

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9711200152 DOC. DATE: 97/11/14 NOTARIZED: NO DOCKET
 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana M 05000
 AUTH. NAME AUTHOR AFFILIATION
 GILLESPIE, B. Indiana Michigan Power Co.
 BLIND, A.A. Indiana Michigan Power Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-012-01: on 970826, potential operation of CCW sys above design basis value for heat exchanger outlet constituted condition outside design basis. Cause not determined. Revised CCW operating procedure. W/971114 ltr.

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Indiana Michigan
Power Company
Cock Nuclear Plant
One Cock Place
Bloomington, IN 47404



November 14, 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:

97-012-01

Sincerely,

A handwritten signature in cursive script, appearing to read 'A. A. Blind'.

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

9711200152 971114
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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

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TITLE (4)

Potential Operation of CCW System Above Design Basis Value for Heat Exchanger Outlet Constitutes Condition Outside Design Basis

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
08	26	97	97	-- 012 --	01	11	14	97	Cook Unit 2	50-316
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.73(a)(2)(iii) (Check one or more) (11)							
1			20.2201(b) 20.2203(a)(3)(i) 50.73(a)(2)(iii) 73.71(b)							
POWER LEVEL (10)			20.2203(a)(1) 20.2203(a)(3)(ii) 50.73(a)(2)(iv) 73.71(c)							
100			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							
			20.2203(a)(2)(iii) 50.36(c)(2) 50.73(a)(2)(viii)(A) Abstract below							
			20.2203(a)(2)(iv) 50.73(a)(2)(i) 50.73(a)(2)(viii)(B) and in Text,							
			20.2203(a)(2)(v) X 50.73(a)(2)(ii) 50.73(a)(2)(x) NRC Form 366A)							

LICENSEE CONTACT FOR THIS LER (12)

NAME
Mr. Bob Gillespie, Operations ManagerTELEPHONE NUMBER (Include Area Code)
616/465-5901, x2535

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)

On August 26, 1997 with Units 1 and 2 at 100 percent Rated Thermal Power, it was determined that both units had operated outside the design basis for Component Cooling Water (CCW) maximum temperature. Contrary to FSAR Table 9.5-3 which states that the maximum CCW heat exchanger outlet temperature is 95 degrees Fahrenheit, guidance provided in the Operations procedures allowed CCW heat exchanger outlet temperature to reach 120 degrees Fahrenheit during the first three hours of RHR operation. It was determined that this event was reportable under 10CFR50.72(B)(1)(ii)(B), and an ENS notification was made on August 26, 1997. This LER is being submitted under 10CFR50.73(a)(2)(ii) as a condition outside the design basis.

The root cause for the original failure to incorporate the 120 degree Fahrenheit value into the FSAR could not be determined. Subsequent revisions to the CCW procedure failed to identify the problem due to inadequate safety screenings. Additional emphasis is being stressed by management on the need to perform complete and accurate safety screenings. The CCW procedure was revised to remove the reference to 120 degrees Fahrenheit. An evaluation was successfully performed to support a short term maximum temperature of 120 degrees Fahrenheit for CCW operation. The Operations procedure(s) was revised to reference 115 degrees Fahrenheit, which allows for instrument uncertainty.

It was determined that the temporary increase in the CCW temperature during cooldown would not have resulted in any adverse safety consequences. The safety significance of this condition is, therefore, low and did not endanger the health or safety of the public at any time.

LICENSEE EVENT CONTINUATION

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Cook Nuclear Plant - Unit 1	50-315	YEAR	SEQUENTIAL	REVISION	2 OF 4
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TEXT (if more space is required, use additional NRC Form 366A's) (17)

Conditions Prior to Event

Unit 1 was in Mode 1 at 100 percent Rated Thermal Power

Unit 2 was in Mode 1 at 100 percent Rated Thermal Power

Description of Event

During the AE Design Inspection, conducted August 4 through September 12, 1997 at Cook Nuclear Plant, it was noted by the inspection team that the Component Cooling Water (CCW) system normal operating procedure allowed a 120 degree Fahrenheit CCW heat exchange outlet temperature for three hours while cooling down on Residual Heat Removal (RHR). This exceeded the FSAR design limit of 95 degrees Fahrenheit.

The Operations Department procedure OHP 4021.016.003, "Operation of the Component Cooling Water (CCW) System during Reactor Startup and Power Operation", was reviewed. Precaution 2.3 of this procedure contains the statement "During the first three hours of RHR operation, supply temperature may be allowed to reach 120 degree Fahrenheit." The 120 degree value has been in the procedure since 1974 and was not challenged during any revisions to the procedure.

The Westinghouse document entitled "Design Criteria and Functional Requirements for Component Cooling Water System", dated March 31, 1969, was reviewed. This document was provided to Cook Nuclear Plant as a standard design basis for the CCW system, although it is noted that the design is for a single unit plant, and some changes should be made to adapt it to a twin unit station. The document contains statements regarding operability of equipment cooled by CCW as long as the CCW supply temperature remains below 120 degrees Fahrenheit. Although it cannot be conclusively proven, it is thought that this document was used as the basis for the statement in the CCW operating procedure.

Cause of Event

No cause could be determined for the discrepancy between the original CCW operating procedure value of 120 degrees Fahrenheit and the FSAR value of 95 degrees.

Subsequent revisions to the CCW procedure did not identify the temperature discrepancy due to the performance of inadequate safety screenings.

