

# CATEGORY 1

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FACIL:50-305 Kewaunee Nuclear Power Plant, Wisconsin Public Service 05000305  
AUTH.NAME AUTHOR AFFILIATION  
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 98-012-00:on 981008,inadequate pre-job brief resulted in  
redundant component cooling pumps being inoperable for  
approx 5 minutes.Caused by configuration conflict.LER will  
be routed to entire operations staff.With 981109 ltr.

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NRC-98-112

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November 9, 1998

10 CFR 50.73

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305  
Operating License DPR-43  
Kewaunee Nuclear Power Plant  
Reportable Occurrence 1998-012-00

In accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System," the attached Licensee Event Report (LER) for reportable occurrence 1998-012-00 is being submitted.

Sincerely,

for

Mark L. Marchi  
Site Vice President-Kewaunee Plant

MMK

Attach.

cc - INPO Records Center  
US NRC Senior Resident Inspector  
US NRC, Region III

9811180152 981109  
PDR ADOCK 05000305  
S PDR

LER

**LICENSEE EVENT REPORT (LER)**

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

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<b>FACILITY NAME (1)</b> Kewaunee Nuclear Power Plant	<b>DOCKET NUMBER (2)</b> 05000	<b>PAGE (3)</b> 1 OF 6
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**TITLE (4)**  
Inadequate Pre-job Brief Results in Redundant Component Cooling Pumps Being Inoperable for Approximately Five Minutes

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	08	1998	1998	012	00	11	09	98		05000
									FACILITY NAME	DOCKET NUMBER
										05000

<b>OPERATING MODE (9)</b> N	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)</b>									
<b>POWER LEVEL (10)</b> 096	20.2201(b)			20.2203(a)(2)(v)			X	50.73(a)(2)(i)		50.73(a)(2)(viii)
	20.2203(a)(1)			20.2203(a)(3)(i)			X	50.73(a)(2)(ii)		50.73(a)(2)(x)
	20.2203(a)(2)(i)			20.2203(a)(3)(ii)				50.73(a)(2)(iii)		73.71
	20.2203(a)(2)(ii)			20.2203(a)(4)				50.73(a)(2)(iv)		OTHER
	20.2203(a)(2)(iii)			50.36(c)(1)				50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
20.2203(a)(2)(iv)			50.36(c)(2)				50.73(a)(2)(vii)			

**LICENSEE CONTACT FOR THIS LER (12)**

<b>NAME</b> Martin M. Kwitek - Senior Plant Operations Supervisor	<b>TELEPHONE NUMBER (Include Area Code)</b> (920) 388-8641
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**COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO		MONTH	DAY	YEAR

**ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)**

On October 8, 1998, while the plant was at full power, a special test procedure (STP) was performed in part to check the emergency diesel generator (EDG) auto inhibit relay for the B component cooling (CC) pump in response to NRC Generic Letter 96-01. In accordance with the STP, the voltage restoration control switch for the B train emergency safeguards 4160 volt bus was placed in manual. With the switch in manual, the bus is inoperable. Kewaunee Technical Specifications (TS) allows one safeguards bus to be inoperable for up to 24 hours. With the switch in manual, the EDG will automatically start, however engineered safeguards (ESF) loads will not automatically shed or load onto the bus. During performance of the STP, the A train CC pump was started and the B train CC pump was stopped as part of the test conditions. Following completion of the B CC pump test, both CC pumps were running. In order to return the CC system operating conditions to normal, one pump running, and prior to returning the voltage restoring switch to automatic, the decision was made and actions taken to stop the A CC pump. In order to stop the pump, the discharge isolation valve, CC-4A, was closed to prevent fast closure of the discharge check valve, CC-3A, as the pump discharge pressure decayed. Isolating the A CC pump rendered the pump inoperable. Although the B CC pump was running and supplying CC flow, the ESF power supply was not operable and effectively both trains of CC were out of service. The potential for rendering both CC pumps inoperable was not discussed at the pre-job briefing with the personnel involved in the test. During the short time that both pumps were inoperable, approximately five minutes, the plant was vulnerable to a loss of component cooling in the event a loss of off-site power were to occur.

