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ACCESSION NBR:9101230310 DOC.DATE: 91/01/17 NOTARIZED: NO DOCKET #
 FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light c 05000250
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 PLUNKETT,T.F. Florida Power & Light Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-018-01:on 891212,use of single manual SI block/
 unblock switch for both trains of SI outside design basis.
 Caused by inadequate original plant design.Info explaining
 potential single failure mode provided to personnel.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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L-91-002

10 CFR 50.73

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

Gentlemen:

Re: Turkey Point Units 3 and 4
Docket No. 50-250 and 50-251
Reportable Event: 89-018-01
Date of Event: December 12, 1989
Plant Operating Outside of it's Design Basis Due to a
Design Inadequacy of the Safety Injection Block Switch

The attached revision 1 to Licensee Event Report 250-89-018-00
is being provided pursuant to the requirements of 10 CFR 50.73
to provide additional information on the subject event.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Nuclear

TFP/DPS/ds

enclosures

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

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Turkey Point Unit 3										DOCKET NUMBER (2) 0 5 0 0 0 2 5 0					PAGE (3) 1 OF 0 5							
TITLE (4) Plant Operating Outside Of Its Design Basis Due To A Design Inadequacy Of The Safety Injection Block Switch																						
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)									
									Turkey Point Unit 4				0 5 0 0 0 2 5 1									
1	2	1	2	8	9	8	9	0	1	8	0	1	0	1	1	7	9	1	0 5 0 0 0 1 1			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																				
1		20.402(b)					20.405(c)					50.73(a)(2)(iv)					73.71(b)					
POWER LEVEL (10)		20.405(a)(1)(i)					50.36(c)(1)					50.73(a)(2)(v)					73.71(c)					
1 10 10		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)										
		20.405(a)(1)(v)					50.73(a)(2)(iii)					50.73(a)(2)(ix)										
LICENSEE CONTACT FOR THIS LER (12)																						
NAME										TELEPHONE NUMBER												
David R. Powell, Licensing Superintendent										3 0 5 2 4 6 - 1 6 5 5 9												
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																						
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS												
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)

On December 12, 1989, with Turkey Point Unit 3 in Mode 1 (power operation) at 100 percent power and Unit 4 in Mode 1 at 40 percent power, the Plant Nuclear Safety Committee (PNSC) determined that the use of a single manual Safety Injection (SI) block/unblock switch (Westinghouse OT2 switch using a stack of four OT2A contact blocks) for both trains of SI was outside the design basis for both units. During a control room design review concerning placement of controls on the control room control boards at the Point Beach Nuclear Plant, the use of a single manual SI block/unblock switch for both safety injection trains was questioned. A subsequent review by Wisconsin Electric engineering determined that a single mechanical failure of this switch could block both trains of SI. On September 16, 1988, Point Beach issued Licensee Event Report 88-07 describing in detail their review and conclusions. After being contacted by the NRC, Westinghouse notified Turkey Point and other applicable Westinghouse facilities. Turkey Point Units 3 and 4 are currently shut down for the 1991 dual unit outage. A separate SI block switch will be installed for each train of SI during this dual unit outage.

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Turkey Point Unit 3	0 5 0 0 0 2 5 0	8 9	— 0 1 8	— 0 1	0 2	OF	0 5

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

DESCRIPTION OF THE EVENT

On September 16, 1988, Point Beach Nuclear Plant submitted a Licensee Event Report (LER) to the NRC addressing a design deficiency with their control room Safety Injection (SI) block circuit. In a letter dated October 26, 1989, FPL was notified by Westinghouse relating that the SI block circuit concern was potentially applicable to Turkey Point Units 3 and 4. On December 12, 1989, it was determined that this condition resulted in Units 3 and 4 being outside their design basis as described in the Final Safety Analysis Report (FSAR). At this time, Unit 3 was running at 100 percent power while Unit 4 was at 40 percent power. At 1459 EST, December 12, 1989, the NRC was notified of this event in accordance with the requirements of 10CFR50.72 (b) (1) (ii) (B).

The SI block circuit mentioned above is part of the Safety Injection System (EIIIS:BQ). Each Unit is provided with two redundant trains of safety injection designed to protect the core from various postulated loss of coolant accidents. Two trains are provided so that a single failure will not cause a loss of SI function.

