

James A. FitzPatrick  
Nuclear Power Plant  
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Michael J. Colomb  
Site Executive Officer

July 27, 2000  
JAFP-00-0169

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-00-004-02**  
**(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 additional testing and concurrent 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,

A handwritten signature in cursive script, appearing to read 'M. J. Colomb', written over the printed name.

MICHAEL J. COLOMB

MJC:GB:las  
Enclosure

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

IE22

## LICENSEE EVENT REPORT (LER)

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

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.

## FACILITY NAME (1)

James A. FitzPatrick Nuclear Power Plant

## DOCKET NUMBER (2)

05000333

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## TITLE (4)

RCIC System Inoperable for Greater Than Seven Days &amp; 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                                 |
| 03                 | 04  | 00   | 00                                                                                          | 004               | 02              | 07                | 27  | 00   | N/A                           | 05000                                         |
|                    |     |      |                                                                                             |                   |                 |                   |     |      | N/A                           | 05000                                         |
| OPERATING MODE (9) |     | N    | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (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 366A |
|                    |     |      | 20.2203(a)(2)(iv)                                                                           |                   |                 | 50.36(c)(2)       |     |      | 50.73(a)(2)(vii)              |                                               |

## LICENSEE CONTACT FOR THIS LER (12)

## NAME

Mr. John Hody, Sr. Licensing Engineer

## TELEPHONE NUMBER (Include Area Code)

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)

|   |                                                     |    |          |       |     |      |
|---|-----------------------------------------------------|----|----------|-------|-----|------|
| X | YES<br>(If yes, complete EXPECTED SUBMISSION DATE). | NO | EXPECTED | MONTH | DAY | YEAR |
|   |                                                     |    |          | 11    | 17  | 2000 |

## 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.

**LICENSEE EVENT REPORT (LER)**  
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|                                          |            | 00             | 004                  | 02                 |          |  |

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 is considered unknown and remains under investigation.

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

**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.

This physical condition is limited to the RCIC system.

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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. An Action Plan has been issued, capturing actions completed to date and identifying planned ongoing testing and evaluation. On July 24, 2000, during testing conducted as part of this Action Plan, an additional flow anomaly occurred. Cause remains under investigation. Additional cause determination resulting from the Action Plan will be forwarded in a subsequent LER update. **(Completion Date: 11/17/00)**
4. 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)**

**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.

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 this NOV (JAFP-00-0095).