CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9705220415 DOC.DATE: 97/05/15 NOTARIZED: NO DOCKET #
FACIL:50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana M 05000315
AUTH.NAME AUTHOR AFFILIATION
NOBLE,D. Indiana Michigan Power Co.
BLIND,A.A. Indiana Michigan Power Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-009-00:on 970415,radiation monitor particulate channels inoperable due to use of incorrect calibration constant,discovered.Caused by personnel error.TS action statement for channels w/TSs were entered.W/970515 ltr.

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TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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CATEGORY 1 DOCUMENT

Indiana Michigan
Power Company
Cook Nuclear Plant
One Cook Place
Bridgman, MI 49106

INDIANA MICHIGAN POWER

May 15, 1997

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Operating Licenses DPR-58
Docket No. 50-315

Document Control Manager:

In accordance with the criteria established by 10 CFR 50.73 entitled Licensee Event Report System, the following report is being submitted:

97-009-00

Sincerely,

A. Alan Blind

A. A. Blind
Site Vice President

/mbd

Attachment

c: A. B. Beach, Region III
E. E. Fitzpatrick
P. A. Barrett
S. J. Brewer
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Records Center, INPO
NRC Resident Inspector

220073

NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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.

FACILITY NAME (1)	DOCKET NUMBER (2)	Page 1 of 4
Donald C. Cook Nuclear Plant - Unit 1	50-315	

TITLE (4)
Radiation Monitor Particulate Channels Inoperable Due to Use of Incorrect Calibration Constant

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
04	15	97	97	-- 009 --	00	05	15	97	Cook, Unit 2	50-316
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	5
POWER LEVEL (10)	00

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(iii)		73.71(b)
	20.2203(a)(1)		20.2203(a)(3)(ii)		50.73(a)(2)(iv)		73.71c
	20.2203(a)(2)(i)		20.2203(a)(4)	X	50.73(a)(2)(v)		OTHER
	20.2203(a)(2)(ii)		50.36(c)(1)		50.73(a)(2)(vii)	(Specify in Abstract below and in Text, NRC Form 366A)	
	20.2203(a)(2)(iii)		50.36(c)(2)		50.73(a)(2)(viii)(A)		
	20.2203(a)(2)(iv)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(B)		
	20.2203(a)(2)(v)	X	50.73(a)(2)(ii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Mr. Doug Noble, Radiation Protection Superintendent	616/465-5901, x2527

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

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

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

On April 15, 1997, it was discovered that the calibration constant for the particulate channels of the Eberline radiation monitors were incorrect. A calibration constant value of 1.17 E-05 μCi/cpm had been used instead of the correct value of 4.66 E-05 μCi/cpm. The calibration constant for the Eberline particulate channel is based on what is referred to as the "divide by circuitry". The "divide by circuitry" converts detector pulses to units of activity. A channel's calibration constant is adjusted depending on which "divide by circuitry" is used. When the procedure was developed in 1990 for making the "divide by circuitry" adjustment it was incorrect. The cause for this event is personnel error.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition that resulted in the power plant being in a condition that was outside the design basis of the plant, 10 CFR 50.73(a)(2)(v)(C) as a condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material, and 10 CFR 50.73(a)(2)(i)(B) as operation prohibited by the plant's technical specifications.

Immediately upon confirming the error, the technical specification action statement for those channels with technical specifications were entered, the parameter file log sheets were revised to the correct value of 4.66 E-05 μCi/cpm, and the channel parameter files were revised to reflect the new calibration constant. Based on current requirements for the review and verification of information, no further actions are being taken. Additionally, based on other required monitors being operable and the ability to use the trending function of the particulate monitors this event did not represent a significant risk to the health and safety of the public.

Condition Prior to Event

Unit One was in Mode Five, Cold Shutdown, at 0 percent Rated Thermal Power.
Unit Two was in Mode One, Power Operation, at 100 percent Rated Thermal Power.

Description of Event

On April 15, 1997, it was discovered that the calibration constant for the particulate channels of the Eberline radiation monitors were incorrect. A calibration constant value of 1.17 E-05 μCi/cpm had been used instead of the correct value of 4.66 E-05 μCi/cpm.

The calibration constant for the Eberline particulate channel is based on what is referred to as the "divide by circuitry". The "divide by circuitry" converts detector pulses to units of activity. A channel's calibration constant is adjusted depending on which "divide by circuitry" is used. When the procedure was developed in 1990 for making the "divide by circuitry" adjustment it was incorrect.