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

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant	05000305	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 6
		1998	-- 012	-- 00	

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

**DESCRIPTION OF EVENT**

This report describes an event that resulted in redundant component cooling water [CC] pumps [P] being rendered inoperable for approximately five minutes.

On October 8, 1998, while the plant was at full power, a special test procedure (STP-DGE-42-09) was performed in part to check the emergency diesel generator (EDG) [DG] auto inhibit relay [RLY] for the B component cooling (CC) pump. The test was being conducted as part of Kewaunee's response to NRC Generic Letter 96-01. A Nuclear Control Operator (NCO) and Nuclear Auxiliary Operator (NAO) both from the relief shift were assigned the task of aligning and operating plant equipment per the STP as coordinated by the test engineer.

In accordance with the STP, the voltage restoration control switch [ASU] for the B train emergency safeguards 4160 volt [EA] bus [BU] [EK] was in manual. With the switch in manual the bus is inoperable. Kewaunee Technical Specifications (TS) allows one safeguards bus to be inoperable for up to 24 hours. When the bus voltage restoration switch is in manual, the associated EDG will automatically start, however engineered safeguards (ESF) loads will not automatically shed or load onto the safeguards bus.

Prior to the start of the STP, the B Component Cooling (CC) Pump was running. During performance of the STP, the A CC pump was started and the B CC pump was stopped as part of the pre-conditions for the test. Following completion of the B CC pump test, both CC pumps were running. In order to return the CC system operating conditions to normal, the test NCO decided to restore the plant to the pre-test condition, that is, B CC pump running and A CC pump in automatic standby. This configuration had been established two days earlier when a similar test was run on the A train auto inhibit relay.

Prior to stopping the A CC pump, the pump's discharge isolation valve, CC-4A, was closed. This prevents rapid closure of the discharge check valve, CC-3A, as the A CC pump discharge pressure decays. Isolating the A CC pump rendered the A train CC pump inoperable. Although the B CC pump was running and supplying CC flow, the ESF power supply was not operable. Effectively both trains of CC were out of

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

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Kewaunee Nuclear Power Plant	05000305	1998	-- 012	-- 00	3 OF 6

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

service. Immediately after the pump was stopped the NAO reopened CC-4A thereby returning the A CC pump to service.

This configuration conflict was identified by the Shift Supervisor (SS) when he approached the control boards to check on the status of the test and inquired about the steps used to stop the A CC pump. He was expecting the B CC pump to have been stopped. At the time of identification, the problem had already been resolved by reopening CC-4A after stopping CC pump A. The total time of the event was estimated at less than five minutes.

The situation of having both trains of CC out of service due to closure of the discharge isolation valve was the subject of a Licensee Event Report in January of 1998 (LER 98-001). Corrective actions as a result of that LER included a revision to the controlling procedures for stopping a CC pump (N-CC-31 and SP 31-168). These revisions were issued in August 1998.

**CAUSE OF THE EVENT**

A review of the event with members of the operating shift as well as the NCO supporting the test provided the following:

- The STP required a pre-job briefing for an Infrequently Performed Test or Evolution (IPTE) per Nuclear Administrative Directive (NAD) 3.1. This pre-job briefing was held with the test NCO, test NAO, the test personnel, along with the Shift Supervisor and the Control Room Supervisor. This briefing was held the day before the test. The previous LER on CC pump operation was not discussed as part of the IPTE as the operation of the CC pump was a small part of the overall test scope. The NCOs who were at the controls as Reactor Operator (RO) and Balance of Plant Operator (BOP) were not included in the IPTE. By excluding the RO from the briefing, a separate team was created in the control room and at the CC pumps.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Kewaunee Nuclear Power Plant	05000305	1998	-- 012	-- 00	4 OF 6

