



MAY 21 2007

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

Serial No. 07-0395
KPS/LIC/RS: RO
Docket No. 50-305
License No. DPR-43

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION
LICENSEE EVENT REPORT 2007-007-00

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. 50-305/2007-007-00

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 Mr. Richard Sattler at (920) 388-8121.

Very truly yours,

Leslie N. Hartz
Site Vice President, Kewaunee Power Station

Attachment

Commitments made by this letter: NONE

JE22

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

Ms. Margaret H. Chernoff
Project Manager
U.S. Nuclear Regulatory Commission
Mail Stop O-8G9A
Washington, DC 20555-0001

NRC Senior Resident Inspector
Kewaunee Power Station

LICENSEE EVENT REPORT (LER)

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

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.

FACILITY NAME (1)

Kewaunee Power Station

DOCKET NUMBER (2)

05000305

PAGE (3)

1 of 4

TITLE (4)

Unexpected Safety Injection Response With Safeguards Buses Connected To The Reserve Auxiliary Transformer

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	23	2007	2007	-- 007	-- 00	05	22	2007	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		N		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR : (Check all that apply) (11)						
POWER LEVEL (10)		99.6%		20.2201(b)		20.2203(a)(3)(ii)		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)	X	50.73(a)(2)(v)(A)		73.71(a)(5)
				20.2203(a)(2)(ii)		50.36(c)(2)	X	50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
				20.2203(a)(2)(iii)		50.46(a)(3)(ii)	X	50.73(a)(2)(v)(C)		
				20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)	X	50.73(a)(2)(v)(D)		
				20.2203(a)(2)(v)	X	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)
Richard Sattler	(920) 388-8121

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)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT

On 3/23/2007 at 15:16 CST, with the plant at approximately 100% power, it was determined that automatic sequencing both trains of engineered safety features (ESF) equipment while both ESF buses are aligned to a single transformer could not meet design basis assumptions. The analysis shows that, in this arrangement, bus 5 and 6 degraded voltage relays may trip and subsequently shift both buses to their respective diesel generators. The plant design basis is for both safety buses to remain connected to offsite power when it is available. Both safety buses were manually aligned to the reserve auxiliary transformer (for relatively short durations) seven times during last three years. The electrical distribution system was normally aligned such that this lineup could have automatically occurred following a degradation of bus 5 voltage (fast bus transfer). The following example is provided in NUREG-1022, Event Reporting Guidelines, for reportability under 10 CFR 50.73(a)(2)(v): "Both offsite electrical power (transmission lines) and onsite emergency power (usually diesel generators) are considered to be separate functions by [General Design Criteria] GDC 17. If either offsite power or onsite emergency power is unavailable to the plant, it is reportable regardless of whether the other system is available. GDC 17 defines the safety function of each system as providing sufficient capacity and capability, etc., assuming the other system is not available. Loss of offsite power should be determined at the essential switchgear buses."

This event is being reported in accordance with 10CFR50.73(a)(2)(i)(B) as an operation which was prohibited by the plant's Technical Specifications, and 10 CFR 50.73(a)(2)(v)(A),(B),(C), and (D), "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to (A) Shut down the reactor and maintain it in a safe shutdown condition, (B) Remove residual heat, (C) Control the release of radioactive material, and (D) mitigate the consequences of an accident."

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Kewaunee Power Station	05000305	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 of 4
		2007	-- 007	-- 00	

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

Event Description:

On 3/23/2007 at 15:16 CST, it was determined that automatic sequencing both trains of engineered safety features (ESF) equipment while both ESF buses [BU] are aligned to a single transformer [XFMR] could not meet design basis assumptions. The affected transformer is the reserve auxiliary transformer (RAT). The analysis shows that, in this arrangement, bus 5 and 6 degraded voltage relays [59][RLY] may trip and subsequently shift both buses to their respective diesel generators [DG]. The plant design basis is for both safety buses to remain connected to offsite power when it is available. Both safety buses were manually aligned to the RAT (for relatively short durations) seven times during the last three years. The electrical distribution system was normally aligned such that this lineup could have automatically occurred following a degradation of bus 5 voltage (fast bus transfer).

