Dominion Energy Kewaunee, Inc.
N490 Highway 42, Kewaunee, WI 54216-9511

Dominion®

SEP 2 9 2005

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Serial No. 05-633
KPS/LIC/RR: RO
Docket No. 50-305
License No. DPR-43

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION
LICENSEE EVENT REPORT 2005-005-01

Dear Sirs:

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

Report No. 50-305/2005-005-01

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

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

Very truly yours,

Michael G. Gaffney
Site Vice President, Kewaunee Power Station

Attachment

Commitments made by this letter: NONE

IE22

cc: Mr. J. L. Caldwell
Administrator Region III
U.S. Nuclear Regulatory Commission
2443 Warrenville Road
Suite 210
Lisle, IL 60532-4352

Mr. J. F. Stang
Project Manager
U.S. Nuclear Regulatory Commission
Mail Stop O-8-H-4a
Washington, D. C. 20555

Mr. S. C. Burton
NRC Senior Resident Inspector
Kewaunee Power Station

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2007

Estimated burden per response to comply with this mandatory collection request: 50 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 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, (3150-0066), 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)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Kewaunee Power Station	05000305	1 of 4

TITLE (4)

Emergency Diesel Generator Exhaust Ductwork Not Adequately Protected from Potential Tornado Winds & Missiles

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	24	2005	2005	-- 005 --	01	09	29	2005	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N
POWER LEVEL (10)	000

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

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

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
David Lohman / Richard Repshas	(920) 388-8368 / (920) 388-8217

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	x				

ABSTRACT

On March 24, 2005, with unit in the refueling shutdown condition, a walk-down was being conducted in the Kewaunee Power Station (KPS) Turbine Building, as part of an evaluation of the Turbine Building response to design basis tornado winds. Sections of sheet metal panel siding on the Turbine Building are designed to blow out / blow in due to tornado wind loading, as given in Updated Safety Analysis Report (USAR) Appendix B. However, loss of this siding would expose the Class 3 portion of the A and B Emergency Diesel Generator (EDG) exhaust ductwork to tornado wind loads. The response of the sheet metal panels would be that the ductwork could be subjected to full design basis tornado force. Exposure to tornado winds would likely result in deformation of the ductwork for each EDG. On April 19, 2005, during the evaluation to determine a resolution to the tornado wind EDG ductwork deformation problem, it was determined that the EDG exhaust ductwork was also susceptible to turbine and tornado missiles. Appendix B of the USAR evaluates turbine and tornado missiles for Class 1 portion of the EDG. It does not address how the Class 3 structures and components associated with the EDG could impact its operation if impacted by a missile. Deformation of the EDG exhaust ducts could result in some reduction of EDG capacity, due to postulated increase in exhaust backpressure. The apparent cause relative to this condition is the original design of the plant, which did not take these effects into account. Design Change Request DCR-3582 was completed and it reinforced the guides for the EDG exhaust ducts and reinforced the existing structural steel to carry the guide loads. A probabilistic evaluation of tornado missiles, utilizing the TORMIS computer program, was performed. An evaluation of the effects of turbine missiles on the 'B' EDG exhaust duct was also performed.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Kewaunee Power Station	05000305	2005	-- 005 --	01	2 of 4

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

Event Description:

On March 24, 2005 with unit in the refueling shutdown condition, a walk-down was being conducted in the Kewaunee Power Station (KPS) Turbine Building as part of an evaluation of the Turbine Building response to design basis tornado winds. The Turbine Building is a mixed classification building, according to Appendix B, Section B.2 of the KPS Updated Safety Analysis Report (USAR). In that regard, the Turbine Building has to be able to withstand design basis tornado wind conditions without jeopardizing the Class 1 equipment housed in the building.

Through study of design information for KPS and consultation with a recognized industry expert in tornados (including response of structures to tornados), it has been determined that the Turbine Building response to design basis tornado winds would not jeopardize the Class 1 equipment housed in the building. Sections of sheet metal panel [PL] siding on the KPS Turbine Building are designed to blow out / blow in due to tornado wind loading, as given in USAR Appendix B. However, loss of this siding would expose the Class 3 portion of the 'A' and 'B' Emergency Diesel Generator (EDG) [DG] exhaust ductwork [DUCT] to tornado wind loads. The response of the sheet metal panels in the Turbine Building (clearing in reaction to the approaching tornado to vent the building) would likely be such that this Class 3 EDG exhaust ductwork (each located just inboard of the Turbine Building east wall) could be subjected to full design basis tornado force winds (300 mph plus 60 mph translational speed for a total of 360 mph). Exposure to winds of that magnitude would likely result in deformation of the exhaust ductwork for each EDG at the anchor [SPT] located between the Turbine Building east wall and the Turbine Building crane rails. This would also likely result in deformation of the guide channel beams where the exhaust ductwork passes through the Turbine Building roof.

