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NLS2012054

June 7, 2012

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Licensee Event Report No. 2012-002-00
Cooper Nuclear Station, Docket No. 50-298, DPR-46

Dear Sir or Madam:

The purpose of this correspondence is to forward Licensee Event Report 2012-002-00.

There are no new commitments contained in this letter.

Sincerely,

Brian J. O'Grady
Vice President Nuclear-
Chief Nuclear Officer

/jo

Attachment: Licensee Event Report 2012-002-00

cc: Regional Administrator w/attachment
USNRC - Region IV

NPG Distribution w/attachment

Cooper Project Manager w/attachment
USNRC - NRR Project Directorate IV-1

INPO Records Center w/attachment
via email: lerevents@inpo.org

Senior Resident Inspector w/attachment
USNRC - CNS

SORC Chairman w/attachment

SRAB Administrator w/attachment

CNS Records w/attachment

COOPER NUCLEAR STATION

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www.nppd.com

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: 80 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the 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

Cooper Nuclear Station

2. DOCKET NUMBER

05000298

3. PAGE

1 of 4

4. TITLE

Improper Rotor Installation Causes Failure of Diesel Generator to Start

5. EVENT DATE

MONTH	DAY	YEAR
04	11	2012

6. LER NUMBER

YEAR	SEQUENTIAL NUMBER	REV NO.
2012	- 002 -	00

7. REPORT DATE

MONTH	DAY	YEAR
06	07	2012

8. OTHER FACILITIES INVOLVED

FACILITY NAME	DOCKET NUMBER
	05000

FACILITY NAME	DOCKET NUMBER
	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 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 checked="" type="checkbox"/> 50.73(a)(2)(i)(B) | <input checked="" 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

David W. Van Der Kamp, Licensing Manager

TELEPHONE NUMBER (Include Area Code)

(402) 825-2904

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
D	LC	DTR	C634	Y					

14. SUPPLEMENTAL REPORT EXPECTED☐ YES (If yes, complete EXPECTED SUBMISSION DATE) ☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR

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

On April 9, 2012, Diesel Generator (DG) 1 and DG1 Starting Air were declared inoperable for on-line maintenance activities.

On April 11, 2012, DG1 failed to start. After the first failure to start, the fuel oil line was vented due to suspected air, and DG1 subsequently started successfully. On April 12, 2012, DG1 failed to start. Further troubleshooting identified the rotor in the left bank starting air distributor had been installed 180 degrees out of alignment during on-line maintenance in October 2011. This resulted in DG1 being inoperable from the last successful surveillance on March 6, 2012, until April 15, 2012, when DG1 was declared operable.

On March 12, 2012, DG2 was declared inoperable and remained inoperable until March 18, 2012, thus a loss of safety function for both DGs occurred during that time. The root cause of this event was procedural guidance was inadequate to ensure the rotor was properly reinstalled in the DG1 left bank starting air distributor after work scope changed in October 2011. To prevent recurrence of this condition, the procedure will be revised and guidance will also be developed that ensures vendor recommendations and cautions are included. The procedure for diesel maintenance runs will be revised to ensure detection of air distributor malfunctions.

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17. NARRATIVE**PLANT STATUS**

Cooper Nuclear Station (CNS) was in Mode 1, Power Operation, at 100 percent power at the time the condition was discovered on April 11, 2012. Diesel Generator (DG) 1 was protected.

BACKGROUND

The purpose of the standby (emergency) Alternating Current (AC) power system [EIS:EK] is to provide a single failure proof source of on-site AC power adequate for maintaining the safe shutdown of the reactor following abnormal operational transients and postulated accidents. This system consists of two independent AC power sources, the Emergency Diesel Generators (EDG) [EIS:DG].

Each EDG shall be capable of automatic start at any time and capable of continued operation at rated load, voltage, and frequency until manually stopped.

During normal plant operations both DGs are in standby. A DG starts automatically on a loss of coolant accident signal (i.e., low reactor water level signal or high drywell pressure) or on loss of voltage on a critical bus. The DG automatically connects to its respective bus after off-site power is tripped as a consequence of critical bus loss of voltage or degraded voltage.

EVENT DESCRIPTION

On April 9, 2012, at 11:00, DG1 was declared inoperable for on-line maintenance activities and Limiting Condition for Operation (LCO) 3.8.1, Condition B, was entered. DG1 Starting Air was also declared inoperable for maintenance thus LCO 3.8.3, Condition F, was entered.

