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NewYork Power Authority

Michael J. Colomb
Site Executive Officer

November 17, 2000
JAFP-00-0268

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Subject: **Docket No. 50-333**
LICENSEE EVENT REPORT: LER-00-004-03
(DER-00-00830 & DER-00-01442)

RCIC System Inoperable for Greater Than Seven Days and Inoperable During Two Plant Start-Up Evolutions

Dear Sir:

This report is submitted in accordance with 10 CFR 50.73(a) (2) (i) (B).

This supplement is being issued to report the results of an equipment failure evaluation and the resulting corrective actions.

There are no commitments contained in this report.

Questions concerning this report may be addressed to Mr. John Hoddy at (315) 349-6538.

Very truly yours,

MICHAEL J. COLOMB

MJC:GB:las
Enclosure

cc: USNRC, Region 1
USNRC, Project Directorate
USNRC Resident Inspector
INPO Records Center

IE22

NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/200

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
James A. FitzPatrick Nuclear Power Plant	05000333	1 OF 5

TITLE (4)

RCIC System Inoperable for Greater Than Seven Days & Inoperable During Two Plant Start-Up Evolutions

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 NAME	DOCKET NUMBER
									N/A	05000
03	04	00	00	004	03	11	17	00	FACILITY NAME: N/A	DOCKET NUMBER: 05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	100	20.2201(b)	20.2203(a)(2)(v)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Mr. John Hoddy, Sr. Licensing Engineer	315-349-6538

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 4, 2000, with the plant at 100 percent power, Surveillance Test (ST) - 24J, Reactor Core Isolation Cooling (RCIC) System Flow Rate Inservice Test was in progress. During ST-24J, the RCIC pump flowrate took approximately 2 minutes to stabilize to the required 400 GPM flowrate. The RCIC system was declared inoperable at 0939 on March 4, 2000. On March 31, 2000, during a review of prior RCIC system performance data, it was determined that after initially achieving 400 gpm, the RCIC system had failed to maintain 400 GPM flow during the October 14, 1999 scram (LER 99-010). This condition indicated that the RCIC system had been inoperable for a time period exceeding the allowable out of service time in the Technical Specifications and is therefore a condition prohibited by the Technical Specifications (T.S.).

The identified extended inoperable time period also resulted in two plant restarts being completed with the RCIC System inoperable. This is also a condition prohibited by the T.S.

A gain adjustment was made to the RCIC system flow controller, applicable sections of ST-24J were re-run, acceptable system dynamic response was observed and the RCIC system was declared operable at 2020 on March 4, 2000.
An equipment failure evaluation was conducted which identified a dirty contact in the flow controller as the cause. The controller had been replaced during troubleshooting in July 2000.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	00	004	03	2 OF 5

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

EIIS Codes in [ ]

Event Description

On March 4, 2000, with the plant at 100 percent power, Surveillance Test (ST) - 24J, Reactor Core Isolation Cooling (RCIC) [BN] System Flow Rate Inservice Test was in progress. During ST-24J, the RCIC pump flowrate took approximately 2 minutes to stabilize to the required 400 GPM flowrate. The RCIC system was declared inoperable at 0939 on March 4, 2000.

On March 31, 2000, during a review of prior RCIC system performance data, it was determined that, after initially achieving 400 GPM, the RCIC system had failed to maintain 400 GPM flow during the October 14, 1999 scram (LER 99-010). This condition indicated that the RCIC system had been inoperable for a time period exceeding the allowable out of service time in the Technical Specifications (T.S.) and is therefore a condition prohibited by the Technical Specifications. Additionally, during this identified extended inoperable period, the plant performed two restart evolutions, one on October 25, 1999 and again on November 11, 1999. T.S. section 3.0.D prohibits a mode switch change when Limiting Conditions for Operation (LCO) are not met and the associated action requires a shutdown if they are not met within a specified time interval.

A gain adjustment was made to the RCIC system flow controller, applicable sections of ST-24J were re-run, acceptable system dynamic response was observed and the RCIC system was declared operable at 2020 on March 4, 2000.

Cause of Event

RCIC system dynamic characteristics are dependent on control system settings as well as system hydraulic and mechanical characteristics. The surveillance test frequency for the RCIC system was therefore increased and additional parameters monitored to gather additional data for analysis. The condition has recurred twice during the increased testing, first on May 26, 2000 and most recently on July 24, 2000.

