

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9805220062 DOC. DATE: 98/05/15 NOTARIZED: NO DOCKET #
 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana M 05000315
 AUTH. NAME AUTHOR AFFILIATION
 SCHOEPP, P. Indiana Michigan Power Co.
 SAMPSON, J. R. Indiana Michigan Power Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 98-012-01: on 980305, discovered that 1/4 inch particulate retention requirement had not been maintained in containment recirculation pump. Caused by incompleting design change. Will correct condition under new design change. W/980515 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 4
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

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| EXTERNAL: L ST LOBBY WARD | 1 | | | | 1 | LITCO BRYCE, J H | 1 | | | | 1 |
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American Electric Power
Cook Nuclear Plant
One Cook Place
Bridgman, MI 49106
616 465 5901



May 15, 1998

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:

98-012-01

Sincerely,

A handwritten signature in cursive script, appearing to read "J. R. Sampson", is written over the typed name.

J. R. Sampson
Site Vice President

/mbd

Attachment

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

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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 1DOCKET NUMBER (2)
50-315

Page 1 of 3

TITLE (4)

1/4 Inch Particulate Requirement Not Maintained In Containment Recirculation Sump

| 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 | 05 | 98 | 98 | - 012 - | 01 | 05 | 15 | 98 | 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) | 0 | 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) | 73.71(c) |
| | | 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)(vi) | (Specify in Abstract below and in Text, NRC Form 366A) |
| | | 20.2203(a)(2)(iii) | 50.36(c)(2) | 50.73(a)(2)(vii)(A) | |
| | | 20.2203(a)(2)(iv) | 50.73(a)(2)(i) | 50.73(a)(2)(vii)(B) | |
| 20.2203(a)(2)(v) | X 50.73(a)(2)(ii) | 50.73(a)(2)(x) | | | |

LICENSEE CONTACT FOR THIS LER (12)

NAME

Mr. Paul Schoepf, Mechanical Systems Manager

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 (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 March 5, 1998, with both Unit 1 and Unit 2 in Mode 5, it was determined that the 1/4 inch particulate retention requirement for the containment recirculation sump was not properly established in 1979 following sump modifications. Specifically, one of the modifications involved moving a 1/4 inch retention element from inside the recirculation sump to the entrance of the sump. When the element was moved, the 1/4 inch retention requirement was not fully addressed and pathways exceeding the 1/4 inch requirement were inadvertently established. While assessing the significance of debris found in the Unit 1 ice condenser ice melt system filter, an additional pathway was identified. This pathway represents a condition outside the plant's design basis for maintaining the 1/4 inch particulate retention requirement. This was determined reportable under 10CFR50.72 (b) (2) (i), and an ENS notification was made at 1851 hours on March 5, 1998. An interim LER for this condition was submitted on April 3, 1998, in accordance with 10CFR50.73 (a) (2) (ii) as a condition outside the design basis, as is this updated LER.

The cause for the event was that the design change that moved the 1/4 inch particulate retention boundary was not technically complete in that it did not address the 1/4 inch particulate retention requirement during design and/or installation. The condition will be corrected under design change 12-DCP-886.

The safety significance of this condition has been evaluated. The probability that debris could be introduced into the recirculation sump via this pathway is small. Based on engineering judgement, this condition, in itself, would not have prevented the containment recirculation sump from performing its design function. It has been determined that this condition has no safety significance, and therefore, the health and safety of the public were not jeopardized.

LICENSEE EVENT CONTINUATION

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 (HNB8 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) | LER NUMBER (6) | | | PAGE (3) |
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| Cook Nuclear Plant - Unit 1 | 50-315 | YEAR | SEQUENTIAL | REVISION | 2 OF 3 |
| | | 97 | -- 012 -- | 01 | |

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

Condition Prior to Event

Unit 1 was in Mode 5, Cold Shutdown

Unit 2 was in Mode 5, Cold Shutdown

Description of the Event

While assessing the significance of debris found in the Unit 1 ice condenser ice melt system, a pathway was identified which did not meet the 1/4 inch particulate retention requirement. The 1/4 inch requirement ensures that debris which may be large enough to plug the Containment Spray(CTS) nozzles is not swept into the CTS header via the containment recirculation sump. The aforementioned pathway leads from the ice condenser drain lines to the containment recirculation sump. Specifically, the ice condenser main drain lines have a smaller, separate drain for minor leakage which connects the ice condenser to inside the containment sump. The containment sump connects to the recirculation sump via an 8 inch drain line. The 8 inch drain line does not meet the 1/4 inch particulate requirement and, therefore, represents a condition outside the design basis of the plant.

