

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9804240098 DOC. DATE: 98/04/20 NOTARIZED: NO DOCKET #
 FACIL: 50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana M 05000316
 AUTH. NAME: AUTHOR AFFILIATION
 SCHOEPP, P. American Electric Power Co., Inc.
 SAMPSON, J.R. American Electric Power Co., Inc.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 98-004-00: on 980319, ice condenser bypass potentially in excess of design basis limits occurred. Caused by unauthorized mods. Known degraded conditions resulting in divider barrier pass being corrected. W/980420 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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American Electric Power
Cock Nuclear Plant
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Bridgman, MI 49106
516 365 5901



April 20, 1998

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 (LER), the following report is being submitted.

98-004-00

Sincerely,

A handwritten signature in cursive script that reads "J. R. Sampson".

J. R. Sampson
Site Vice President

/tlm

Attachment

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

9804240098 980420
PDR ADOCK 05000316
S PDR

IE221/

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

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TITLE (4)

Ice Condenser Bypass Potentially In Excess of Design Basis Limit

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
03	19	98	98	-- 004 --	00	04	20	98	None	
									FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		00	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)	73.71e
			20.2203(a)(2)(i)			20.2203(a)(4)			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)			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. Paul Schoepf, Safety Related Mechanical Engineering Superintendent

616/465-5901, x2408

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs

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 March 19, 1998, with Unit 2 in Mode 5, cold shutdown, it was determined that the design basis limit of 5 square feet for bypass flow around the ice bed during an accident had been exceeded by the cumulative effect of multiple bypass flow paths. This was determined reportable under 10CFR50.72(b)(2)(i), as a degraded condition discovered while the unit is shutdown that, if found while the reactor was operating, would have resulted in the plant being in an unanalyzed condition, and an ENS notification was made at 1422 hours EST. The investigation later determined that the cumulative total did not exceed the design basis value, however, given the number of degraded conditions already identified, it could not be guaranteed that additional unidentified bypass flow paths do not exist. Therefore, this LER is voluntarily submitted in accordance with 10CFR50.73(a)(2)(ii).

The individual bypass conditions are attributed to unauthorized modifications. All known bypass flow paths are being corrected as they are discovered. Preventive actions are being taken to prevent unauthorized and inadvertent design changes, to enhance the recognition of a design change, and to enhance the quality of the design basis and configuration documentation.

The condition was evaluated and it was determined that the safety significance of the known bypass flow paths around the ice bed is negligible. If all known conditions existed simultaneously, and passed flow at their maximum bypass capability, the cumulative effect would have been below the design limit of 5 square feet. Therefore, the health and safety of the public was never in jeopardy.

LICENSEE EVENT CONTINUATION

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

Conditions Prior to Event

Unit 2 was in Mode 5, Cold Shutdown

Description of the Event

The Cook units are pressurized water reactors with ice condenser containments. The ice condenser containment requires that the steam and air flowing from the lower containment compartment in the event of an accident be routed to the upper compartment via the ice bed. To accomplish this, a structural barrier, called the divider barrier, separates the lower and upper containment compartments. The divider barrier includes the walls of the ice compartment, the upper deck, the compartments enclosing the upper portion of the steam generators and pressurizer, the gate separating the reactor cavity from the refueling canal, and portions of the walls of the refueling canal.

The design basis limits bypass flow around the ice bed to no more than 5 square feet (ft²). The installed bypass through the refueling cavity drains is equivalent to 2.3 ft². As a result of recent inspection efforts, it was determined that the 5 ft² limit was potentially exceeded in the past as a result of multiple bypass conditions in addition to the installed bypass. The cumulative effect for the known bypass flow paths had been calculated to be 5.24 ft². Since it could not be determined how long most of the identified conditions had existed, the bypass flow was conservatively assumed to have concurrently existed.

