

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NUMBER (2)

0 5 0 0 0 3 3 3 1 OF 0 4

PAGE (3)

TITLE (4)

Reactor Scram While Performing Turbine Stop Valve Surveillance

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)																														
04	04	86	86	010	00	05	02	86			050000																														
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																																						
N			<table border="0"><tr><td>20.402(b)</td><td>20.408(c)</td><td><input checked="" type="checkbox"/></td><td>50.73(a)(2)(iv)</td><td>73.71(b)</td></tr><tr><td>20.406(a)(1)(i)</td><td>50.38(c)(1)</td><td></td><td>50.73(a)(2)(v)</td><td>73.71(e)</td></tr><tr><td>20.406(a)(1)(ii)</td><td>50.38(c)(2)</td><td></td><td>50.73(a)(2)(vii)</td><td>OTHER (Specify in Abstract below and in Text, NRC Form 365A)</td></tr><tr><td>20.406(a)(1)(iii)</td><td>50.73(a)(2)(i)</td><td></td><td>50.73(a)(2)(viii)(A)</td><td></td></tr><tr><td>20.406(a)(1)(iv)</td><td>50.73(a)(2)(ii)</td><td></td><td>50.73(a)(2)(viii)(B)</td><td></td></tr><tr><td>20.406(a)(1)(v)</td><td>50.73(a)(2)(iii)</td><td></td><td>50.73(a)(2)(ix)</td><td></td></tr></table>									20.402(b)	20.408(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)	20.406(a)(1)(i)	50.38(c)(1)		50.73(a)(2)(v)	73.71(e)	20.406(a)(1)(ii)	50.38(c)(2)		50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)	20.406(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		20.406(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		20.406(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(ix)	
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POWER LEVEL (10)																																									
0.83																																									

LICENSEE CONTACT FOR THIS LER (12)

NAME

Joseph P. Flaherty  
Assistant Instrument & Controls Superintendent

TELEPHONE NUMBER

AREA CODE

3 1 5 3 4 2 - 3 8 4 0

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)

☒ YES (If yes, complete EXPECTED SUBMISSION DATE)☐ NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR  
1 2 3 18 86

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

At 2125 on April 4, 1986, while performing Main Turbine Stop Valve Limit Switch Instrument Functional Test, a full scram occurred when testing the first set of Turbine Stop Valves.

The void collapse following the scram resulted in a reactor water level decreased to 163.6 inches above Top of Active Fuel (TAF). By design, at 177 inches above TAF, Standby Gas Treatment Trains A and B started and a Group II and Reactor Water Cleanup System isolation occurred. Reactor water level recovered rapidly with one Reactor Feed Pump (RFP). At 222.5 inches above TAF, both the Main and RFP Turbines tripped on reactor high water levels. One RFP was restarted for reactor water level control. The Main Steam Isolation Valves remained open during the event and pressure was controlled by using the Main Turbine Bypass Valves.

Plant performance was per design and no major problems were observed during the transient.

Troubleshooting failed to identify the exact cause of the scram. The most likely components were replaced and all systems satisfactorily tested, prior to plant startup on April 5, 1986, at 2155.

Subsequent review of the scram and troubleshooting resulted in the following recommendations:

- 1) A detailed examination of the TSV be made at the next scheduled outage and 2) an evaluation of the TSV limit switch for its present usage will also be conducted.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)

DOCKET NUMBER (2)

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PAGE (3)

JAMES A. FITZPATRICK  
NUCLEAR POWER PLANTYEAR SEQUENTIAL REVISION  
NUMBER NUMBER NUMBER

0 5 0 0 0 3 3 3 8 6 - 0 1 0 - 0 0 0 2 OF 0 4

TEXT (If more space is required, use additional NRC Form 368A's) (17)

At approximately 2100 on April 4, 1986, reactor power was reduced from 100% to 88% to perform weekly control rod exercising and monthly turbine valve testing. At 2125, after Control Rod Operability Test (F-ST-20C) and Turbine Control Valve Instrument Channel and Valve Operability Check (F-ST-16) had been completed, Main Turbine Stop Valve Limit Switch Instrument Functional Test (F-ST-1E) was started. When the first set of Turbine Stop Valves (TSV) was tested, only an A side Reactor Protection System (RPS) half-scam should have been received. Instead, a full scram occurred when both A and B side RPS signal were received.

By design, the void collapse following the scram caused a Group II and Reactor Water Cleanup System isolation on reactor low level of 177 inches above Top of Active Fuel (TAF). Standby Gas Treatment Trains A and B also started, as designed on the reactor low level. Initial level restoration occurred with one Reactor Feed Pump (RFP), the other RFP having been manually tripped by the Operator after the scram. Reactor water level recovered rapidly and both the Main and Feed Pump Turbines tripped on reactor high water level (222.5 inches TAF). One RFP was restarted for reactor water level control. The Main Steam Isolation Valves (MSIV) remained open during the event, and pressure was controlled by using the Turbine Bypass Valves.

Plant performance was per design with no major problems observed during the transient.