A correct calibration constant value was provided for the "divide by 2" circuitry along with a formula for determining alternate "divide by circuitry" calibration constants. The Eberline particulate channels use a "divide by 4" circuit. The formula incorrectly switched the original "divide by circuitry" value and the new "divide by circuitry" value. This resulted in a larger number of counts being necessary to reach the required alarm setpoint or to reflect actual particulate activity.

Based on the incorrect formula, the following particulate channels have had incorrect calibration constants since 1990:

Unit 1
ERS-1301 Containment Lower Compartment - Train A
ERS-1401 Containment Lower Compartment - Train B
VRS-1501 Auxiliary Building Effluent monitor.

Unit 2
ERS-2301 Containment Lower Compartment - Train A
ERS-2401 Containment Lower Compartment - Train B
VRS-2501 Auxiliary Building Effluent monitor.

Cause of Event

The cause of this event is personnel error. Contributing to this was the lack of review and verification in 1990 of information used in preparation of the particulate channel calibration constant procedure.

Analysis of Event

This event is being reported in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition that resulted in the power plant being in a condition that was outside the design basis of the plant, 10 CFR 50.73(a)(2)(v)(C) as a condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material, and 10 CFR 50.73(a)(2)(i)(B) as operation prohibited by the plant's technical specifications.

Technical Specifications (TS) 3.3.2.1, Engineered Safety Feature Actuation System Instrumentation, 3.3.3.1, Radiation Monitoring Instrumentation, and 3.4.6.1, Reactor Coolant System Leakage Detection Systems require operability of the Eberline lower containment particulate channels, ERS-1301, ERS-1401, ERS-2301, and ERS-2401. TS 3.3.2.1 requires these channels while purging in Modes 1, 2, 3, and 4. TS 3.3.3.1 requires these channels while purging in Modes 1, 2, 3, 4, and 6. TS 3.4.6.1 requires these monitors during Modes 1, 2, 3, and 4.

The basis for TS 3.3.2.1 and 3.3.3.1 requirements while purging is to monitor and automatically isolate, if necessary, a release pathway from containment. The alarm setpoint is based on 10 CFR 20 limits. The setpoint was determined using the Noble gas setpoint and historical monitor data of the ratio of particulate to Noble gases. Purging is a limited activity, no more than 240 hours per year per unit is allowed by TSs.

The basis for TS 3.4.6.1 is to monitor and detect leakage from the reactor coolant pressure boundary. Operations trends particulate channel averages to monitor reactor coolant system leakage. With the incorrect calibration constant, trending of averages would still provide valuable information relative to reactor coolant leakage; however, the value shown would be smaller than actual.

VRS-1501 and VRS-2501 are not TS required instruments, but are described in the FSAR as instruments used to measure air particulate radioactivity in the unit vents. For annual effluent reporting purposes the particulate filters are removed and counted on a multi-channel analyzer independent of the Eberline particulate channel. Based on this, the calculation of total radioactivity releases from the Cook Nuclear Plant as reported in our annual effluent release reports are correct.

Based on the following, this event did not represent a significant risk to the health and safety of the public:

1. Purging is a limited activity;

2. Lower containment noble gas monitors, also required for purging, would have provided containment isolation in the event of an accident;

3. Containment area radiation monitors, also required for purging, would have provided containment isolation in the event of an accident;

4. Changes in reactor coolant leakage would have been indicated through trending on the particulate monitors, readings from the noble gas monitors, dew point monitor readings or from containment sump pump outs; and

5. The unit vent particulate channels are not used to perform dose assessments for emergency planning purposes.

Corrective Actions

Immediately upon confirming the error, the technical specification action statement for those channels with technical specifications were entered, the parameter file log sheets were revised to the correct value of 4.66 E-05 μCi/cpm, and the channel parameter files were revised to reflect the new calibration constant. In addition, radiation protection procedures were reviewed to find occurrences of the incorrect calibration constant. The review identified one procedure, 12 THP 6010 RPC.804, Eberline Radiation Monitoring System Secondary Source Calibration, step 5.33 particulate monitor where an incorrect calibration constant was used. This procedure was immediately placed on administrative hold to avoid further use of the incorrect calibration constant.

A review of all similar Eberline Radiation Monitoring System channels found no other problems. A review of calculations used to determine the current Eberline RMS calibration constants will be completed by 6/30/97.

Based on current information review and verification requirements and the radiation protection department's procedure, 12 THP 6010.RPP.007, Radiation Protection Documentation of Engineering Calculations/Justifications, no further preventive action is being taken.

Failed component identification

N/A

Previous Similar Events

None