Westinghouse
Vendor Part Number: 181827-004
Manufacturer Date/Code Stamp: 08719 6947

C. Additional Information on Post Trip Conditions**1. Post Trip Cooldown**

Emergency Operating Procedure, EOP-ES-0.1, "Reactor Trip Response," requires boration when the average temperature in the reactor reaches 524 degrees Fahrenheit. For this event, the lowest average temperature reached during the transient was approximately 523 degrees Fahrenheit. This temperature was reached about 33 minutes after the reactor trip (approximately 0721 EDT). The RCS average temperature was below 524 degrees for only a short time. The temperature was restored to 547 degrees by 0730 EDT.

2. Procedural Requirements For Boration

Boration at 524 degrees Fahrenheit was not performed because of procedural inadequacy. EOP-ES-0.1 had been exited to a normal operating procedure 3-GOP-103, "Power Operation To Hot Standby," when the RCS average temperature appeared stable at about 528 degrees Fahrenheit. No boration occurred as a result because general operating procedure 3-GOP-103 had no provision for boration at 524 degrees Fahrenheit and emergency operating procedure EOP-ES-0.1 had already been exited. In addition, the RCS average temperature was not confirmed to have dropped below the procedural limits of EOP-ES-0.1 until after the Unit RCS average temperature had returned above 524 degrees. As part of the review of the cooldown event, Off-Normal Operating Procedure, ONOP 046.1, "Emergency Boration," was reviewed. This procedure is entered during events when

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO 3150-0104
EXPIRES 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 3	0 5 0 0 0 2 5 0	9 0	- 0 1 1	- 0 1	0 5	OF	0 1

TEXT (If more space is required, use additional NRC Form 364A's) (17)

boration is necessary. During a cooldown event, operators would normally enter the ONOP to borate at the RCS average temperature designated in the ONOP. However, the ONOP erroneously listed the emergency boration temperature to be 500 degrees Fahrenheit instead of the 524 degrees designated in the EOP.

3. Emergency Boration Criteria

As discussed in the Analysis section above, boration at 524 degrees Fahrenheit, although required by the EOP-ES-0.1, was not necessary to meet the shutdown margin criteria in this event. This is based on the latest detailed Post Trip RCS Cooldown Analysis for Unit 3 which determined that the conservative end of life minimum shutdown margin is 518 degrees Fahrenheit.

4. Cooldown Limited By Operator Actions

The RCS average temperature did not stay below 524 degrees Fahrenheit long because of the actions taken by the operators to limit the cooldown. These actions, initiated in accordance with EOP-ES-0.1, stabilized the temperature at approximately 528 degrees Fahrenheit at approximately 0706 EDT. After entering the GOP, the temperature drifted down slightly as operators took actions to restore the temperature to 547 degrees Fahrenheit. The low temperature, 523 degrees Fahrenheit was reached at approximately 0721 EDT. By 0730 EDT, the Unit was stabilized at 547 degrees Fahrenheit in accordance with 3-GOP-103.

5. Corrective Actions to Prevent Failures to Borate During Excessive Cooldowns

- a. To ensure the minimum shutdown margin is met during plant cooldowns and to resolve procedural discrepancies, the RCS average temperature setpoint for initiation of emergency boration in Procedures 3-ONOP-046.1 and 4-ONOP-046.1, "Emergency Boration," has been revised to 525 degrees Fahrenheit and Emergency Operating Procedure EOP-ES-0.1, "Reactor Trip Response," has been revised to reference procedure ONOP-046.1 at 525 degrees Fahrenheit. This setpoint is sufficiently above the shutdown margin minimum temperature to allow time for emergency boration before reaching the minimum shutdown margin average RCS temperature. In addition ES-1.1, "Safety Injection Termination," was revised to include the same 525 degrees Fahrenheit setpoint.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 3	0 5 0 0 0 2 5 0	9 0	0 1 1	0 1	0 6	OF	0 6

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

- b. To enhance awareness of end of core life affects, all licensed operators in watch rotation will receive additional instructions in the importance of maintaining the minimum shutdown margin temperatures and the changes in ONOP-046.1 and EOP-ES-0.1. This review will be complete by September 30, 1990.
- c. Inter-office memo PTN-RE-90-102, "Post-Trip Limiting Cooldown Temperature Verification," was issued on August 9, 1990. This memo states that the limiting temperature for post-reactor trip cooldowns shall be evaluated by site Reactor Engineering prior to restart following each refueling outage. In addition, the emergency boration temperature setpoints in applicable procedures will be revised if the new limiting temperature for post-reactor trip cooldowns is calculated to be greater than 520 degrees Fahrenheit.