The condition was introduced in 1978 by design change 12-RFC-2361. Under that design change, the 1/4 inch particulate retention boundary was moved from the lower chamber of the recirculation sump back to the recirculation sump inlet area. The change stemmed from a recommendation made following an outside assessment of the containment recirculation sump design and performance. In its original location, the retention boundary separated the 8 inch drain line from the containment spray and emergency core cooling suction headers. In its as-left position, it did not.

Cause of the Event

Design change RFC-2361, the design change that moved the 1/4-inch particle retention boundary from the low chamber of the recirculation sump back to the recirculation sump inlet area, was not technically complete in that it did not address the 1/4-inch particle retention requirement during design and/or installation.

Analysis of the Event

The NRC was notified of this event on March 5, 1998, at 1851 hours. The NRC notification was made under 10 CFR 50.72(b)(2)(I) as a condition outside the design basis of the plant. This event is being reported under 10 CFR 50.73 (a)(2)(ii) as a condition that resulted in the nuclear power plant being in a condition that was outside the design basis of the plant.

The containment recirculation sump functions to collect water deposited in the containment following a design basis accident and to return it to the Emergency Core Cooling system (ECCS) and the CTS for long term cooling of the reactor and the containment. The design of the recirculation sump ensures that water is delivered to the suction of the ECCS and CTS pumps without detrimental air entrainment or vortexing and it also includes provisions for exclusion of foreign material in excess of its 1/4 inch screen mesh size. The 1/4 inch screen mesh size ensures that particles sufficiently large to block the 3/8 inch CTS nozzles will not enter the sump. The screen also provides protection for the ECCS and CTS components against foreign material.

LICENSEE EVENT CONTINUATION

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|-----------------------------|-------------------|----------------|------------|----------|----------|
| Cook Nuclear Plant - Unit 1 | 50-315 | YEAR | SEQUENTIAL | REVISION | 3 OF 3 |
| | | 97 | - 012 - | 01 | |

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

Analysis of the Event (cont'd)

Assessment of the possible impact of this deficiency considered the likelihood that material would actually reach the containment sump and enter the recirculation sump via the 8 inch line and the vulnerability of the components in the ECCS and CTS if the material does in fact enter the sump. Actual entry of material into the recirculation sump was considered a low probability event for the following reasons:

- ▶ Any material larger than the ice basket mesh size, which is 1 inch x 1 inch, would be held inside the ice baskets
- ▶ A portion of the remaining material would be swept through the main ice condenser drain lines with sufficient velocity to prevent it from settling out of the flow stream and into the small drain lines.
- ▶ Only the heaviest of the debris would settle down into the small drain lines; since the lower containment sump is at a lower elevation than the recirculation sump, that heavy debris would settle to the bottom of the containment sump.

Components which are most vulnerable to foreign material include the Safety Injection (SI) and Centrifugal Charging (CC) pumps which both have tight tolerances, the safety injection needle valves, check valves throughout the ECCS and CTS, and the CTS spray nozzles. The only material that is likely to pass from the lower containment sump to the higher recirculation sump is light, buoyant material. Although it is not likely that light and buoyant material would make its way to the containment sump, any such material that is swept into the ECCS and CTS headers must first pass through the Residual Heat Removal (RHR) and CTS pumps. Such material would be broken down by the RHR and CTS pumps; therefore the SI and CC pumps would then be able to pass the material. Similarly valves and the CTS nozzles would also be expected to pass these materials for the same reasons. Check valves would be expected to close against the light material.

The safety significance of this condition has been evaluated. The probability that debris could be introduced into the recirculation sump via this pathway is small. Based on engineering judgement, this condition, in itself, would not have prevented the containment recirculation sump from performing its design function. It has been determined that this condition has no safety significance, and therefore, the health and safety of the public were not jeopardized.

Corrective Action

Design change 12-DCP-886 was initiated to install 1/4 inch mesh on the 8 inch cross-over pipe between the lower containment sump and the recirculation sump. This design change will be completed before plant startup.

Preventive Action

This condition was introduced in 1979. Since that time, improvements have been made to the design change process which have resulted in more rigorous design change reviews. Most recently, enhancements have been made to the process for conducting 10CFR50.59 reviews. Plant personnel are currently being trained on the implementation of those enhancements.

Identification of Failed Component

Not Applicable

Previous Similar Events

LER 315/97-018-00

