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Brian R. Sullivan
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JAFP-16-0008
February 1, 2016

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

Subject: LER: 2015-007, Slow Exhaust Fan Start Leads to Secondary
Containment Vacuum Below Technical Specification Limit

James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
License No. DPR-59

Dear Sir or Madam:

This report is submitted in accordance with 10 CFR 50.73(a)(2)(v)(C).

There are no commitments contained in this report.

Questions concerning this report may be addressed to Mr. Chris M. Adner, Regulatory Assurance Manager, at (315) 349-6766.

Sincerely,

A handwritten signature in black ink, appearing to read "BRS", written over a horizontal line.

Brian R. Sullivan
Site Vice President

BRS/CMA/mh

Enclosure(s): JAF LER 2015-007, Slow Exhaust Fan Start Leads to Secondary Containment
Vacuum Below Technical Specification Limit

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



LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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.

1. FACILITY NAME

James A. FitzPatrick Nuclear Power Plant

2. DOCKET NUMBER

05000333

3. PAGE

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4. TITLE

Slow Exhaust Fan Start Leads to Secondary Containment Vacuum Below Technical Specification Limit

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	1	2015	2015	007	00	2	1	2016	N/A	N/A
									N/A	N/A

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
100	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT Mr. Chris M. Adner, Regulatory Assurance Manager	TELEPHONE NUMBER (Include Area Code) 315-349-6766
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	VA	CNTR	G080	N					

14. SUPPLEMENTAL REPORT EXPECTED

YES (If yes, complete 15. EXPECTED SUBMISSION DATE) NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

At 2036 on December 1, 2015, James A. FitzPatrick Nuclear Power Plant (JAF) was operating at 100 percent power when differential pressure of the Secondary Containment exceeded a Technical Specification requirement. The requirement is for the Secondary Containment to have a ≥ 0.25 inches of vacuum water gauge compared to the external environment.

This event was caused by hardened grease in the operating mechanism of the motor starter contactor 71MCC-141-OB2. This led to a slow start of the above refuel floor Reactor Building exhaust fan 66FN-13B while the intake air supply fans were running. The exhaust fan started, without Plant Operator action, after approximately 60 seconds; however, Reactor Building differential pressure exceeded 0.25 inches of vacuum water gauge for approximately 80 seconds.

When Secondary Containment did not meet the Technical Specification Surveillance Requirement 3.6.4.1.1 for differential pressure, the Limiting Condition of Operation (LCO) was not met. Therefore, Secondary Containment was Inoperable. Restoration of the LCO was completed within the allowed action completion time. This report is being submitted per 10 CFR 50.73(a)(2)(v)(C) as a condition that could have prevented the fulfillment of safety function to control the release of radioactive material.

**LICENSEE EVENT REPORT (LER)
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NARRATIVE

Background

The Secondary Containment [EIS identifier: NG] is a structure comprised of the Reactor Building that surrounds the primary containment and refuel equipment. Its safety function is designed to provide containment for postulated accident scenarios: loss-of-coolant accident and refueling accident. This structure forms a control volume that serves to hold up and dilute the fission products. Since pressure may increase in Secondary Containment relative to the environmental pressure, it was designed to include a differential pressure vacuum such that external atmosphere would leak into containment rather than fission products leak out.

The systems which maintain a differential pressure vacuum inside Secondary Containment include the normal Reactor Building Ventilation (RBV) system [VA] and the safety-related Standby Gas Treatment (SBGT) system [BH]. During a postulated accident scenario, the normal RBV isolates by closing two intake isolation valves and two exhaust isolation valves. At the same time, SBGT initiates in order to filter the Secondary Containment atmosphere prior to releasing to the environment. SBGT has the capacity to maintain the required differential pressure vacuum.

Secondary Containment differential pressure vacuum is maintained either in Normal Mode with RBV or in Isolation Mode with SBGT. During Normal Mode, the RBV system operates with two of three supply fans and two of four exhaust fans inservice. Non-inservice fans are kept on standby. Periodically, as a result of surveillance tests or planned maintenance, Secondary Containment may need to transition between these two modes.

The event described in this Licensee Event Report (LER) involves a deficiency with one exhaust fan, 66FN-13B, while transitioning to Normal Mode from Isolate Mode.

Event Description

Immediately prior to this event, a test was performed to verify proper operation of "B" above refuel floor exhaust fan damper position switch. The test involved initiating a RBV isolation in order to verify that the damper will close and damper position switch will initiate a signal for 66FN-13B to stop. The test was successful. This planned maintenance was a result of investigations into extent of condition initiated after the events of September 18, 2015 (Reference LER-15-005).

At 20:36 on December 1, 2015, while JAF was at 100 percent power, Secondary Containment was transitioning back to unisolate mode when exhaust fan 66FN-13B did not start as expected. The RBV maintains a fresh air supply in the building using intake and exhaust fans. If the exhaust air capacity becomes degraded, as it did during this event, then the intake air supply begins to overfill the building. The extra air increases building pressure relative to the outside environment. This condition was corrected when 66FN-13B started, without intervention, in approximately 60 seconds.

