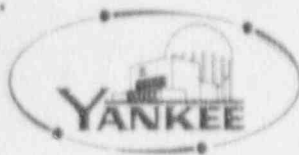


YANKEE ATOMIC ELECTRIC COMPANY

Telephone (413) 424-5261



Star Route, Rowe, Massachusetts 01367

December 7, 1990
BYR 90-161

TO: NRC - DOCUMENT CONTROL DESK
DOCUMENT: LICENSEE EVENT REPORT, LER
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U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: Licensee Event Report No. 50-29/90-010
Manual Actuation of the Reactor Protection System
During Pre-Startup Testing

Dear Sir:

In accordance with 10 CFR 50.73(a)(2)(iv), the attached
Licensee Event Report is hereby submitted.

Very truly yours,

Normand N. St. Laurent
Plant Superintendent

LDF/pkg
ENCLOSURE

cc: [3] NSARC Chairman (YAEC)
[1] Institute of Nuclear Power Operations (INPO)
[1] USNRC, Region I
[1] Resident Inspector

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Yankee Nuclear Power Station, Rowe, MA. 01367	DOCKET NUMBER (2) 0 5 0 0 0 0 2 9 1	PAGE (3) 1 OF 0 3
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TITLE (4)
Manual Actuation of the Reactor Protection System During Pre-Startup Testing

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)	
1 1	0 8	9 0	9 0	0 1 0	0 0	1 2	0 7	9 0	0 5 0 0 0	
									0 5 0 0 0	

OPERATING MODE (9) 3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)									
POWER LEVEL (10) 0 0 1 0	<input type="checkbox"/> 20.405(b)	<input type="checkbox"/> 20.405(i)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.38(a)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.38(a)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366)						
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)							
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
<input type="checkbox"/> 20.405(a)(1)(vi)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(ix)								

LICENSEE CONTACT FOR THIS LER (12)	
NAME Gregory A. Maret, Technical Director	TELEPHONE NUMBER AREA CODE 4 1 3 4 2 4 - 5 2 6 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

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 November 8, 1990, at 1514 hours, with the plant in Mode 3 at 0% power, during pre-startup testing of the reactor rod control system, the licensed reactor operator manually actuated the Reactor Protection System. This action was appropriately taken by the reactor operator upon receipt of the reactor scram alarm and indication that the reactor scram breakers remained closed and the control rods remained in position. Following the manual scram signal all indications showed that the scram breakers opened and the control rods inserted into the core.

The cause of the reactor scram alarm could not be determined and subsequent testing could not reproduce the conditions which led the operator to initiate a manual scram.

At no time during this event was the plant in an unanalyzed condition. There were no further challenges to any Engineered Safety Feature beyond the manual actuation of the Reactor Protection system for which components functioned as designed. There was no adverse effect on the health or safety of the public as a result of this event.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

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

INITIAL CONDITIONS

The plant was in Mode 3, at 0% reactor power, with a main coolant boron concentration of 2374 ppm. Plant procedure OP-4222, "Reactor Rod Control System Precritical Check," was in progress in preparation for physics testing following a refueling outage. Control Rod [EIS:AA] Groups A and C were fully inserted in the core. Control Rod Group D was withdrawn to 3 inches. Control Rod Group B was at 1 5/8 inches in the process of being withdrawn to 3 inches.

EVENT DESCRIPTION

On November 8, 1990 at 1514 hours, during withdrawal of Control Rod Group B, the following Panalarms [EIS:IB] annunciated: N-A6, Reactor Scram; N-A8, High Startup Rate alarm; N-A12, Nuclear Instrumentation Scram; and N-A17, Neutron Shield Tank High Temperature. These Panalarms, with the exception of N-A6, were reset. N-A6 is actuated by closure of the Reactor Scram Breaker [EIS:BKR], BK 1 or BK 2, "b" fingers when either breaker opens. The licensed reactor operator observed that, inconsistent with N-A6, BK 1 and BK 2 indicated closed, and, that the control rod primary position indicating lights remained lit. Because of the conflicting indication, the reactor operator immediately initiated a manual reactor scram. Following the scram, all indications showed that BK-1 and BK-2 opened and the control rods inserted fully into the core.

A review of the Sequence of Events Recorder (SER) and the Nuclear Instrumentation indicated there was no signal to actuate the Reactor Protection System prior to the manual scram initiated by the reactor operator.

CAUSE OF EVENT

The cause of this event could not be determined with certainty, nor could the conditions and circumstances be reproduced in subsequent testing and troubleshooting. Investigation focused on the components and system interaction that could have caused the observed response. The scram breakers were inspected by an electrician who discovered loose linkage on the "b" finger contactors. He was able to move the linkage so that N-A6 would annunciate. Instrumentation technicians could find no problems with the relays or Panalarm components, nor was any evidence of a current induced signal found. However, conservative action to change key components, noted below, was taken. It is possible that vibration of the mechanical linkage on the reactor trip breaker could have caused contacts ("b" fingers) to close, causing Panalarm N-A6 to annunciate independent of scram breaker opening.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (if more space is required, use additional NRC Form 386A's) (17)

CORRECTIVE ACTIONS

OP-4611, "Nuclear Instrumentation and Reactor Protection System Precritical Check," was performed to assure the operability of the Reactor Protection System. Additionally, two rod stop relays were replaced, Panalarm cards (N-A6/N-A12 and N-A16/N-A22) were exchanged, and the mechanical linkage (to the "b" fingers) on the trip breaker was readjusted. Subsequently, OP-4222, "Reactor Rod Control System Precritical Check " to check control rod operability, was successfully performed.

SAFETY ASSESSMENT

From the evidence collected, a valid scram signal had not been generated. However, proper immediate actions by the reactor operator who manually activated the Reactor Protection System were taken. At no time during this event was the plant in an unanalyzed condition. There were no further challenges to any Engineered Safety Feature beyond the manual actuation of the Reactor Protection System. All components functioned as designed. (i.e., BK-1 and 2 reactor trip breakers opened and the control rods inserted into the core). There was no adverse effect on the health or safety of the public as a result of this event.

SIMILAR EVENTS

This is the first incident of this nature.