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REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9012180012 DOC. DATE: 90/12/12 NOTARIZED: NO DOCKET #
 FACIL: 50-305 Kewaunee Nuclear Power Plant, Wisconsin Public Service 05000305
 AUTH. NAME AUTHOR AFFILIATION
 APPLE, T.M. Wisconsin Public Service Corp.
 EVERS, K.H. Wisconsin Public Service Corp.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-011-00: on 901112, unplanned actuation of containment vent isolation sys occurred. Probably caused by worn sample selector switch. Selector switch replaced & connections repaired. W/901212 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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INTERNAL:	ACNW		2	2		ACRS		2	2
	AEOD/DOA		1	1		AEOD/DSP/TPAB		1	1
	AEOD/ROAB/DSP		2	2		NRR/DET/ECMB 9H		1	1
	NRR/DET/EMEB 7E		1	1		NRR/DLPQ/LHFB11		1	1
	NRR/DLPQ/LPEB10		1	1		NRR/DOEA/OEAB		1	1
	NRR/DREP/PRPB11		2	2		NRR/DST/SELB 8D		1	1
	NRR/DST/SICB 7E		1	1		NRR/DST/SPLB8D1		1	1
	NRR/DST/SRXB 8E		1	1		REG FILE 02		1	1
	RES/DSIR/EIB		1	1		RGN3 FILE 01		1	1
EXTERNAL:	EG&G BRYCE, J.H		3	3		L ST LOBBY WARD		1	1
	NRC PDR		1	1		NSIC MAYS, G		1	1
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600 North Adams • P.O. Box 19002 • Green Bay, WI 54307-9002

December 12, 1990

10 CFR 50.73

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

Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Reportable Occurrence 90-011-00

The attached Licensee Event Report for reportable occurrence 90-011-00 is being submitted in accordance with the requirements of 10 CFR 50.73; "Licensee Event Report System."

Sincerely,

for K. H. Evers
Manager-Nuclear Power

DJM/jms

Attach.

cc - INPO Records Center
Mr. Patrick Castleman, US NRC
US NRC, Region III

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) **Kewaunee Nuclear Power Plant** DOCKET NUMBER (2) **050003051** OF **04** PAGE (3)

TITLE (4) **Actuation of the Containment Vent Isolation System Due to Age Related Degradation of the Radiation Monitoring System**

EVENT DATE (6)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
1	1	29	09	01	00	1	2	29	N/A		05000
1	1	29	09	01	00	1	2	29			05000

OPERATING MODE (8) **N** THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

20.402(b)	<input checked="" type="checkbox"/>	20.406(c)	<input type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	72.71(b)	<input type="checkbox"/>
20.406(a)(1)(i)	<input type="checkbox"/>	50.38(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	<input type="checkbox"/>	72.71(c)	<input type="checkbox"/>
20.406(a)(1)(ii)	<input type="checkbox"/>	50.38(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vi)	<input type="checkbox"/>	OTHER (Specify in Abstract below and in Text, NRC Form 365A)	
20.406(a)(1)(iii)	<input type="checkbox"/>	50.73(a)(2)(i)	<input type="checkbox"/>	50.72(a)(2)(vii)(A)	<input type="checkbox"/>		
20.406(a)(1)(iv)	<input type="checkbox"/>	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(vii)(B)	<input type="checkbox"/>		
20.406(a)(1)(v)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(i)	<input type="checkbox"/>		

POWER LEVEL (10) **100**

LICENSEE CONTACT FOR THIS LER (12)

NAME **Thomas M. Apple - Plant Nuclear Engineer** TELEPHONE NUMBER **414 388-2560**

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDPS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDPS

SUPPLEMENTAL REPORT EXPECTED (14) YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15) **N/A** MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

This report describes the unplanned actuation of the containment vent isolation system, an engineered safety feature (ESF). On November 12, 1990, a Reactor Operator (RO) touched the sample selector switch with the plant at 100% power. This caused containment vessel-air particulate monitor (R-11) and containment vessel-radioactivity gas monitor (R-12) to alarm. R-11 and R-12 radiation level indicators displayed normal activity throughout the event. As designed the post-LOCA hydrogen containment vent isolation valve, LOCA-2B, closed from the high radiation alarm. Proper operating procedures were followed and samples of containment atmosphere were analyzed to verify normal radiation levels.

The incident was repeated several times during the subsequent investigation. The probable cause was determined to be a worn sample selector switch. This switch is a manually operated three way rotary switch that enables sample source selection for R-11 and R-12. Other possible causes identified were a disconnected lead from the postaccident high radiation level recorder and a cold solder joint on the sample selector switch. The root cause of the incident was determined to be age-related degradation of the radiation detection system.

