

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9711050221 DOC.DATE: 97/10/31 NOTARIZED: NO DOCKET #
 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana M 05000315
 AUTH.NAME AUTHOR AFFILIATION
 PISARSKY, F. Indiana Michigan Power Co.
 BLIND, A.A. Indiana Michigan Power Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-022-01: on 970911, determined that conditions had not
 been properly established in CCW sys to meet plant piping
 design code requirements. Caused by manual valves installed
 in CCW sys piping. Revised procedure. W/971031 ltr.

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Power Company
Cook Nuclear Plant
One Cook Place
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October 31, 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:

97-022-01

Sincerely,

A handwritten signature in cursive script, appearing to read "A. A. Blind", is written above the typed name.

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

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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 1

DOCKET NUMBER (2)

50-315

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TITLE (4)

Failure to Comply with USAS B31.1 Power Piping Code Due to Oversight in Valve Control Requirements Results in Condition That Could Have Prevented Fulfillment of a Safety Function of a System

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
09	11	97	97	022	01	10	31	97	Cook Unit 2	50-316
									FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.73(a)(2)(iii) (Check one or more) (11)							
			20.2201(b)			20.2203(a)(3)(i)			50.73(a)(2)(iii)	
POWER LEVEL (10)		0	20.2203(a)(1)			20.2203(a)(3)(ii)			50.73(a)(2)(iv)	
			20.2203(a)(2)(i)			20.2203(a)(4)			X 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)			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. Frank Pisarsky, Mechanical Component Engineering Supervisor

TELEPHONE NUMBER (Include Area Code)

616/465-5901, x2607

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 September 11, 1997, with Units 1 and 2 in cold shutdown, it was determined that conditions had not been properly established in the Component Cooling Water (CCW) system to meet plant piping design code requirements. It was determined that this event was reportable under 10 CFR 50.72(b)(2)(iii)(C) and (D), as a condition that alone could have prevented the fulfillment of the safety function of a system needed to control the release of radioactive material and mitigate the consequences of an accident. An ENS notification was made at 1956 hours on September 11, 1997. An interim LER was submitted on October 13, 1997 under 10 CFR 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(v)(D).

The piping design code at the Cook Plant is USAS B31.1 Power Piping Code, 1967 edition. Code requirement B31.1 states that an intercepting stop valve cannot be located between the source of pressure and the pressure relief device credited for protecting the pipe. Contrary to the code requirement there were manual valves between the Reactor Coolant Pump (RCP) thermal barrier cooling coil and the safety relief valve on the CCW surge tank that were not controlled in accordance with or exempted from USAS B31.1, 1967 edition.

To correct this condition the intercepting stop valves have been placed under procedural control such that the valves are sealed open during system operation, thus ensuring the safety valve on the CCW Surge Tank will provide over pressure protection for the CCW System Piping during a rupture of an RCP thermal barrier cooling coil. Based on normal system operation and controls, this event was determined to have negligible safety impact.

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

Conditions Prior to Event

Unit 1 Mode 5, Cold Shutdown

Unit 2 Mode 5, Cold Shutdown

Description of Event

During the AE Design Inspection, conducted August 4 through September 12, 1997 at Cook, the inspection team questioned if there was sufficient over pressure protection in the Component Cooling Water (CCW) System taking into consideration Code criteria for blocking valves. FSAR Chapter 9.5 states, "The relief valve on the component cooling surge tank is sized to relieve the maximum flow rate of water that would enter the surge tank following a rupture of a reactor coolant pump thermal-barrier cooling coil. The set pressure assures that the design pressure of the component cooling system is not exceeded." The CCW's piping design code is USAS B31.1 Power Piping Code, 1967 Edition.

Paragraph 122.6.1 of the B31.1 Power Piping Code states, "There shall be no intervening stop valves between piping being protected and its protective device or devices." Upon reviewing operating flow diagrams 1-5135, 1-5135A, 2-5135 and 2-5135A, the inspection team noted that valves were installed within piping at locations between the reactor coolant pump thermal barrier and the component cooling surge tank. The inspection team noted the piping design was not in compliance with B31.1 Code because valves had the potential to be closed, thereby isolating the piping being protected from its protective device.

