

PRIORITY 1

(ACCELERATED RIDS PROCESSING)

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9407250057 DOC. DATE: 94/07/18 NOTARIZED: NO DOCKET #
 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana M 05000315
 AUTH. NAME AUTHOR AFFILIATION
 WEBER, G.A. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
 BLIND, A.A. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 94-008-00: on 940129, determined that filter system was inoperable. Caused by debris on fan unit bypass damper sealing area. Debris was removed & affected seals made good contact w/damper seals. W/940718 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
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INTERNAL: AEOD/DSP/TPAB	1 1	AEOD/ROAB/DSP	2 2
NRR/DE/EELB	1 1	NRR/DE/EMEB	1 1
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REG FILE 02	1 1	RES/DSIR/EIB	1 1
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EXTERNAL: EG&G BRYCE, J.H	2 2	L ST LOBBY WARD	1 1
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Indiana Michigan
Power Company
Cook Nuclear Plant
One Cook Place
Bridgman, MI 49106
616 465 5901



INDIANA
MICHIGAN
POWER

July 18, 1994

United States Nuclear Regulatory Commission
Document Control Desk
Rockville, Maryland 20852

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:

94-008-00

Sincerely,

A. A. Blind
Plant Manager

/sb

Attachment

c: J. B. Martin, Region III
E. E. Fitzpatrick
P. A. Barrett
R. F. Kroeger
M. A. Bailey - Ft. Wayne
NRC Resident Inspector
J. B. Hickman - NRC
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G. Charnoff, Esq.
D. Hahn
INPO
S. J. Brewer

9407250057 940718
PDR ADDCK 05000315
S PDR

JE221

LICENSEE EVENT REPORT (LER)

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

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 (MNNB 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.

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D. C. COOK NUCLEAR PLANT - UNIT 1

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05000 315

PAGE (3)

1 OF 5

TITLE (4) SPENT FUEL POOL EXHAUST VENTILATION SYSTEM INOPERABLE DUE TO UNACCEPTABLE LEAKAGE AROUND THE CHARCOAL ADSORBER

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	29	94	94	008	00	07	18	94	FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)						
POWER LEVEL (10)	0	20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
		20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)
		20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER
		20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		
		20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME

G. A. WEBER - PLANT ENGINEERING SUPERINTENDENT

TELEPHONE NUMBER (include Area Code)

616-465-1501

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
X	DA	SEAL	J073	Y					

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 April 25, 1994, a routine engineering review of post-surveillance as-found Halide Detector calibration data brought into question the operability of the SFP Exhaust filter system. The Halide Detector had been used for surveillance testing of filter system efficiency performed on January 29, 1994 and was used as the basis for considering the system operable. On May 12, 1994, retesting of the filter system efficiency with a calibrated instrument determined that the filter system was inoperable. With the system inoperable, Technical Specification 3.9.12 prohibits all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool. No such operations were in progress at the time of the retest. A June 17, 1994 Engineering Review concluded that the SFP Exhaust Filter System had been inoperable from January 29, 1994 until May 12, 1994. Fuel movement in the SFP did occur on February 23-26, 1994 and April 4-6, 1994 in violation of Technical Specification 3.9.12. The cause of the filter efficiency test failure was related to debris on the fan unit bypass damper sealing area. This problem was corrected and, on May 17, 1994 following retesting, the system was declared operable. No cause has been determined for the out-of-calibration as-found condition of the Halide Detector. This event is reportable as an operation or condition prohibited by the Plant's Technical Specifications. This event did not adversely impact the health and safety of the public.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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

Conditions Prior to Occurrence:

Unit One was in Mode 6 (Refueling)
Unit Two was in Mode 3 (Hot Standby)

Description of Event:

On April 25, 1994, a routine engineering review of post-surveillance as-found Halide Detector calibration data brought into question the operability of the Spent Fuel Pool (SFP) Exhaust Filter System (EIFS:DA/ABS). The Halide Detector had been used for surveillance testing of filter system efficiency performed on January 29, 1994 and was used as the basis for considering the system operable.

On January 29, 1994, the SFP Exhaust Vent System was tested and was capable of removing 99.1 percent of a halogenated hydrocarbon refrigerant test gas. This surveillance test determines the amount of leakage (measured in percent efficiency) through or around the charcoal adsorber, not the performance of the charcoal adsorber. The Halide Detector used in the January 29, 1994 test, was found to be out-of-calibration (reading 76 percent high) during the routine calibration. This instrument inaccuracy could have resulted in a January 29, 1994 efficiency of 98.3 percent, which is below the Technical Specification acceptance criteria of 99 percent.

A retest of SFP Exhaust Ventilation System Charcoal Adsorber was performed on May 12, 1994. A test gas removal efficiency of 98.7% was found. The SFP Exhaust Ventilation System was removed from service in accordance with Technical Specification 3.9.12. Due to the sensitivity of the test instruments, a Vendor representative was brought on-site to review the use of the test instruments and the leak test procedure. No deficiencies were noted in the test or use of the instruments. The charcoal adsorber test consists of releasing a halogenated hydrocarbon refrigerant test gas up-stream of the charcoal adsorber bed and measuring the upstream and downstream test gas concentrations.

On June 17, 1994, an Engineering Review determined that the SFP Exhaust Ventilation System Charcoal Adsorber was not capable of meeting the Technical Specification (3.9.12) surveillance test acceptance criteria, for removal of 99% of a halogenated hydrocarbon refrigerant test gas, from January 29, 1994 until May 12, 1994. The Action Statement requires suspension of all operations involving movement of fuel within the storage pool or crane operation with loads over the SFP, when the SFP Exhaust System is inoperable.