Corrective action included: Replacing the sample selector switch and repairing the connections. R-11 and R-12 were returned to service on November 14, 1990. replacement of the radiation monitoring system is scheduled to be completed in 1993.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR 9 0	SEQUENTIAL NUMBER - 0 1 1	REVISION NUMBER - 0 0		
					0 2 OF 0 4	

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

DESCRIPTION OF EVENT

This report describes the unplanned actuation of an engineered safety feature (ESF). At 1556, November 12, 1990, the containment vessel-air particulate monitor (R-11) [DET] and the containment vessel-radioactivity gas monitor (R-12) [DET] alarmed with the plant at 100% power. As designed the post-LOCA hydrogen containment vent isolation valve [ISV], LOCA-2B, closed due to the high radiation alarm [RA].

The incident occurred when the Reactor Operator (RO) touched the sample selector switch [HS] while verifying the switch position during performance of Surveillance Procedure 87-125, "Shift Instrument Channel Checks -Operating." The sample selector switch is located in the control room on the front panel of the R-11 drawer. It is a manually operated three way rotary switch that enables sample source selection for R-11 and R-12. Samples can be taken from the containment atmosphere or the reactor building discharge vent. A purge line can be selected to clean the sample line.

Throughout the event, the sample selector switch was positioned to sample containment atmosphere. When the RO touched the switch, R-11 and R-12 unexpectedly alarmed. The operators continued to observe normal activity readings from R-11 and R-12 radiation level indicators [RI]. The operators implemented Operating Procedure A-RM-45, "High Activity Radiation Monitoring System," and verified closure of valve LOCA-2B. Health Physics verified normal radiation levels by analyzing particulate/iodine and gas samples of containment atmosphere. Work request 45-49832 was issued to investigate and correct the cause of the R-11 and R-12 alarm.

During the investigation the sample selector switch was agitated several times to verify the source of the R-11 and R-12 alarm. Readings from R-11 and R-12 radiation level indicators remained normal. An Instrument and Control person determined the switch was worn and was the probable cause of the unplanned actuation. A cold solder joint on the sample selector switch and a disconnected lead from the postaccident high radiation level recorder [RR] were also identified during the investigation and could have contributed to the incident.

Corrective action was taken to replace the sample selector switch and repair the connections. The incident could not be repeated after making the repairs. R-11 and R-12 were tested in accordance with surveillance procedure 45-049.11, "Radiation Monitoring System Test Channel R-11" and surveillance procedure 45-049.12, "Radiation Monitoring System Test Channel R-12." R-11 and R-12 were returned to service at 1558 on November 14, 1990.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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					0 3	OF 0 4

TEXT (If more space is required, use additional NRC Form 388A's) (17)

CAUSE OF EVENT

R-11 and R-12 unexpectedly alarmed when the RO had touched the sample selector switch during a Surveillance Procedure on November 12, 1990. The root cause of this event was determined to be the age of the radiation detection system.

Contributing causes to the event were:

1. Normal wear of the sample selector switch.
2. A questionable cold solder joint on the sample selector switch. A cold solder joint is a poor union between the wire and terminal. High resistance occurs as the metals oxidize. A temporary loss of signal from the switch could cause R-11 and R-12 to alarm.
3. A disconnected lead from the postaccident high radiation level recorder. It was discovered lying on the power supply module for the containment air particulate channel drawer (R-11). The module had exposed high reference voltage terminals. The disconnected lead could have contacted the exposed high voltage terminals causing the module to spike and alarm R-11 and R-12. The disconnected lead was a result of retracting and inserting the R-11 drawer for maintenance.

ANALYSIS OF EVENT

The event is being reported in accordance with 10 CFR 50.73 (a)(2)(iv) as a condition that resulted in the automatic ESF actuation of the containment vent isolation system. This incident was reported to the Nuclear Regulatory Commission (NRC) at 1743 in accordance with 10 CFR 50.72 (b)(2)(ii) on November 12, 1990.

There were no safety consequences as a result of the actuation. Containment radiation levels remained normal and valve LOCA-2B closed. Had there been high activity in containment, the ESF actuation of valve LOCA-2B would have performed its designed function.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

CORRECTIVE ACTIONS

The following corrective actions have been taken to prevent a recurrence of these events:

1. Design work has been initiated to replace the radiation monitoring system. Extensive design work has been completed on the replacement radiation monitoring system. Installation of the system is scheduled to be completed in 1993.
2. The sample selector switch was replaced.
3. The postaccident high radiation level recorder leads from the containment air particulate channel drawer (R-11) power supply were rerouted. Rerouting the leads should prevent them from being disconnected when retracting and inserting the R-11 drawer.
4. Leads were appropriately terminated.

ADDITIONAL INFORMATION

Equipment Failures: Westinghouse Electric Corporation Rotary Switch Part Number 2373A02H03 Manufactured by Grayhill Incorporated

- Similar Events:
- 89-13: Broken wire on R-13 causes ASV Actuation
 - 89-14: The age and design of the radiation monitoring system resulted in actuation of the Auxiliary Building Special Ventilation System (an Engineered Safety Feature)
 - 85-16: Inadvertent actuation of ESF component due to momentary power loss