The following example is provided in NUREG-1022 for reportability under 10 CFR 50.73(a)(2)(v): "Both offsite electrical power (transmission lines) and onsite emergency power (usually diesel generators) are considered to be separate functions by [General Design Criteria] GDC 17. If either offsite power or onsite emergency power is unavailable to the plant, it is reportable regardless of whether the other system is available. GDC 17 defines the safety function of each system as providing sufficient capacity and capability, etc., assuming the other system is not available. Loss of offsite power should be determined at the essential switchgear buses."

Per GDC Criterion 17, "The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents."

Analysis has shown that the receipt of a Safety Injection (SI) with both bus 5 and bus 6 aligned to the RAT may result in a loss of available offsite power to the ESF buses.

Event Analysis:

This event is being reported in accordance with 10CFR50.73(a)(2)(i)(B) as an operation which was prohibited by the plant's Technical Specifications, and 10 CFR 50.73(a)(2)(v)(A),(B),(C), and (D), "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to (A) Shut down the reactor and maintain it in a safe shutdown condition, (B) Remove residual heat, (C) Control the release of radioactive material, and (D) mitigate the consequences of an accident."

Preliminary (and conservative) calculations found that if bus 1-5 and 1-6 are connected to the RAT, certain safety-related motor loads take longer to start than anticipated. The increased starting time typically occurs around 25-53 seconds from start of the SI event and results in bus voltage decaying below the degraded voltage relay setpoint. Safety related buses would be disconnected from the RAT and connected to their diesel generator.

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

This condition is not fully in compliance with GDC 17 that states in part:

“Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies.”

Offsite power to bus 1-5 and 1-6 may be lost if they are connected to the RAT and an SI occurs. An undervoltage condition occurs during motor loading and the offsite supplies (the 138 kV system) described in GDC 17 are lost. The buses are transferred to the diesel generators rather than remaining connected to the available offsite source. This condition is not fully in conformance with GDC 17 since offsite power to the buses is lost when it is actually available to power plant equipment.

Per Generic Letter 79-36; “A voltage degradation during the electrical starting condition becomes a safety concern either if the degradation causes the starting condition to be prolonged so as to become a sustained undervoltage or if the voltage degradation causes frequent spurious shedding of the ESF loads from the preferred power source, the offsite electric grid.”

During the last three years, buses 5 and 6 were simultaneously powered from the RAT seven times as shown below:

	Instances	Duration (min)
total @ power	4	44
total	7	88

The instances above were all short in duration and revolved around component retesting and manually shifting power supplies to the buses.

Also, for most of the last three years, the electrical distribution system was aligned such that a degraded voltage on bus 5 could have automatically transferred the bus 5 supply to the RAT. This would have resulted in operation with both bus 5 and 6 supplied by the RAT.

Technical Specification 3.7. states (in part):

- a. The reactor shall not be made critical unless all of the following requirements are satisfied:
 - 1. The reserve auxiliary transformer is fully operational and energized to supply power to the 4160-V buses.
- b. During power operation or recovery from inadvertent trip, any 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.
 - 1. Either auxiliary transformer may be out of service for a period not exceeding 7 days provided the other auxiliary transformer and both diesel generators are OPERABLE.

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

Technical Specification 3.0.c states:

c. Standard Shutdown Sequence

When a LIMITING CONDITION FOR OPERATION is not met, and a plant shutdown is required except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 36 hours.

Under the described scenario, the RAT would not have been fully operational for periods exceeding 7 days with the plant critical. This scenario would have required entry into TS 3.7 and then 3.0.c. This never occurred.

Safety Significance:

The exposure time described above is only a small fraction of the reporting period. This condition is only of concern for events for which an SI signal is generated, such as a LOCA or a steam line break. Furthermore, for some events, enough time is available for manual restoration of off-site power, which is consistent with Emergency Operating Procedural actions to be taken during the recover phase of the SI. Therefore, this condition is of very low safety significance (i.e., < 1E-6).

Cause:

This design deficiency was not determined during initial plant design because the required calculational tools for evaluating transient motor response were not available.

Corrective Actions:

Operation with both buses 5 and 6 connected to the RAT, (including alignment allowing the automatic transfer feature), has been procedurally prohibited.

Similar Events:

None