On April 11, 2012, at 11:47, both air banks were used to start DG1 for the post-maintenance run; however, DG1 failed to start. The incomplete sequence light came on after approximately 20 seconds. The starting air solenoid valve failure alarm and the starting air low pressure alarm were received and cleared. DG1 was reported to have rolled over multiple times. DG1 was started at 17:56 for a maintenance run and troubleshooting after the Diesel Generator Fuel Oil (DGFO) system for DG1 was vented due to suspected air.

On April 12, 2012, DG1 started successfully three times. Initial troubleshooting identified the failure to start DG1 on April 11, 2012, was air introduction into the DGFO system due to inadequate venting of the system during the current maintenance window. This was supported by the one successful start on April 11, 2012, and the three successful starts on April 12, 2012. However, at 11:45 on April 12, 2012, while performing a surveillance run to declare operability, DG1 once again failed to start and the incomplete sequence light came on after approximately 20 seconds. The starting air solenoid valve failure alarm and the starting air low pressure alarm were received.

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17. NARRATIVE

On April 14, 2012, further troubleshooting identified the rotor in the left bank starting air distributor had been installed 180 degrees out of alignment during on-line maintenance in October 2011. The left bank starting air distributor was re-installed correctly and at 19:46, DG1 successfully started for a maintenance run.

On April 15, 2012, at 02:40, DG1 was started successfully and at 12:43, DG1 was declared operable, and LCO 3.8.1, Condition B and LCO 3.8.3, Condition F were exited.

In October 2011 the left bank air distributor gasket was replaced to eliminate oil leakage. Insufficient gasket crush was achieved when work was performed in September 2009. That gasket crush could not be achieved with the existing parts in October 2011. Investigation revealed that the mounting flange would not fit correctly over the air distributor bracket. The bracket was replaced and the distributor was reassembled; however the rotor was installed 180 degrees out of alignment. Match marking failed to prevent the misalignment during reassembly. The revised work instructions did not require air start timing of the diesel engine. The work instructions provided to the workers for reassembling the air distributor to the engine did not include a cautionary notice from the Vendor Manual to reset the air distributor timing and did not contain a cautionary notice regarding a potential for the rotor to be inserted 180 degrees out of proper alignment.

DG1 started successfully after the maintenance in October 2011 and also on subsequent surveillance runs from October 2011 through March 2012, which masked the discrepant condition. As such, DG1 was determined to be inoperable from the last successful surveillance on March 6, 2012 at 14:55, until restoration on April 15, 2012 at 12:43, thus a past operation or condition prohibited by Technical Specifications existed. Since DG2 was also inoperable from March 12, 2012 at 11:55 until March 18, 2012 at 11:08 for planned maintenance, a loss of safety function also occurred.

BASIS FOR REPORT

CNS determined that this condition was reportable on April 16, 2012, in accordance with 10 CFR 50.73(a)(2)(i)(B) as an operation or a condition which was prohibited by Technical Specifications and later also determined that this condition was reportable in accordance with 10 CFR 50.73(a)(2)(v) as "any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to ...(D) Mitigate the consequences of an accident."

SAFETY SIGNIFICANCE

The key safety consequences of this event include the loss of the ability of the DG1 to automatically provide the emergency AC power required to energize the Division 1 "F" 4160 VAC bus for events that include loss of all offsite power.

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17. NARRATIVE

The safety significance associated with the DG1 air distributor timing issue is low based on DG2 not being impacted and would have performed functions provided by DG1 using redundant Division 2 systems; and the supplemental DG was not impacted and would have powered the DG1 loads that are required to mitigate associated loss of offsite power events.

Note that DG2 was removed from service for planned maintenance during the time frame that DG1 was vulnerable to the air distributor timing failure. This configuration resulted in concurrent unavailability of DG1 and DG2, and a corresponding loss of the ability to provide emergency onsite power. This significance is also judged to be low based on the small exposure time in which both diesel generators were unavailable and the fact that the supplemental DG remained available to provide power to loads required to mitigate a loss of offsite power event.

This condition resulted in a negligible increase to the core damage probability reflected in the internal events base model of the CNS Probabilistic Risk Assessment.

CAUSE

CNS has determined the root cause of this event was procedural guidance for ensuring post maintenance verification and post maintenance testing was inadequate to ensure the rotor was properly reinstalled in the DG1 left bank starting air distributor after work scope changed in October 2011.

CORRECTIVE ACTION

To prevent recurrence of this condition, the post maintenance testing procedure will be revised to require single bank start of the diesel for the applicable side when air start distributor maintenance, including air lines, has been performed. Additionally, post work verification that air start timing is complete will be required. Procedure guidance will also be developed for diesel generator air start system maintenance that ensures vendor recommendations and cautions are included. In addition, the procedure for diesel maintenance runs will be revised to ensure detection of air distributor malfunctions.

PREVIOUS EVENTS

There have been no recent similar events.