The cause of this event was initially considered a random failure (Cause Code X), corrected by the system flow controller gain adjustment. As a result of subsequent failures, the cause had been considered unknown and remained under investigation.

An equipment failure evaluation was conducted which identified dirty contacts in a switch in the flow controller signal path. This event is therefore due to the lack of a preventive maintenance task to periodically clean these contacts(Cause Code E).

Event Analysis

The function of the RCIC system is to provide makeup injection to the reactor to mitigate reactor isolation events.

An engineering analysis was performed to assist in determining the risk significance of this condition. This analysis made the following conservative assumptions.

1. A loss of feedwater event occurs.

2. The RCIC system is the only source of makeup injection

3. RCIC flow as low as 280 GPM was considered (a review of actual RCIC flow data indicates RCIC flow was approximately 360 GPM)

This analysis concluded that with a RCIC flow of 280 GPM, reactor water level would not fall below 72 inches above the top of active fuel. Qualitative post event review determined that the failure of the RCIC system to maintain 400 GPM injection flow during the October 14,1999 scram may not have been a system failure. The RCIC system is nominally designed to mitigate the consequences of a loss of feedwater transient with reactor isolation. The RCIC system injects into the feedwater header and from there into the reactor. During the October 14, 1999 scram, the feedwater system [SJ] remained in service, and during the RCIC injection period, was at a high flow rate to recover reactor level. The effect of high feedwater flow rates in the RCIC discharge flow path have not been quantitatively evaluated and therefore the conclusion that the RCIC system was inoperable during the October 14, 1999 scram is conservative. This event does not constitute a safety system functional failure in the context of NEI 99-02, Rev. 0.

Extent of Condition

Additional review of RCIC performance data indicates that this condition existed as early as August 19, 1999.

LER-99-008-02 identified an event where oxidation on the winding of an unsealed potentiometer caused erratic operation of a master trip unit in a containment isolation valve control circuit. This event is considered similar with respect to the cause. Specifically, both events can be attributed to degraded contact resistance in low signal level (milliamp) control circuits. It is therefore reasonable to conclude that other unsealed contacts in low signal level control circuits are susceptible to this degradation mechanism.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	00	004	03	4 OF 5

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

Corrective Actions

1. The proportional band gain of the RCIC flow controller was adjusted and the system was declared operable. **(Completed)**

2. On May 26, 2000 RCIC experienced a similar flow anomaly. A diagnostic instrumentation plan was developed for the RCIC system to measure relevant parameters during surveillance testing. Additional monitoring included turbine control valve position and various controller parameters. Testing was conducted on an increased frequency and the data analyzed to determine cause. Maintenance was conducted on the turbine governor valve (HOV-2) but no conclusive problems were found. The system was returned to service on increased monitoring frequency. **(Completed)**

3. The circumstances surrounding the August 19, 1999 run of Surveillance Test (ST) 24J were reviewed to determine why this degraded flow was not recognized. The review determined that the ST required measuring response time from system initiation to reaching the required 400 gpm, but nothing in the ST specified that flow stay above the required minimum. ST-24J (and analogous HPCI ST-4N) have been revised to state this requirement. These requirements have been discussed with operating shift personnel. **(Completed)**

4. The controller with the dirty switch contacts was replaced on July 25, 2000. **(Completed)**

5. The extent of condition will be addressed by establishing and implementing the appropriate preventive maintenance strategy for contacts subject to degradation by oxidation. This strategy and an implementation schedule will be developed by February 1, 2001. **(Scheduled to be complete February 1, 2001)**

Additional Information

This event occurred during the Reactor Scram reported under LER-99-010; however, this condition was not recognized at the time and therefore LER-99-010 did not address it.

The High Pressure Coolant Injection (HPCI) [BJ] system has also experienced performance degradation which had gone unnoticed until October of 1999 (LERs 99-011 and 00-002). Although this performance degradation was due to a different failure mechanism, these events were similar in the respect that the plant's System Monitoring Program did not detect the degradation for some time.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	00	004	03	5 OF 5

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

Additional Information (con't.d)

Weaknesses with respect to performance monitoring of the HPCI system are documented in a Notice of Violation (NOV) included in NRC Inspection Report 05000333/2000001. A comprehensive corrective action for weaknesses in system monitoring is described in the Authority's response to NOV 2000-001 (JAFP-00-0095).