The Action Statement requirement of Technical Specification 3.9.12 was not met when subsequent fuel movement in the SFP occurred. Fuel was removed from the reactor core on February 23, 24, 25, and 26, 1994, and was reloaded in the reactor core on April 4, 5, and 6, 1994.

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94	008	00

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

Cause of Event:

The inability to meet the Technical specification acceptance criteria for leak testing of the charcoal adsorbers is two-fold:

- The leakage around the charcoal adsorber was due to debris on the sealing area of several damper blades.
- The test instrument inaccuracy resulted in the inability to detect the actual leakage around the charcoal adsorber during the January 29, 1994 test.

Analysis of Event:

This event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B) as an operation or condition prohibited by Technical Specifications since this condition would have existed when fuel movement occurred in the SFP during the Unit 1 Refueling Outage.

According to ANSI N510 - 1980, Appendix A, the purpose of the In-Place Leak Test is to verify that there is no significant leakage bypassing the air cleaning system. The tests are designed to determine only the amount of leakage through or around the installed bank of adsorber cells. The performance of the absorbent is not detected by these tests.

The fuel handling accident analyses are presented in chapter 14.2.1 of the UFSAR. Two analyses are presented, one for an accident inside the Containment Building, and the other for an accident in the Spent Fuel Pool. In the analysis for the accident inside Containment, no credit was taken for iodine removal by filters or for containment isolation. The calculation doses were approximately 80 Rem to thyroid, which is well within the 10 CFR 100 limit of 300 Rem to the thyroid.

In the analysis for the accident in the Spent Fuel Pool it was assumed that the charcoal filters removed 90 percent of the radioiodine released from the Spent Fuel Pool. This number cannot be compared directly to the Technical Specification methyl iodide removal efficiency lab test acceptance criteria of 90 percent, since 1) the Technical Specification value is specific to methyl iodide, and 2) the Technical Specification limit on bypass leakage must be taken into account.

The UFSAR analysis assumes that 99.75 percent of the iodine released into the Spent Fuel Pool from a shattered assembly is in the form of elemental iodine, and 0.25 percent is methyl iodide. The analysis further assumes a Spent Fuel Pool decontamination factor of 150 for elemental iodine, and 1 for methyl iodide. This means that only 1/150 of the elemental iodine is released from the pool into the Auxiliary Building along with all of the methyl iodides. After accounting for the pool decontamination factors, the iodine released to the Auxiliary Building atmosphere is composed of 73 percent inorganic iodine and 27 percent methyl iodide.

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

Analysis of Event continued:

The overall efficiency is a combination of the individual efficiencies for elemental and methyl forms of iodine, as well as the allowable filter bypass leakage. There is no Technical specification testing which directly measures elemental iodine removal efficiency. However, ERDA 76-21, entitled "Nuclear Air Cleaning Handbook" states that "...the efficiency of nearly any good grade of activated carbon, impregnated or not, will be at least 99 percent under any combination of temperature and humidity that would be encountered in a nuclear air cleaning system." Methyl iodide removal is required to be at least 90 percent, per the Technical Specifications. Bypass leakage is limited by the Technical Specifications to 1 percent.

With the above assumption, the overall efficiency of the adsorbers is 96 percent. This is conservative with respect to the UFSAR assumption of 90 per overall removal efficiency.

With the bypass leakage increased to 1.3 percent, the overall efficiency is 95 percent. Therefore, the UFSAR assumption of 90 percent overall removal efficiency was met.

It should be noted that the fuel handling accident for the Spent Fuel Pool would have acceptable results even with no charcoal filtration. With no filtration, the accident becomes the same as the accident inside Containment. In that analysis, no credit was taken for filtration or containment isolation. This argument was used in our submittal AEP:NRC:0959, which proposed a Technical Specification change to allow fuel handling operations with the crane bay roll-up door and the drumming room door open (this could result in iodine being released from a fuel handling accident that bypasses the charcoal filters.) The NRC accepted the proposed change via Technical specification Amendments 124 (Unit 1) and 111 (Unit 2). In the Safety Evaluation Report for those amendments, the NRC concluded:

An independent analysis of the consequences of a fuel handling accident in the Auxiliary Building was performed. No credit was given for removal of radioiodine by the charcoal adsorbers. Based on this, the analysis estimates that the 0-2 hour site boundary thyroid dose, without credit for containment and charcoal filtration, meets the intent of the SRP Section 15.7.4, "Radiological Consequences of Fuel Handling Accidents," acceptance criteria for "well within" the 10 CFR 100 exposure guideline values, i.e., 75 Rem for the thyroid...".

In conclusion, this event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B) an operation or condition prohibited by the Plant's Technical Specifications. However, the problem did not significantly impact public health and safety. The UFSAR overall removal efficiency was still met with the increased bypass leakage. Moreover, the 10 CFR 100 limits can be met event without any credit for the charcoal adsorbers.

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

Corrective Actions:

The SFP Exhaust System was removed from service on May 12, 1994, following the test failure. An inspection of the bypass dampers revealed that there was some gaps noted in several blade seals where debris was found on the blade sealing surfaces. The debris was removed and the affected seals made good contact with the damper seals. Subsequent testing revealed that an acceptable charcoal adsorber leakage rate of 99.4 percent. The SFP Exhaust Ventilation System was returned to service on May 17, 1994.

To ensure continued system operation, a quarterly Preventive Maintenance activity has been initiated to perform a visual inspection of the SFP charcoal adsorber bypass dampers.

Failed Component Identification:

Component I.D.: J073
Manufacturer: Johnson Controls
Model: D-1300

Previous Similar Events:

050-0315/92-08

