



Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc.

James A. Fitzpatrick NPP
P.O. Box 110
Lycoming, NY 13093
Tel 315-349-6024 Fax 315-349-6480

January 10, 2013
JAFP-13-0003

Michael J. Colomb
Site Vice President - JAF

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

SUBJECT: LER: 2012-008, Automatic Reactor Shutdown Caused by a Fault in Main Transformer
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)(iv)(A), System Actuation.

There are no commitments contained in this report.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Michael J. Colomb".

Michael J. Colomb
Site Vice President

MC/CA/mh

Enclosure(s): JAF LER 2012-008, Automatic Reactor Shutdown Caused by a Fault in Main Transformer

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 Records and FOIA/Privacy Service 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

1 OF 3

4. TITLE

Automatic Reactor Shutdown Caused by a Fault in Main Transformer

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
11	11	12	2012	- 008 -	00	01	10	13	N/A	05000
									N/A	05000

9. OPERATING MODE

1

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

- | | | | |
|---|---|--|---|
| <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) |
| <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input checked="" 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 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

10. POWER LEVEL

100

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Mr. Chris M. Adner, Licensing Manager

TELEPHONE NUMBER (Include Area Code)

(315) 349-6766

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	EL	XFMR	A576	Y					

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)

An unplanned, automatic reactor scram occurred at 0355 on November 11, 2012, caused by a fire in the main transformer 71T-1A. All Reactor Protection Systems operated to shutdown the reactor without any complications. Offsite power transmission lines were Operable and onsite emergency power remained available during this event. At 0545 the emergency plan was entered by declaring a Notification of Unusual Event (HU 6.1). The fire was declared extinguished at 0632 and at 0801 the Notification of Unusual Event was exited. There was no release of radioactivity or personal injury. This event was caused by arcing; possibly originating by either a connection or coil failure internal to the transformer or by internal insulation breakdown or both. 71T-1A was replaced, tested, and returned to service.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

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NARRATIVE

EVENT DESCRIPTION & ANALYSIS

On November 11, 2012 at 03:56, an electrical fault occurred on James A. FitzPatrick Nuclear Power Plant (JAF) Main Transformer [EIS System Identifier: EL], 71T-1A, which resulted in a main turbine trip and an automatic reactor scram. At the time of the event, the unit was operating at 100% power in Mode 1. The failure of 71T-1A caused a generator load reject and a Turbine Stop Valve closure, which in turn resulted in the reactor scram. All Reactor Protection Systems (RPS) actuated with no complications and the reactor was shutdown. The Reactor scram caused reactor water level to shrink causing High Pressure Coolant Injection (HPCI) [BJ] and Reactor Core Isolation Cooling (RCIC) [BN] to start. RCIC did inject and HPCI did not inject. The HPCI system did not inject due to the prompt recovery of reactor water level.

Combustible gasses, ignited by the electrical fault, ruptured the main tank of 71T-1A. This resulted in an oil leak from the transformer to the surrounding oil containment moat. The electrical fault ignited a oil fire in the transformer and damaged the Isophase Bus duct. The transformer's fire suppression system mitigated the spread of the fire. An Unusual Event was declared under Emergency Action Level (EAL) HU6.1 based on a conservative decision by the shift manager. This event was reported to the NRC by ENS 48501 along with the actuation of the RPS. The fire was extinguished by the onsite fire brigade, assisted by the local fire department and the Unusual Event was terminated at 0801. This report is being made in accordance with 10 CFR 50.73(a)(2)(iv)(A) for an event which resulted in automatic actuation of RPS.

Potential causes for transformer failures were analyzed. Thermography, corona inspections, oil sampling are performed on a periodic basis. No significant degradation in the transformer was detected by these tests.

CAUSE OF EVENT

This event was caused by an arcing fault, possibly caused by either a connection or coil failure internal to the transformer; by internal insulation breakdown; or both. Arcing produces heat which in turn produces combustible gas that could then ignite. The precise cause will not be known until an extensive forensic investigation is completed.

EXTENT OF CONDITION

Other high-voltage transformers include Main Transformer 71T-1B, Reserve Station Service Transformers [FK] 71T-2, 71T-3, or Normal Station Service Transformer 71T-4.

71T-2 and 71T-3 were replaced in R20. These transformers are isolated from 71T-1A and were unaffected by this event. They are monitored per the existing system monitoring plan, predictive maintenance, and preventive maintenance programs.

71T-1B and 71T-4 are electrically connected to the 71T-1A transformer. An external examination and electrical testing of these transformers indicate no impact from this event. In addition, the fire walls on the north and south side of transformer 71T-1A prevented the spread of fire and its potential impact on adjacent transformers. Manual oil samples were taken for both 71T-1B and 71T-4. The Dissolved Gas in Oil Analysis (DGA) for both of these units indicates that total combustible gas rates are within limits.

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CORRECTIVE ACTIONS

Completed Actions

- Isophase Bus was repaired.
- 71T-1A was replaced and tested.
- Performed inspection and testing of 71T-1B, 71T-4, and the Main Generator to verify components were not impacted by the event and ready for service.

Future Actions

- Perform failure analysis of Transformer 71T-1A.

ASSESSMENT OF SAFETY CONSEQUENCES

Nuclear Safety

This event was an automatic reactor trip. Automatic reactor trips do present a challenge to nuclear safety systems; however, all safety systems functioned properly.

During the event, an electrical transient caused a loss of the Spent Fuel Pool Cooling (FPC) System [DA]. There was minimal challenge to nuclear safety due to the loss of FPC because operators restored it to service promptly.

Radiological Safety

There is no impact on radiological safety because this event occurred in the transformer yard, which is not a radiologically controlled area. This event did not cause any radiation exposure to workers or the public.

Environmental Safety

No oil escaped the contained switchyard area. Contaminated stone was removed from the switch yard as remediation. A New York State Department of Environmental Conservation individual inspected the area around the 71T-1A transformer and expressed no issues or concerns.

Industrial Safety

There were no personnel injuries or accidents associated with this event. The industrial safety significance was the failure of the transformer that resulted in a fire in the transformer yard. There were no personal present in the yard at the time of the fire.

SIMILAR EVENTS

Catastrophic Transformer failures are a known industry issue but JAF has no previous failures of this type.

REFERENCES

- JAF Condition Reports: CR-JAF-2012-08084 - Root Cause Evaluation; CR-JAF-2012-08090 – Notification of Unusual Event Declaration