Analysis of Event

This event was determined to be reportable under 10CFR50.72(B)(1)(ii)(B), as a condition outside the design basis, on August 26, 1997, and an ENS notification was made at 1553 hours that same day. This LER is therefore being submitted under 10CFR50.73(a)(2)(ii), as a condition outside the design basis.

The temporary operation of the CCW system at 120 degrees Fahrenheit to achieve a rapid cooldown has been evaluated for safety consequences. The evaluation package included an evaluation of CCW system components, and components supplied by the CCW system, at a maximum temperature of 120 degree Fahrenheit. Westinghouse provided additional evaluation of the effect on a higher CCW temperature on Westinghouse supplied equipment and the accident analysis.

LICENSEE EVENT CONTINUATION

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Analysis of Event (cont'd)

The analysis concluded that all the CCW system components, piping, and supports would function acceptably at higher temperatures with the following exceptions:

- ▶ Out of 1231 pipe supports, 4 pipe supports required modification to meet the UFSAR and ANSI B31.1 design allowable stress. However, the pipe supports did satisfy the requirement for operability outlined in Mechanical Design 5700-11, Mechanical Design Interim Acceptance Criteria for Safety Related Piping Systems, therefore, the supports would not have prevented the CCW system from performing any of its safety functions.
- ▶ The Westinghouse radiation monitors upstream of the CCW heat exchangers were determined to be unqualified for the higher operating temperature. However, the monitors do not perform any safety related function, and are not Technical Specification equipment. Therefore, should they fail during a cooldown, there would be no safety consequence.
- ▶ The Westinghouse evaluation of operation of the RHR and Centrifugal Charging Pumps (CCPs) indicated that operation with CCW temperature at 120 degrees Fahrenheit is acceptable. However, the assumed minimum CCW flow in the Westinghouse evaluation was 10 gpm for the RHR pump coolers, 24 gpm for the Safety Injection pump coolers, and a total of 50 gpm for the CCP coolers. This exceeds the existing CCW flows to these coolers as reference in the UFSAR. An operability determination was performed which determined that, in view of the short duration of the elevated CCW temperature, the lower flow rates to these pump coolers would not have caused degradation to the pumps, and would not have prevented the CCW system from performing its safety functions.

Based on the above, the effect of the 120 degree Fahrenheit temperature on the CCW system and components supplied by the CCW would not have resulted in any adverse safety consequence.

Westinghouse performed an evaluation to evaluate the operation of the CCW system at 120 degrees Fahrenheit for the duration of the cooldown. The evaluation addresses the accident analysis and concludes that the increased CCW temperature has no adverse impact on any portion of the accident analysis. A component evaluation for Westinghouse supplied components was also provided as part of their evaluation, and concluded that all Westinghouse supplied equipment can operate with the higher CCW temperature. Therefore, based on the results of the Westinghouse evaluation, it is concluded that the increased CCW temperature would not have adversely affected the safety function of the CCW system.

In conclusion, the temporary increase in the CCW temperature to a maximum temperature of 120 degree Fahrenheit for a three hour period during cooldown would not have resulted in any adverse safety consequences. The safety significance of this condition was determined to be low, and did not endanger the health or safety of the public at any time.

LICENSEE EVENT CONTINUATION

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Corrective Actions

In the short term, the CCW operating procedure was revised to remove the reference to the 120 degree maximum. For the long term, an engineering evaluation was performed to determine the ability to operate at temperatures in excess of 95 degrees. This evaluation was performed as part of a design change package to allow temporary operation of the system at a maximum of 120 degrees Fahrenheit during a rapid cooldown with one train of CCW and RHR available. Based on the information outlined in the Analysis Section of this LER, it was determined to be acceptable and reference to a maximum temperature was reinstated in the Operations procedure. To allow for instrument inaccuracies, a maximum value of 115 degrees Fahrenheit is used in the affected procedure(s).

Complete and accurate safety screenings are being stressed by the Operations Department Managers. Although the requirements for performance of safety screenings are proceduralized, the general steps to be taken to ensure the quality of those safety screenings were re-emphasized to all Operations procedures writers. These included:

- ▶ Computer based word searches are to be used to determine affected section of the FSAR or UFSAR.
- ▶ The affected sections should be reviewed using the hard copy of those documents, including all tables, graphs, figures, and flow diagrams.
- ▶ Review NRC correspondence and previous safety reviews to ensure that the proposed changes are consistent with the guidance in these documents.
- ▶ Review of Technical Specifications (T/S) shall include not only the T/S itself but also the surveillance requirements, the Bases section and the Administrative Section.

The procedure writers were also reminded of how to proceed if it becomes obvious during the screening process that the existing procedure did not satisfy the assumptions in the FSAR or UFSAR, and how to proceed with a proposed change that appears to affect the UFSAR and requires a complete 10CFR50.59 Safety Evaluation.

As discussed in the NRC's Confirmatory Action Letter (CAL) to the Cook Nuclear Plant, dated September 19, 1997, we are assessing the problems identified during the recent AE Design Inspection to determine whether these types of problems exist in other safety related systems and whether they affect system operation in the longer term. We will evaluate our programs for improvements to assure these kinds of problems are promptly identified, thoroughly evaluated and resolved. The results of our reviews and assessments, as well as necessary preventive actions will be communicated separately to the NRC.

Failed Component Identification

Not Applicable

Previous Similar Events

None

