

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9906210076 DOC.DATE: 99/06/14 NOTARIZED: NO DOCKET #  
FACIL:50-305 Kewaunee Nuclear Power Plant, Wisconsin Public Servic 05000305  
AUTH.NAME AUTHOR AFFILIATION  
SCHAEFER,R.T. Wisconsin Public Service Corp.  
MARCHI,M.L. Wisconsin Public Service Corp.  
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 99-002-00:on 990514,noted that inadequate STP results in  
redundant containment level instrument channels & violation  
of TS.Restored voltage on output loop to within acceptable  
limits.With 990614 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 7  
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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Public Service

NRC-99-044

Wisconsin Public Service Corporation  
(a subsidiary of WPS Resources Corporation)  
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June 14, 1999

10 CFR 50.73

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

Ladies/Gentlemen:

Docket 50-305  
Operating License DPR-43  
Kewaunee Nuclear Power Plant  
Reportable Occurrence 1999-002-00

In accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System," the attached Licensee Event Report (LER) for reportable occurrence 1999-002-00 is being submitted.

Sincerely,

*RP Repshua For*  
Mark L. Marchi  
Vice President-Nuclear

RTS

Attach.

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

9906210076 990614  
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**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: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If 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 Nuclear Power Plant

DOCKET NUMBER (2)

05000305

PAGE (3)

1 OF 6

TITLE (4)

Inadequate Surveillance Test Procedure Results in Redundant Containment Level Instrument Channels Degraded and in Violation of Technical Specifications.

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
05	14	1999	1999	002	000	06	14	1999		05000
										05000

  

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)						
		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)		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)	X	50.73(a)(2)(vii)		

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

NAME: Russell T. Schaefer  
 TELEPHONE NUMBER (Include Area Code): (920) 388-8725

**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)**

YES (if yes, complete EXPECTED SUBMISSION DATE).

X NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

On May 14, 1999 with the plant at 97% power, during a review of plant logs, an Operator noted the plant process computer for 'B' wide range containment sump level was indicating "\*N". The indication was noted and reported to the Control Room Supervisor (CRS). The control board indicator was indicating zero, as expected.

The "\*N" indication was a result of the output loop's voltage being outside the limits for the plant process computer to accurately read. We believe the cause of the voltage output anomaly was due to the calibration process used in the Surveillance Procedure (SP) for this system. The process used in this SP involves open circuiting the output current loop during calibration, while the input power is still applied. According to the equipment vendor, open circuiting the output loop, with power applied, may cause the isolation amplifier (part of the signal converter) to shift the output voltage off-scale, causing an abnormal reading.

Since we were not able to recreate the condition, we were unable to conclusively determine the resultant shift in the wide range containment sump level indication. Therefore we were unable to definitively determine the channel's operability. As a result, we are conservatively reporting this event as a violation of Technical Specification, Table 3.5-6.

After restoring the voltage on the output loop to within the acceptable limits, both trains of Wide Range Containment Sump Level were returned to operable status on May 14, 1999.

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		1999	-- 002 --	00	

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

DESCRIPTION OF EVENT

On May 14, 1999 with the plant at 97% power, during a review of plant logs, the Control Operator noted the plant process computer [CPU] point L8002A ('B' wide range containment sump level indication [LI]) was indicating "\*N". The indication was noted and reported to the Control Room Supervisor (CRS). The control board [CB] indication was indicating zero, as expected. After the CRS and the Shift Supervisor (SS) discussed the issue, the SS issued a work request to have the Instrument and Control (I&C) group investigate/repair computer point L8002A and verify operation of the channel.

The instrumentation is an electro-mechanical arrangement with mechanical floats inside containment [NH], input/output isolating signal converter, and an output indicator loop. A voltage output of 1 volt is equivalent to 0 ft of liquid in containment, and a voltage output of 5 volts is equivalent to 22 ft. The instrumentation produces a "\*N" reading on the plant process computer when the voltage output is less than 0.8 volts ("off-scale low") or greater than 5.2 volts ("off-scale high"). On May 14, 1999, the as found voltage output for train 'B' was 0.715 volts, which produced a reading of "\*N".

Troubleshooting this condition involved checking the voltage in the output loop of the signal converter. The voltage was found to be outside the acceptance criteria for the surveillance procedure. Since the voltage output is the input for the wide range containment sump level indication on the control board, we concluded that the train 'B' instrument could have been inoperable. After restoring the 'B' train output loop voltage at approximately 2025 hours on May 14, 1999, I&C technicians performed a similar check on the 'A' train. Even though the plant process computer point for the 'A' train was reading 0.0 as expected, the as found voltage for the output loop was also outside the acceptance criteria for the surveillance procedure. The as found voltage output for train 'A' was 0.820 volts. The troubleshooting activities for that day were concluded by restoring the output loop's voltage for both 'A' and 'B' channels to within the acceptable limits. Further investigation revealed that the plant process computer indication for 'B' train of wide range containment level had read "\*N" since October 30, 1998.

