Dominion Energy Kewaunee, Inc.
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MAY 21 2009

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Serial No. 09-332
LIC/RR/RO
Docket No.: 50-305
License No.: DPR-43

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION
LICENSEE EVENT REPORT 2009-004-00

Pursuant to 10 CFR 50.73, Dominion Energy Kewaunee, Inc., hereby submits the following Licensee Event Report applicable to Kewaunee Power Station.

Report No. 50-305/2009-004-00

This report has been reviewed by the Facility Safety Review Committee and will be forwarded to the Management Safety Review Committee for its review.

If you have any further questions, please contact Mr. Richard Repshas at (920) 388-8217.

Very truly yours,

Stephen E. Scace
Site Vice President, Kewaunee Power Station

Attachment(s)

Commitments made by this letter: NONE

IE22
NRR

cc: Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
2443 Warrenville Road
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Lisle, IL 60532-4352

Mr. P. S. Tam
Sr. Project Manager
U.S. Nuclear Regulatory Commission
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Rockville, MD 20852-2738

NRC Senior Resident Inspector
Kewaunee Power Station

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORYCOMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory 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 Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Failed Backdraft Damper Renders Containment Fan Coil Unit Inoperable

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
03	23	2009	2009	-- 004 --	00	05	21	2009	FACILITY NAME	

9. OPERATING MODE

N

10. POWER LEVEL

100

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

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☒ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☒ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☒ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (*include Area Code*)
Brian O'Connell	920-388-8174

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
X	BK	FCU	E322	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*)

On March 23, 2009 21:00 Central Daylight Time with the station at 100 percent power, inoperability of the containment fan coil unit 'A' was identified. While preparing to remove the fan motor during maintenance, workers saw that the fan was spinning backward and an excessive amount of air was blowing through gaps in the ventilation ductwork. Investigation found the containment fan coil unit backdraft damper not fully closed. The fan had been in an off/auto condition since November 14, 2008. This condition allowed backflow from the operating containment fan coil unit 'B'. With the fan spinning backward, it is postulated that the fan would trip on overcurrent when started. Following review of the operability of required containment cooling systems since November 14, it was determined that Technical Specifications had been violated numerous times due to inoperability of various combinations of containment cooling system components and the postulated inoperable containment fan coil unit 'A'.

This condition is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B), as a condition which was prohibited by the plant's Technical Specifications, 10 CFR 50.73(a)(2)(ii)(B), as a condition that resulted in the nuclear power plant being in an unanalyzed condition, and since both trains of containment cooling systems were inoperable, this condition is being reported under 10 CFR 50.73(a)(2)(v), for any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident.

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		YEAR	SEQUENTIAL NUMBER	REV NO.	
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Event Description:

On March 23, 2009 21:00 Central Daylight Time (CDT) with the station at 100 percent power, inoperability of the containment fan coil unit 'A' [FCU] was identified. While preparing to remove the fan [FAN] motor [MO] during maintenance, workers saw that the fan was spinning backward and an excessive amount of air was blowing through gaps in the ventilation ductwork [DUCT]. The fan had been in an off/auto condition since November 14, 2008. Investigation found the containment fan coil unit backdraft damper [UDMP] not fully closed. This condition allowed backflow from the operating containment fan coil unit 'B'. At the time of discovery there was no immediate reportability since the fan was inoperable and the Technical Specification (TS) Limiting Condition for Operation (LCO) had been entered for the maintenance activity of replacing the fan motor.

Following a review of the operability of required containment cooling systems [BK] since November 2008, it was determined that Technical Specifications had been violated numerous times during this time due to inoperability of various combinations of containment cooling system components and the stuck open containment fan coil unit 'A' backdraft damper. Engineering determined that with the backdraft damper failing to close upon stopping the fan, the containment fan coil unit 'A' would likely have tripped if required to start during an accident from the off/auto condition due to overcurrent.

Per the Updated Safety Analysis Report (USAR) Revision 21, Section 6.4:

"Either of the following combinations of equipment will provide sufficient heat removal capability to maintain the post-accident containment vessel pressure below the design value:

- All four containment fan-coil units
- Two containment fan coil units and one internal containment spray pump"

The following TS apply to the containment cooling systems:

TS 3.3.c.1.A.3. During power operation or recovery from inadvertent trip, any one of the following conditions of inoperability may exist during the time intervals specified. If OPERABILITY is not restored within the time specified, then within 1 hour action shall be initiated to:

- Achieve HOT STANDBY within the next 6 hours.
- Achieve HOT SHUTDOWN within the following 6 hours.
- Achieve COLD SHUTDOWN within an additional 36 hours.