The change in differential pressure exceeded the Technical Specification (TS) Surveillance Requirement (SR) 3.6.4.1.1 of ≥ 0.25 inches of vacuum water gauge for approximately 80 seconds. During the period in which Secondary Containment did not meet the SR the TS Limiting Condition of Operation (LCO) was not met. Therefore, Secondary Containment was Inoperable. Restoration of the LCO was completed within the allowed action completion time of the TS. A notification was made to the NRC by ENS 51579. This Licensee Event Report (LER) is being submitted per 10 CFR 50.73(a)(2)(v)(C) as an event that could have prevented the fulfillment of safety function to control the release of radioactive material.

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Event Analysis

This event began when Secondary Containment was transitioning from Isolation Mode to Normal Mode. First, the fan damper fully opened. Next, the damper position switch gave an initiation signal for the exhaust fan 66FN-13B to start; however, it did not initiate for approximately 60 seconds.

Electricians investigated and discovered that the 66FN-13B motor starter contactor in motor control center 71MCC-141-OB2 was operating sluggishly because of hardened grease in the operating mechanisms. The contactor was cleaned and lubricated with Dow Corning 44 and then verified to operate properly.

The chemical process of oxidation degrades grease by breaking down the molecules and changing its lubrication properties. This oxidation is due to either a stress being placed on the grease or the grease being exposed to air for a long period of time. This degradation manifests itself by increasing grease viscosity until it becomes hardened or caked. In effect, the grease will inhibit mechanical movement rather than assisting it.

Cause

The likely cause of this event is identified as hardened grease on motor starter contactor in 71MCC-141-OB2 which prevented a prompt start of Reactor Building above refuel floor exhaust fan 66FN-13B.

Similar Events

Internal

On October 5, 2013, hardened grease in the motor starter contactor in 71MCC-431-AR1 led to a blown fuse which tripped stator water pump 94P-15A. 71MCC-431-AR1 had its Preventative Maintenance (PM) Frequency changed from 10 years to 16 years. As a corrective action, the PM Frequency was returned to 10 years.

During the events of October 28, 2014 (LER-14-002-01) and September 18, 2015 (LER-15-005) Reactor Building Ventilation exhaust flow was obstructed and Secondary Containment pressure increased. In both events, the exhaust fan 66FN-13A air flow was obstructed because its damper 66AOD-106A was not full open due to damper operator diaphragm failures and the position switch 66PNS-106A1 did not function to initiate a swap from 66FN-13A and to 66FN-13B. Even though these events resulted in a similar effect (increased pressure), they do not share the same failure mechanism with the event reported by this LER.

External

River Bend, November 7, 2007, Reactor Scram as a Result of Loss of Normal Power 13.8 kV Bus. The 13.8 kV breaker supplying the step-down transformer should have tripped to isolate the fault; however, the breaker was slow to operate. The likely cause of the slow operation was likely due to hardened, dirty grease in the breaker mechanism. (ML080080031)

FAILED COMPONENT IDENTIFICATION:

Position Switch Manufacturer:	General Electric
Manufacturer Model Number:	CR106F000BAA
NPRDS Manufacturer Code:	G080
NPRDS Component Code:	CNTR
FitzPatrick Component ID:	71MCC-141-OB2

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Corrective Actions

Completed Actions

- Removed hardened grease and lubricated motor starter contactor in 71MCC-141-OB2.

Future Actions

Preventative Maintenance (PM) is periodically performed on 71MCC-141-OB2 to ensure its proper operation. The last performance was conducted on January 22, 2010. This included cleaning and reapplying lubrication to motor starter contactor in 71MCC-141-OB2. The prior PM was performed on January 4, 2005. During this five year interval, the equipment in 71MCC-141-OB2 was found to be in good condition.

In May 2013, (similar to the internal event for 71MCC-431-AR1) the PM frequency for 71MCC-241-OB2 was changed to 15 years. This change was based on the Preventative Maintenance Optimization System (PMOS) Template recommend frequency of 12 years plus a fleet procedure (EN-DC-324) allowance of 1.5 times longer for Non-Critical components.

- As a result of this event, PM frequency for 71MCC-141-OB2 will be adjusted from 15 years to 5 years.

Safety Significance

There was no radiological consequence during this event.

The potential for a radiological consequence was only applicable during the time period that Secondary Containment did not meet ≥ 0.25 inches of vacuum water gauge differential pressure. A higher Reactor Building pressure could allow for the exfiltration of radioactive material during an accident. However, the release would be detected by radiation monitors and this would initiate a Secondary Containment isolation.

A differential pressure vacuum is maintained within Secondary Containment by two of four RBV exhaust fans or one of two SBGT trains. During a postulated accident scenario, RBV is placed in isolation and the SBGT is used to maintain differential pressure. This event only affected one of four RBV exhaust fans.

The condition does not adversely impact that ability of RBV to isolate or SBGT to initiate and maintain a sufficient differential pressure. Therefore, the capability of Secondary Containment to mitigate the consequence of an accident is unaffected by this deficiency.

References

- Condition Report: CR-JAF-2015-05244, 66FN-13B Slow Fan Start
- Event Report: LER-15-005, "A" Position Switch and Damper Failure