On April 19, 2005, during the evaluation to determine a resolution to the tornado wind EDG ductwork deformation problem, it was determined that the EDG exhaust ductwork was also susceptible to turbine and tornado missiles. Appendix B of the Updated Safety Analysis Report (USAR) evaluates turbine and tornado missiles for Class 1 portion of the EDG. It does not address how the Class 3 structures and components associated with the EDG could impact its operation, if impacted by a missile.

This report does not identify a Safety System Functional Failure.

Event Analysis:

This condition is being reported in accordance with 10CFR50.73(a)(2)(ii)(B), "Any event or condition that resulted in the nuclear plant being in an unanalyzed condition that significantly degraded plant safety".

The function of EDG exhaust ducts is to vent EDG exhaust gases to the atmosphere. They are constructed of ¼" thick carbon steel plate and are supported by a series of guides, springs, and anchors. The function of the guides is to provide lateral support to the duct. Each duct is free to move vertically at the guides and spring supports. The duct is vertically supported at the anchors and spring supports.

USAR Appendix B Section B.9.1 discusses the analysis performed for turbine missile effects at KPS. The focus of the text contained in the USAR is on Class I structures and components. The USAR makes little mention of Class 3 structures and components, and does not specifically address the EDG exhaust ductwork. It has been determined that the EDG exhaust ductwork was not considered in the analysis.

Turbine missiles affect only the 'B' EDG exhaust duct, since it is physically located directly opposite the #1 Low Pressure Turbine.

Cause:

The condition whereby the EDG exhaust ductwork was not adequately protected from the effects of tornado winds and missiles has existed since initial operation of KPS. The apparent cause relative to this condition is the original design of the plant did not take these effects into account.

Corrective Actions:

1. Completed Design Change Request DCR-3582 (EDG Exhaust Duct Reinforcement for Tornado Wind Loading).

   The 'A' and 'B' EDG exhaust ducts are located immediately inside of the east wall of the Turbine Building from approximately EL. 608'-4"' up to EL. 700'. The 'A' EDG exhaust line is located on the north end of the east Turbine building wall adjacent to column line 9. The 'B' EDG exhaust line is located adjacent to the east Turbine Building wall between column lines 5 and 6. Each duct is supported laterally by 3 guides and two anchor supports that are strategically placed along their lengths. Also, two spring cans support the duct vertically.

   Detailed analyses of the existing ducts, duct supports and supporting structural steel were performed for the tornado wind loading. The results of the analyses documented concluded that a number of modifications were required to ensure structural integrity of the exhaust duct and its supporting systems. More specifically, two guides on each duct along with one structural steel member for the south duct required modification to increase their strength. Additionally for the Turbine Building roof duct guides for both exhaust ducts, new channel frames and tension rods were installed to support distributing the load to stronger parts of the roof structure.

2. Performed a probabilistic evaluation of tornado missiles.

   The TORMIS computer program develops the probability of tornado missiles striking the modeled plant structures and other targets, using probability techniques. The NRC, in a Safety Evaluation Report dated October 26, 1983, concluded that TORMIS is an acceptable approach for demonstrating compliance with 10 CFR 50 Appendix A General Design Criteria 2, regarding 50 Appendix A General Design Criteria 2, regarding protection of safety-related plant features from the effects of tornado and high wind generated missiles.

   The results of the TORMIS evaluation show the damage probability per year for the EDG exhaust vents is 4.09E-07. This probability is less than 1E-06 per year. Per NUREG 0800, NRC Standard Review Plan, Section 3.5.1.4 – Missiles Generated by Natural Phenomena, and its associated Regulatory Guides, if the probability of a damaging missile strike is less than 1E-06 per year, then it can be considered not credible.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Kewaunee Power Station	05000305	2005	-- 005 --	01	4 of 4

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

3. Performed an evaluation of the effects of turbine missiles on the 'B' EDG exhaust duct.

   The results of this evaluation showed the 'B' EDG exhaust duct has sufficient turbine missile protection based on the criteria of NUREG 0800, Section 3.5.1.3. KPS has demonstrated turbine disc integrity, the turbine overspeed protection has redundancy and has been evaluated to show that it minimizes the potential for missile generation due to an overspeed condition, and a redundant EDG is available.

Similar Events:

None.