(i) One containment fancoil unit train may be out of service for 7 days provided the opposite containment fancoil unit train remains OPERABLE.
(ii) One containment spray train may be out of service for 72 hours provided the opposite containment spray train remains OPERABLE.
(iii) The same containment fancoil unit and containment spray trains may be out of service for 72 hours provided their opposite containment fancoil unit and containment spray trains remain OPERABLE.

The last time the containment fan coil unit 'A' was placed to the off/auto position was November 14, 2008 and the backdraft damper has been open since then. A review of the inoperability of the two containment fan coil unit trains ('A' and 'B' for one train and 'C' and 'D' for the other train) and the two containment spray pump [BE] trains ('A' and 'B'), show numerous cases where TS 3.3.c.1.A.3 has been violated. Examples were found where both trains of containment fan coil units were inoperable or where the same train containment fan coil unit and containment spray train was out of service with the opposite train inoperable.

The backdraft damper stuck open due to the damper open assist actuator linkage being out of adjustment. The upper arm was found on the shaft such that the actuator assist pin would not contact the lever arm attached to the damper and assist in opening the damper. The lower lever arm was found under the open assist pin rather than above it. This configuration would not aid in opening the damper with the actuator assist function. The lever arm was also found to be interfering with a bearing mounting stud causing it to restrict movement in the closed position. The backdraft damper was repaired and the LCO was exited on March 26, 2009 at 23:35 CDT.

This condition is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B), as a condition which was prohibited by the plant's Technical Specifications, 10 CFR 50.73(a)(2)(ii)(B), as a condition that resulted in the nuclear power plant being in an unanalyzed condition, and since both trains of containment cooling systems were inoperable at various times, this condition is being reported under 10 CFR 50.73(a)(2)(v), for any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident.

Event and Safety Consequence Analysis:

The backdraft damper stuck open due to the damper open assist actuator linkage being out of adjustment. The damper is a gravity backdraft damper with an air actuator that assists the damper to the open position. The actuator does not assist the damper to the closed position. When air is isolated to the damper, the damper acts as a check damper.

The damper has two lever arms on the end of two of the damper blade shafts. The open assist actuator is designed to push on these to assist in opening the damper. The push pins which assist in opening the damper move out of the way when the actuator is failed closed allowing the damper to cycle as a check damper.

This condition would not impact airflow through the ducting since an emergency discharge damper in the system is not affected by this damper and flowpath. However, with the stopped fan rotating backwards, a potential for a fan trip on a start signal is postulated due to increased starting horsepower requirement and the locked rotor inrush current.

The cooling of containment is provided by two systems: Containment fan coil units and containment spray systems. The containment fan coil units and containment spray system protect containment integrity by limiting the temperature and pressure that could be experienced following a Design Basis Accident. The Limiting Design Basis Accidents relative to containment integrity are the loss-of-coolant accident (LOCA) and steam line break (SLB). During normal operation, the fan coil units are required to remove heat lost from equipment and piping within the containment. In the event of the Design Basis Accident, either of the following combinations will provide sufficient cooling to limit containment pressure to less than design values: Four fan coil units or two fan coil units plus one containment spray pump.

Due to various containment cooling system components being taken out of service while the damper was in the stuck open position from November through March, both trains of containment cooling were considered inoperable.

The containment air cooling system is designed to keep containment below the design pressure during a

design basis event. The containment fan coil units have minimal impact on large early release frequency because the Kewaunee containment is able to withstand a severe accident for 24 hours or more before pressure reaches the containment failure pressure, which is significantly higher than the design pressure. Therefore, the risk impact of this event is very low.

Cause:

The backdraft damper stuck open due to the damper open assist actuator linkage being out of adjustment.

Corrective Actions:

The damper lever arm assist actuator linkage was readjusted to operate correctly.

The containment fan coil unit 'B' backdraft damper was checked and did not have a similar condition. The containment fan coil units 'C' and 'D' dampers are of a different design.

Similar Events:

None.