Manual blocking of both trains of safety injection is achieved using a single Westinghouse OT2 control switch located on the control board. This switch is a three position cam (Block, Neutral, Unblocked) spring return to neutral switch. Four Westinghouse OT2A contact blocks are stacked together and operated by a single selector switch. Each block provides a normally closed set of contacts on one side (unblocked) of the contact block and a normally open set of contacts (blocked) on the other side of the contact block.

A failure of the SI block switch "block" (normally open) contacts in the closed position would result in a loss of some SI actuations whenever RCS pressure drops to less than 2000 psig and Tavg is less than 543 degrees F. High containment pressure SI or manual SI initiation are not affected by the block circuit. This condition does not meet the requirement of the plant's instrumentation and control section of the FSAR as described in Chapter 7.

On November 6, 1990, FPL Quality Assurance personnel discovered that Off-Normal Operating Procedures 3/4-ONOP-049, "Re-energizing Safeguard Racks After Loss of Single Power Supply," require the SI block switch to be held in the "block" position while re-energizing safeguard racks above the permissive setpoint of 2000 psig. This action would be taken to prevent

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

an inadvertent SI due to relay chatter. Provisions do not exist for testing the SI block switch after this manipulation to ensure that the switch has returned to the neutral position. However, no evidence has been located which would confirm that this switch manipulation has been performed above the permissive setpoint since our corrective actions for the SI block switch were implemented on January 31, 1990.

While evaluating possible methods to test the SI block switch above the permissive setpoint of 2000 psig, two concerns related to previously performed SI block switch operability testing were identified. First, in LER 50-250/89-018-0, FPL committed to revise procedure 0-OSP-200.2, "Plant Startup Surveillances," by January 31, 1990. This revision was to include a requirement for performing an electrical test of the SI block switch prior to exceeding 2000 psig or exceeding 543 degrees F. Procedure 0-OSP-200.2 was revised on January 31, 1990. However, the SI block switch electrical testing was identified as a Mode 2 (Startup) entry constraint. Plant parameters of 2000 psig and 543 degrees F are attained in Mode 3 (Hot Standby). The SI block switch electrical testing was being performed after exceeding 2000 psig and 543 degrees F.

Second, FPL determined that electrical testing does not fully demonstrate SI block switch operability unless the SI circuit is in the "unblocked" condition under the permissive setpoint of 2000 psig. During normal shutdowns, the SI circuit is blocked while below the permissive setpoint of 2000 psig. Personnel responsible for developing the electrical test did not recognize this operational constraint. Since the SI block switch electrical test originally committed to did not demonstrate SI block switch operability, a visual inspection test was implemented in its place. On November 15, 1990, the Unit 3 and Unit 4 SI block switch contacts were visually verified to be in the correct position.

CAUSE OF THE EVENT

The cause of this condition was an inadequate original plant design. During the construction phase of Turkey Point Nuclear Power Plant, the SI block circuit design did not consider the effect of a potential switch failure on the design redundancy requirements.

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

ANALYSIS OF THE EVENT

The loss of redundancy being reported in this LER involves a postulated mechanical failure of the SI blocking switch. A safety evaluation of the SI block switch indicated an extremely low probability of failing in the postulated manner.

The SI block switch does not affect the operability of the Safety Injection System when above the permissive setpoint of 2000 psig. However, if the block switch were to experience the postulated failure after being manipulated, then three of the four automatic SI actuation signals would be blocked when pressure decreased below the permissive setpoint of 2000 psig. The three conditions that automatically initiate SI which could be affected by the switch failure are Low Pressurizer Pressure, High Steam Line differential pressure between any steam generator and the main steam header, and high steam flow coincident with either low steam generator pressure or low Tavg. Phase A Containment Pressure High SI and manual SI initiation are not affected by the postulated switch failure. Additionally, if valid SI signals were automatically blocked, plant Emergency Operating Procedure procedures direct the operator to manually initiate SI.

CORRECTIVE ACTIONS

A. Immediate Corrective Actions

- 1) Information explaining the potential single failure mode of the SI block switch was provided to operations personnel.
- 2) A visual inspection of the Unit 3 and 4 SI block switches verified that the switch contacts were in the correct position.

B. Corrective Actions to Prevent Recurrence

Turkey Point Units 3 and 4 are currently shut down for the 1991 dual unit outage. Separate SI block switches will be installed for each train of SI during this dual unit outage.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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ADDITIONAL INFORMATION

Licensee Event Report 250/87-016-0, issued June 25, 1987, reported an inadvertent actuation of the Unit 3 Train A Safety Injection System.