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

- Prior to the STP, but following the IPTE, the BOP and the test NCO discussed final alignment of the CC system. They agreed that returning the plant to the pre-test configuration was desired. Since B CC pump was running before the test, this would be the lineup coming out of the test. This practice is intended to equalize run time on plant equipment. The Shift Supervisor, Control Room Supervisor, and RO were not involved in this discussion. This removed the chance for obtaining input from the rest of the control room staff which could have identified the need to leave CC-4A open with B ESF bus out of service.
- When the test NCO directed the NAO to set up for stopping the A CC pump, he did not direct usage of the normal system operating procedure N-CC-31 at the pump. This is an acceptable practice as stopping a CC pump is a straightforward single valve manipulation which is legitimately committed to memory. Likewise, the test NCO did not refer to the procedure. Therefore, the note which had been added to the procedure to verify both trains operable was not reviewed. The test NCO indicated he was aware of the requirement. A review of the Operations Revision Review Binder confirms that he, as well as all members of the shift, had reviewed the procedure revision. A review of the procedure may have identified the configuration concern.
- When the test NCO dispatched the NAO to setup for stopping CC pump A, he did not specifically communicate this action to the CRS or the RO. The CRS was standing near the test NCO and the NCO stated he thought the CRS was aware of his intent to stop the A train pump. The CRS was not aware of the intent to stop CC pump A.
- This STP had been run on the A train ESF bus and CC pump two days prior. The same NCO was used to perform the test. Use of the on-shift NCOs for the test would tie them up most of the day and would be distracting. This use of a dedicated test NCO is a positive practice. It allows the on-shift RO and BOP to focus on control panel status and other work in progress. It may however, have given a false sense of comfort that the test had been run successfully on the A train, therefore, the B train would present no special challenges.

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

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant	05000305	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 6
		1998	-- 012	-- 00	

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

- The on-shift personnel were not on duty when the A train test was run. The SS noted that he had been aware that the A train test had successfully left the B train CC pump in service and assumed the B train test would also consider train operability requirements. This was not discussed in the IPTE; however the SS felt the test procedure would provide specific control. The test procedure, in fact, was deliberately written to provide the Operations Group the flexibility to align the CC system as dictated by plant conditions at the end of the test.

**ANALYSIS OF THE EVENT**

This event is being reported under 10CFR50.73(a)(2)(I)(B), "an event or condition prohibited by the plant's Technical Specifications," and 10CFR50.73(a)(2)(ii), "an event that resulted in the plant being in a condition that was outside the design basis." This event was initially reported via the Event Notification System (ENS) on October 8, 1998 as a condition outside of the design basis of the plant.

Kewaunee TS 3.7.b.6 allows one 4160 volt ESF bus to be inoperable for up to 24 hours. This TS also stipulates that this condition may exist provided the redundant bus and its loads remain operable. TS 3.3.d requires that two CC trains be operable when the plant is above criticality. TS 3.3.d also allows one train to be inoperable for up to 72 hours. TS 3.7.c requires that when an ESF piece of equipment does not have both its normal and emergency power available, it may be considered operable only when its redundant piece of equipment remains operable. When the A CC pump's discharge valve was closed with the B train ESF bus voltage restoring switch in manual, both CC pumps were inoperable. Under this condition, in the unlikely event of a loss of off-site power, a complete loss of CC system cooling capability would have been experienced.

Although both CC pumps were inoperable, the event had only minor safety significance. The pumps were only inoperable for a short period of time. Either pump could have been placed in service as needed with a minimum of operator action. In addition to this judgement of safety significance, an evaluation of the instantaneous core

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

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Kewaunee Nuclear Power Plant	05000305	1998	-- 012	-- 00	6 OF 6

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

damage frequency and increase in core damage probability was performed. The instantaneous core damage frequency was  $3.5E-4$ /year. The increase in core damage probability was increased by  $2.9E-9$ . The EPRI PSA Applications Guide considers any temporary condition with a core damage frequency of less than E-3 and increased core damage probability less than E-6 to be non-risk significant. Therefore, the event did not pose a significant core damage risk.

**CORRECTIVE ACTIONS**

1. This LER will be routed to the entire Operations staff and licensed SROs and STAs for information.
2. This event will be used as a case study for License Requalification training in first quarter 1999. This will include emphasis on ensuring that changes in ESF equipment are communicated to the CRS and/or SS consistent with the Kewaunee standards for communications.
3. Based on the risk data obtained as part of the evaluation for safety significance, a further review of options for taking manual action credit when stopping a CC pump will be pursued. This should preclude the need for declaring a CC pump inoperable for the purposes of shifting pumps when an operator is immediately available for opening the discharge valve.

**ADDITIONAL INFORMATION**

None

**SIMILAR EVENTS**

LER 98-001 Two Component Cooling Water Pumps out of Service Simultaneously - TS Violation.