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SUBJECT: LER 90-010-00:on 900910,TS 3.0.1 entry - Train B undervoltage protection circuit inoperable.

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L-90-354
10 CFR 50.73

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

Gentlemen:

Re: Turkey Point Unit 4
Docket No. 50-251
Reportable Event: 90-010
Date of Event: September 10, 1990
Technical Specification 3.0.1 Entry - Train B
Undervoltage Protection Circuit Inoperable

The attached Licensee Event Report is being provided pursuant to the requirements of 10CFR50.73 to provide information on the subject event.

Very truly yours,

K. N. Harris
Vice President
Turkey Point Nuclear Plant

KNH/DRP/dwh

Attachment

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

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PDR ADOCK 05000251
S PDC

NRC Form 366
(9 83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Turkey Point Unit 4	0 5 0 0 0 2 5 1	1 OF 0 4

TITLE (4) Technical Specification 3.0.1 Entry - Train B Undervoltage Protection Circuit Inoperable

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	1 0	9 0	9 0	0 1 0	0 0	1 0	0 1	9 0	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)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	X 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)	X 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)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
David R. Powell, Licensing Superintendent	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 NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	E J	F U	X 9 9 9	Y					

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At 1515 on September 10, 1990, with Unit 4 in Mode 1 at 100 percent power, an alarm was received on Control Room annunciator X-6/5, "4KV System - Bus A and B Loss of Voltage Fuse Failure." At 1605, Electrical Maintenance personnel notified the Plant Supervisor - Nuclear (PSN) that one of the two FU-2 undervoltage protection fuses in the 4B sequencer relay cabinet was blown. The blown fuse rendered the Train B undervoltage protection circuit inoperable. In accordance with Technical Specification (TS) 3.5.1, Unit 4 entered TS 3.0.1 at this time. The specific cause for the blown fuse cannot be determined. Two possible causes for the blown fuse were postulated by the fuse vendor. First, the fuse sensed a low level fault current and opened as designed. FPL confirmed that no testing or maintenance was being performed on the circuit protected by the fuse. Second, the fuse experienced cyclic exposure to small current surges over a period of time which led to degradation of the fuse element. This could not be confirmed through analysis of the blown fuse. At 1715, the fuse was replaced in the 4B sequencer relay cabinet and the Train B undervoltage protection circuit was declared operable. Unit 4 exited TS 3.0.1 at this time. A representative sample of the FU-1, FU-2 and FU-3 fuses used in the Unit 3 and Unit 4 undervoltage protection circuits will be replaced. The old fuses will be sent to the vendor for analysis.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

DESCRIPTION OF THE EVENT

At 1515, on September 10, 1990, with Unit 4 in Mode 1 at 100 percent power, an alarm was received on Control Room annunciator X-6/5, "4KV System - Bus A and B Loss of Voltage Fuse Failure." Off-Normal Operating Procedure (ONOP) 0208.12, "Annunciator List - Panel X - Common," was entered. Breaker 5 in the 4A DC Panel and breaker 12 in the 4B DC Panel were verified to be closed. A Plant Work Order was issued to check the undervoltage protection circuit control power fuses in the sequencer relay cabinets.

At 1605, Electrical Maintenance personnel notified the Plant Supervisor - Nuclear (PSN) that one of the two FU-2 undervoltage protection circuit control power fuses (EIIS:EJ, Component:FU) in the 4B sequencer relay cabinet was blown. The blown fuse rendered the Train B undervoltage protection circuit inoperable.

Technical Specification (TS) 3.5.1 states that TS 3.0.1 applies to TS Table 3.5-2. When the Train B undervoltage protection circuit was declared inoperable, the requirements of TS Table 3.5-2, Item 3.2.a, were not met. At 1605, Unit 4 was placed in TS 3.0.1 as required by TS 3.5.1.

At 1715, a replacement fuse was installed in the 4B sequencer relay cabinet and the Train B undervoltage protection circuit was declared operable. Unit 4 exited TS 3.0.1 at this time.

CAUSE OF THE EVENT

The specific cause for the blown fuse cannot be determined. The fuse was returned to the vendor for analysis. The vendor determined the fuse failed in a manner consistent with its protection function. No abnormalities were observed. Two possible causes for the blown fuse were postulated by the vendor.

The first cause postulated was that the fuse sensed a low level fault current and opened as designed. FPL confirmed that no maintenance or testing was being performed on the circuit being protected by the fuse. No problem was experienced when the replacement fuse was installed in the circuit.

The second cause postulated was that the fuse experienced cyclic exposure to small current surges over a period of time which led to degradation of the fuse element. This could not be confirmed through analysis of the blown fuse.

ANALYSIS OF THE EVENT

The undervoltage protection circuit prevents operation of plant equipment when an undervoltage condition exists on either the A or B 4160 Volt Buses or when a degraded voltage condition exists for a predetermined amount of time on any of the A, B, C or D 480 Volt Load Centers. Train B is comprised of 4160 Volt Bus 4B, 480 Volt Load Center Bus 4B and 480 Volt Load Center Bus 4C.

The undervoltage logic initiates bus stripping, emergency diesel starting, emergency diesel generator (EDG) breaker closing, sequencer timer operation and sequential starting of engineered safeguards equipment on the affected bus. A blown FU-2 fuse in the 4B sequencer relay cabinet rendered the Train B undervoltage protection circuit inoperable.

Because of the failed fuse, bus stripping would not have occurred on 4160 Volt Bus 4B. This condition would not have allowed the "B" EDG output feeder breaker to the bus to close. In the event that one EDG is not available, the available EDG is capable of supporting those loads associated with achieving and maintaining a "hot shutdown" condition in one unit while mitigating a postulated accident in the other unit. During this event, the "A" and "B" EDGs remained operable, no Unit 4 Train A safeguards equipment was out of service, and no degraded voltage or loss of AC condition occurred.

CORRECTIVE ACTIONS

1. A replacement fuse was installed in the 4B sequencer relay cabinet and the Train B undervoltage protection circuit was declared operable.

2. A representative sample of the FU-1, FU-2 and FU-3 fuses used in the Unit 3 and Unit 4 4160 Volt Bus undervoltage protection circuits will be replaced during the dual unit outage scheduled to commence in November, 1990. The old fuses will be sent to the vendor for analysis. Vendor recommendations, if any, will be reviewed. Corrective actions will be taken, as deemed necessary.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Turkey Point Unit 4	0 5 0 0 0 2 5 1	9 0	— 0 1 0	— 0 0	0 4 OF 0 4

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

ADDITIONAL INFORMATION

No similar events have been identified.

The blown fuse was a FRN-15 time delay/dual element fuse manufactured by Bussman. Manufacture of this fuse was discontinued in the early 1980's.