As per Operating Technical Specification Table 3.1-1, Main Turbine Stop Valve Limit Switch Instrument Functional Test is performed monthly, and was last successfully performed March 7, 1986. This test exercises various combinations of two TSV simultaneously in the closed direction until valve limit switches indicate that the valves are  $</ = 90\%$  full open. The opening of the limit switches will de-energize RPS relays which will generate a RPS one-half scram. The TSV 90% limit switch scram signals are bypassed when  $</ = 30\%$  power.

Following the scram, it was determined that to receive the B channel scram signal, TSV-4 scram relay in the B channel had to be de-energized. Troubleshooting efforts that evening, and the following day, could not recreate the event. The RPS scram logic performed as designed. All terminations were found tight, contact resistance of the limit switch on TSV-4 was as expected, visual inspection of the RPS relay contacts showed no misalignment, and the logic circuits performed satisfactory when the TSV was tested numerous times. It was concluded that the most probable cause for B channel scram was in TSV-4 limit switch or the RPS relay associated with TSV-4. Both items were replaced and satisfactorily tested per surveillance procedures.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

In addition, the Main Turbine Stop Valve Limit Switch Functional Test was changed to verify the appropriate relays energized prior to the start of the test, and at other appropriate points, during the test. This verification provides assurance that only the desired one-half scram signal is present during the test of the TSV.

Following review by the Plant Operating Review Committee (PORC), a reactor startup commenced at 2155 on April 5, 1986, with the Main Turbine Stop Valve Limit Switch Instrument Functional Test scheduled to be performed prior to exceeding 30% power. This was in an attempt to see if the problem would repeat at power. The plant returned to service at 0621 on April 6, 1986.

At 0835 on Sunday, April 6, 1986, with reactor power at approximately 22%, the Main Turbine Stop Valve Limit Switch Instrument Functional Test was started. During verification of the RPS relay status, it was noted that the relays for TSV-4 were de-energized when they should have been energized. Power increases were stopped and Turbine Stop Valve Closure (RPS) Instrument Calibration (F-ISP-37) was performed to recheck and set the TSV-4 90% limit switch. A discrepancy of 1.1 cm was observed between the valve stroke taken in the cold condition (19.1 cm) on April 5, when the limit switch was replaced, and those taken in the hot condition on April 6 (18.0 cm). This discrepancy resulted in the 90% limit switch not resetting when the valve was fully open after having been  $\leq 90\%$  open. After resetting, TSV-4 was stroked a minimum of six (6) times with consistent results. Prior to switch replacement on April 5, TSV-4 was last calibrated on March 24, 1986 with a stroke of 19.1 cm.

It was decided to continue with a plant startup since the limit switch was calibrated with the valve in the hot condition; the operation of the limit switch had never failed to initiate the required RPS action, and the valve was successfully cycled many times with proper trip and reset of the limit switch. The Main Turbine Stop Valve Limit Switch Instrument Functional Test was successfully completed and power increases resumed at approximately 1400 on April 6, 1986.

To provide additional assurances, the valve position was marked, and is being checked once per shift to assure that there is no valve stem movement. These checks will continue until TSV-4 is inspected.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

Subsequent detailed investigation by the Site Scram Review and Assessment Team, in combination with a representative of the TSV-4 manufacturer, could not determine the root cause of the scram. A number of recommendations were made which include:

- 1) TSV-4 be inspected during the next scheduled plant outage.
- 2) A study be conducted to examine the application of the limit switch for its present usage.

The component information for TSV-4, the 90% limit switch and the RPS relay, are as follows:

<u>COMPONENT</u>	<u>FUNCTION IDENTIFIER</u>	<u>SYSTEM NAME/ EIIS CODE</u>	<u>MANUFACTURER/CODE/ MODEL NO.</u>
94-LS-104	33	Main Turbine/ TA	Namco Controls/N007/ EA-170-41000/D2400X-R
94-TSV-4	SHV	Main Turbine/ TA	General Electric/ G084/Dwg. #821E668 Rev. 2. Item 3
5A-K10G	RLY	Reactor Protection/ JC	General Electric/ G080/12HFA519F
5A-K10H	RLY		

Since the valve/limit switch did not fail to initiate the required RPS action, there was no significant safety issue due to TSV-4 limit switch not resetting the B channel RPS.

No similar events involving these types of equipment have occurred at the James A. FitzPatrick Nuclear Power Plant.

James A. FitzPatrick  
Nuclear Power Plant  
P.O. Box 41  
Lycoming, New York 13093  
315 342 3840



**New York Power  
Authority**

Radford J. Converse  
Resident Manager

May 2, 1986  
JAFP-86-0390

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

REFERENCE: DOCKET NO. 50-333  
LICENSEE EVENT REPORT: 86-010

Dear Sir:

Enclosed please find the referenced Licensee Event Report in accordance with the requirements of 10 CFR 50.73.

If there are any questions concerning this report, please contact Mr. Joseph P. Flaherty at (315) 342-3840, Extension 230.

RADFORD J. CONVERSE  
RESIDENT MANAGER

*JPF*  
RC/JPF/ail

Enclosure

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