The degraded condition which was identified which increased the bypass flow above the limit was an area of gray duct tape on the bay 24 end wall. The duct tape appeared to be covering gaps in the sheet metal around conduits penetrating the ice condenser end wall. The gap in the sheet metal was estimated to be 1 ft² with six separate two inch conduits penetrating the opening. The end wall of the ice condenser in the lower plenum area is a reinforced concrete wall with embedded pipe sleeves for glycol piping penetration and direct embedded conduit penetrations. After further physical examination of the area behind the sheet metal, it was determined that although a 1 ft² existed in the sheet metal lagging and the insulation had been patched with gray duct tape, no gaps or openings in the wall were discovered. Based upon the physical configuration of the end wall in the area of the conduits, a 1 ft² bypass path was determined not to exist. Utilizing a nominal two inch diameter and neglecting the cable in the conduits, the maximum potential flow path through the six conduits would be 0.13 ft². The revised cumulative known divider barrier bypass flow path was therefore 4.37 ft².

Although the revised bypass flowpath was reduced below the design limit of 5 ft², it was decided that, based on the number of degraded conditions which had been identified which resulted in bypass flow paths, the potential exists that unidentified bypass currently exists which would result in a cumulative total of greater than 5 ft². It was considered significant that the total bypass flow had approached the design basis limit, therefore, this event is being voluntarily submitted as an LER.

Cause of Event

The individual bypass conditions are attributed to unauthorized modifications. The unauthorized modifications created bypass paths via material substitutions, original construction discrepancies, inadequate service life, and unsealing of spare penetrations during the performance of work activities.

Based on the individual deficiencies, it was concluded that the cause of the pattern of degraded conditions was a lack of understanding of the design basis of containment as a system, in combination with a lack of documented configuration and inadequate implementation of the design change control process. All known bypass flow paths are being corrected as they are discovered. Preventive actions are being taken to prevent unauthorized and inadvertent design changes, to enhance the recognition of a design change, and to enhance the quality of the design basis and configuration documentation.

LICENSEE EVENT CONTINUATION

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

Analysis of Event

This condition was determined to be reportable on March 19, 1998, in accordance with 10CFR50.72(b)(2)(i), as a degraded condition discovered while the unit is shutdown that, if found while the reactor was operating, would have resulted in the plant being in an unanalyzed condition, and an ENS notification was made at 1422 hours EST. Although the investigation later revealed that the known cumulative bypass did not exceed the design limit of 5 ft², this LER is being voluntarily submitted in accordance with 10CFR50.73(as)(2)(ii).

The known bypass flow paths summarized below represent the condition as reported on March 19, 1998:

	Open Area in ft ²
Refueling Cavity Drains	2.3
Ice Condenser Air Handling Unit line	0.005
2-CPS-209, 2-CPS-210, 2-CPS-244	0.1
Conduit Penetration in #22 Steam Generator doghouse	0.087
Conduit Penetrations Using "RTV" Sealant	0.349
Divider Barrier Hatches	1.4
Ice Condenser End Wall Penetrations	1
TOTAL	5.241

As a result of the investigation the end wall penetration open area was reduced, resulting in the total known bypass being reduced below the design limit of 5 ft²:

	Open Area in ft ²
Refueling Cavity Drains	2.3
Ice Condenser Air Handling Unit line	0.005
2-CPS-209, 2-CPS-210, 2-CPS-244	0.1
Conduit Penetration in #22 Steam Generator doghouse	0.087
Conduit Penetrations Using "RTV" Sealant	0.349
Divider Barrier Hatches	1.4
Ice Condenser End Wall Penetrations	0.13
TOTAL	4.371

As a result of the reduction in bypass, it has been concluded that the safety significance of this condition is negligible. As depicted in the above summary, the total known bypass flow paths result in open area less than the design limit of 5 ft². Therefore, as the design limit was not exceeded, the health and safety of the public were never in jeopardy.

Corrective Actions

The known degraded conditions resulting in divider barrier pass are being corrected via corrective maintenance or design changes as they are identified.

To prevent unauthorized or inadvertent design changes, 12 PMP 5040.DCP.001 "Design Change Determination", has been developed and implemented. To enhance recognition of a design change, 12 PMP 2291.PLAN.001 "Work Control Planning Process", is being implemented. Additionally the UFSAR validation project will enhance the quality of the design basis and configuration documentation.

LICENSEE EVENT CONTINUATION

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

A procedure will be developed to guide inspection of the divider barrier on a refueling outage frequency for possible bypass paths. This procedure will include provisions to ensure that the design basis allowable cumulative bypass is not exceeded, through correction and/or tracking of any identified bypass paths. This procedure will be developed and initially implemented prior to restart from the current outages.

Failed Component Identification

Not Applicable

Previous Similar Events

None

