

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9801020028 DOC.DATE: 97/12/24 NOTARIZED: NO DOCKET #
 FACIL: 50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana M 05000316
 AUTH.NAME AUTHOR AFFILIATION
 SCHOEPF, P. Indiana Michigan Power Co.
 BLIND, A.A. Indiana Michigan Power Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-009-00: on 971126, blockage of containment air
 recirculation inlet line was noted. Caused by concrete which
 entered line during repair. Blockage was removed & procedures
 were implemented to preclude future blockages. W/971224 ltr.

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

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



December 24, 1997

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

Operating Licenses DPR-74
Docket No. 50-316

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. A. Blind
Site Vice President

/mbd

Attachment

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

1022



9801020028 971224
PDR ADOCK 05000316
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LICENSEE EVENT REPORT (LER)

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 (MNB 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)
Donald C. Cook Nuclear Plant - Unit 2DOCKET NUMBER (2)
50-316

Page 1 of 3

TITLE (4)

Blockage of Containment Air Recirculation Inlet Line Results in Condition Outside Design Bases

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
11	26	97	97	-- 009 --	00	12	24	97	None	
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 11: (Check one or more) (11)							
6			20.2201(b)			20.2203(a)(3)(i)			50.73(a)(2)(iii)	
POWER LEVEL (10)			20.2203(a)(1)			20.2203(a)(3)(ii)			50.73(a)(2)(iv)	
0			20.2203(a)(2)(i)			20.2203(a)(4)			50.73(a)(2)(v)	
			20.2203(a)(2)(ii)			50.36(c)(1)			50.73(a)(2)(vii)	
			20.2203(a)(2)(iii)			50.36(c)(2)			50.73(a)(2)(viii)(A)	
			20.2203(a)(2)(iv)			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)	

(Specify in Abstract below and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME

Mr. Paul Schoepf, Safety Related Mechanical Engineering Superintendent

TELEPHONE NUMBER (Include Area Code)

616/465-5901, x2408

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)

YES

X NO

EXPECTED SUBMISSION DATE (15)

MONTH

DAY

YEAR

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

During a foreign material exclusion inspection conducted on November 26, 1997, one of two Train B inlet lines for the hydrogen removal and air recirculation from the Unit 2 number 2 and 3 Steam Generator enclosures was found to have been blocked by concrete. The condition was reported under the provisions of 10CFR50.72(b)(2)(i) on November 30, 1997.

The blockage occurred during the Unit 2 Steam Generator replacement in 1988. During this time, portions of the Steam Generator enclosure structure were removed to allow access to the Steam Generators. Following the replacement, the structures were reconstructed. It is believed that the concrete entered the line during the repair of the structure. The blockage has been removed, and procedures will be implemented to preclude future blockages of these lines.

An evaluation of the impact of the blockage has concluded that there would have been adequate flow through the Steam Generator enclosure to preclude excessive accumulation of hydrogen. Thus, the condition did not present a significant risk to the health and safety of the public.

LICENSEE EVENT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Cook Nuclear Plant - Unit 2	50-316	YEAR	SEQUENTIAL	REVISION	2 OF 3
		97	- 009 -	00	

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

Conditions Prior to Event

Unit 2 was in Mode 6, Refueling

Description of the Event

During a foreign material exclusion inspection conducted on November 26, 1997, it was discovered that one of two Train B inlet lines for hydrogen removal and air recirculation from the Unit 2 number 2 and 3 Steam Generator enclosures had been sealed sometime in the past. This was reported under the provisions of 10CFR50.72(b)(2)(i) on November 30, 1997.

The air recirculation system at the Cook Nuclear Plant is designed to circulate air from the upper containment to the lower containment as a means of distributing hydrogen generated as a result of an accident. By distributing the hydrogen throughout the containment, the hydrogen concentration at any single location can be maintained below 4 volume per cent. The majority of the air circulated is drawn from the upper containment by the recirculation fan (EHS/BB), flows into lower containment, and is returned to the upper containment through the ice condenser. A small portion of the flow, however, is diverted from the lower containment to the "hydrogen skimmer system" which draws air from the pressurizer compartment, the Steam Generator compartments, and the instrument room, removing hydrogen from these areas.

Steam Generator compartments 2 and 3 each have two inlet pipes to the hydrogen skimmer system (Train A and B). Additionally, the compartments are interconnected by openings in the wall between them. Assuming a single active failure of Train A, with one inlet pipe for Train B blocked, the flow through the two Steam Generators would have been approximately one half of the design flow of 500 cfm. This flow is being confirmed by test.

Cause of the Event

The blocking of the duct is believed to have occurred during the Unit 2 Steam Generator replacement project in 1988, during which the Steam Generator enclosure was demolished and restored. Most likely, while pouring the concrete over the forming plate used to form the new Steam Generator enclosure roof, concrete filled the existing penetration. The blockage went undetected because the current surveillance procedures do not measure flow through the system. Rather, the surveillances check for fan operation, backdraft damper operation, suction valve operation, and position of fixed dampers in the system.

Analysis of the Event

This event is reportable under the provisions of 10CFR50.73(a)(2)(i)(B), operation prohibited by the plant's technical specifications, and 10CFR50.73(a)(2)(ii)(B), a condition which is outside the design basis of the plant.

The production of hydrogen inside the containment following a loss of coolant accident occurs due to water radiolysis and metal corrosion. The prime contributors to metal corrosion generated hydrogen are aluminum and zinc, both of which have high corrosion rates when exposed to alkaline solutions. Inside the containment, these metals would come into contact with an alkaline solution through submergence in the water which accumulates inside the containment or by contact with the solution being sprayed inside containment via the containment spray system.

LICENSEE EVENT CONTINUATION

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

Analysis of the Event (cont'd)

There are no spray nozzles inside the Steam Generator compartments, and the compartments do not fill with water following the floodup of the containment. Therefore, the hydrogen generated in the lower containment occurs outside of the Steam Generator compartment, and it is well mixed with the air (nominal value of 40000 cfm) being circulated through the lower compartment by the recirculation fan. Thus, there is little potential for significant amounts of hydrogen to accumulate in the Steam Generator compartment, even with reduced flow, because the principal source of hydrogen entering the Steam Generator compartment is flow from the well mixed portion of the lower containment.

The hydrogen skimmer system is composed of two trains, and except for short periods of time when a train may have been removed for maintenance within an Technical Specification Action Statement, the redundant system would have been available, and it would have been capable of providing the design flow.

Corrective Action

The concrete was removed from the pipe. Additionally, every branch of both the Unit 1 and Unit 2 hydrogen skimmer systems was inspected. No additional plugging was found.

A test will be conducted on both Unit 1 and Unit 2 prior to startup to confirm that required air flows are achieved. These tests will also measure the air flow through the Unit 2 Steam Generator number 2 and 3 compartment, in the as-found condition.

Preventive Action

The lessons learned from this event will be forwarded to the Unit 1 Steam Generator replacement project, and post maintenance testing of the hydrogen skimmer system will be incorporated into that project's procedures.

Failed Component Identification

Not applicable

Previous Similar Events

None