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CAUSE OF THE EVENT

Kewaunee Nuclear Power Plant's (KNPP's) efforts to recreate the same situation with the wide range containment level channels were not successful. The cause of the "\*N" indication was the voltage output being outside the plant process computer's limits of 0.8 to 5.2 volts. Since we were not able to recreate the same indication during our instrumentation troubleshooting activities, we are not able to conclusively determine why the instrumentation's output voltage was less than 1.0 volt.

We believe the cause of the voltage output anomaly was due to the calibration process used in the Surveillance Procedure (SP) for this system, which is SP 30-223, "Wide Range Containment Sump Level Loop Calibration". The process used in this SP involves open circuiting the output current loop during calibration, while the input power is still applied. According to the equipment vendor, open circuiting the output loop, with power applied, could cause the isolation amplifier (part of the signal converter) to shift the output voltage off-scale, thus resulting in an abnormal reading. Additional troubleshooting efforts were not able to conclusively establish this as the definitive cause of the instrumentation's output voltage being less than 1.0 volt.

The reason this condition was not identified sooner by an Operator is primarily because KNPP's Operators are not expected to use the plant's process computer outputs to verify the control boards' indication. The Operators review the plant's process computer data log in accordance with NAD 3.17, "Shift Operation and Turnover." The expectation of these log reviews is to look for trends, changes in those trends, and unexpected variances. This "\*N" indication had existed since startup from the Fall 1998 Refueling Outage and did not change, therefore there was no variance in the log review. Consequently, there was nothing during the log reviews associated with Wide Range Containment Sump Level that appeared abnormal.

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**ANALYSIS OF THE EVENT**

This event is conservatively being reported under 10CFR50.73(a)(2)(i) and (vii), "Any operation or condition prohibited by the plant's Technical Specifications," and "an event where two independent channels became inoperable in a single system designed to mitigate the consequences of an accident." Technical Specifications require two channels of wide range containment level indication, except during a 14 day Limiting Condition of Operation (LCO), when a minimum of one channel is required to be operable, or a 72 hour LCO with both channels inoperable.

The purpose of the wide range containment sump level instrumentation as defined in the Technical Specification (TS) basis (TS B3.5-4) is to aid the operator in identification of an accident and assessment of plant conditions during and following an accident. The condition found existed longer than the TS allowed limits. The condition also could have inhibited operator performance in accordance with the Integrated Plant Emergency Operating Procedure (IPEOP) for containment flooding.

A conservative extrapolation of the voltage output data calculates the instrumentation would have read approximately 1.6 ft. lower than actual. Even though we believe the indication would have been approximately 1.6 ft. lower than actual, we believe there still would have been indication provided to aid the operator in identifying an accident and assessing the plant conditions following an accident. Therefore, we believe the instrumentation was able to meet its intended design function, as described in TS basis (TS B3.5-4).

Since we could not recreate the condition, the resulting shift in the wide range containment sump level indication could not be precisely determined. Therefore we were unable to definitively determine the channel's operability. As a result, we are conservatively reporting this event as a violation of TS Table 3.5-6. This event did not adversely impact plant operation or overall plant safety. Even though the error in the instrumentation could have inhibited procedural implementation, we believe this condition would not have adversely affected KNPP's ability to ensure public health and safety would have been maintained.

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The highest calculated flood level in containment at KNPP after a loss of coolant accident is approximately 6.67 ft. (wide range containment sump level indication). Wide Range Containment Sump Level indication of 5.75 ft. is used as an entry condition to IPEOP FR-Z.2, "Response to Containment Flooding." When the additional 1.6 ft. is added to the 5.75 ft. the resultant level is still less than the "boron dilution Level" of 8.14 ft. The "Boron Dilution Level" is the calculated level when boron is diluted enough to allow the reactor to reach criticality. Therefore, with the indication being 1.6 ft. lower than the actual level in containment there is no safety significance.

**CORRECTIVE ACTIONS**

The corrective actions taken were:

- 1) Administrative controls were placed on the SP (SP 30-223) to preclude its use.
- 2) Instrumentation for both 'A' and 'B' trains was restored to operable status.
- 3) Plant process computer logs for wide range containment sump level indications were reviewed from the Fall 1996 Refueling Outage Startup to present. This review confirmed that the "\*N" indication for the wide range containment sump level did not exist during the previous operating cycle.

Additional corrective actions are:

- 1) Additional troubleshooting will be performed during the 2000 refueling outage to gain a better understanding of the definitive root cause of this event.
- 2) Prior to its next use, the surveillance procedure (SP 30-223) will be changed to require power to be secured whenever the output loop is open circuited and verify proper signal voltage after test equipment is removed.

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**ADDITIONAL INFORMATION:**

**SIMILAR EVENTS:**

LER 97-003, "Plant Operation Outside of Tech Specs with Reactor Vessel Level Indication Out of Service."

**EQUIPMENT FAILURES:**

NONE