The specific example noted was the potential for closing the containment services and DRV-300 sample heat exchangers CCW return header shutoff valves 1-CCW-385 and 2-CCW-385. If this normally open eight inch gate valve was closed inadvertently and a Reactor Coolant Pump (RCP) thermal barrier cooling coil rupture occurred, the CCW piping between 1-CCM-454 and 1-CCW-385, or 2-CCM-454 and 2-CCW-385, would have the potential to be subjected to a pressure greater than its design pressure of 150 psig.

There are a total of four manual CCW System valves in each unit that are defined as intervening stop or blocking valves per the piping design code B31.1, paragraph 126.6.1. The valve component numbers are as follows: 1-CCW-385, 1-CCW-166, 1-CCW-214, 1-CCW-220, 2-CCW-385, 2-CCW-166, 2-CCW-214 and 2-CCW-220. These manual valves remain in the open position when the CCW System is operable. They are used as isolation valves for maintenance activities during Unit refueling outages.

Although it is very unlikely one of these valves would be closed during unit operation, currently, there are no administratively controlled, positive locking mechanisms in place to preclude them from being inadvertently closed. Therefore, intervening stop valves do exist between piping being protected from an RCP thermal barrier cooling coil rupture and the safety relief device located on the CCW surge tank, 1-SV-60 and 2-SV-60.

Cause of Event

The manual valves were installed in the CCW System piping to allow isolation of a particular segment of the CCW Piping for routine repairs and maintenance. Plant personnel were not aware these valves had to be administratively and physically locked or sealed open while the CCW System is operable to be in strict compliance with the B31.1 Power Piping Code.

LICENSEE EVENT CONTINUATION

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

Analysis of Event

It was determined that this event was reportable under 10 CFR 50.72(b)(2)(iii)C and 10 CFR 50.72(b)(2)(iii)D, as a condition that alone could have prevented the fulfillment of the safety function of a system needed to control the release of radioactive material and mitigate the consequences of an accident. The basis for this classification is that the CCW system is a closed loop system that provides cooling water to equipment which contains radioactivity. By being a closed loop system, the CCW system provides a barrier between radioactive fluid and the essential service water system. An overpressurization of the CCW system could potentially result in the loss of the system to provide its cooling and barrier function.

Since one CCW Pump is in service when the CCW System is operable, it is mandatory that either CMO-411 or CMO-413, CCW Pump Suction Cross-tie Header Isolation Valve, is open when the CCW System is operable, thus ensuring an uninterrupted flow path from the subject CCW System piping to the CCW surge tank relief valve. Establishing the position of these valves for normal operation is controlled by Operation's Department Procedure OHP 4021.016.003 "Operation of the Component Cooling Water System During Reactor Startup and Normal Operation."

The ASME B31.1 Power Piping Code does not provide guidance on locking or sealing open intervening stop valves. However, other ASME Codes have provided direction when stop valves exist between the pressure relieving device and the component being protected. ASME Section VIII, Appendix A, A-104 (a) states "...a full-area stop valve (is acceptable) for inspection and repair purposes only. When such a stop valve is provided, it shall be so arranged that it can be locked or sealed open and it shall not be closed....".

The Cook Authorized Nuclear Inspector (ANI) was requested to provide input on piping code compliance regarding intervening block valves. The ANI stated if the valves were locked open and administratively controlled, they would not be defined as intervening stop valves.

The ASME B31 Mechanical Design Technical Committee Chairman and consultant for Pressure Piping Engineering Associates Inc., was consulted and also stated if a valve was sealed open, the valve would not be defined as an intervening stop valve.

Based on the above, there is not, nor has there been, an operability concern with the CCW System piping. No operating conditions have caused the CCW System piping in question to be over pressurized. To be in strict compliance with the piping design code referenced in the FSAR, the manual valves are required to be sealed open. Since the valves were designated as normally-open valves during operation, they have not been closed while the CCW System is operable. The safety impact of this condition is negligible.

Corrective Actions

Operations Department procedure OHP 4030.STP.035 "Controlled Valve Position Logging" is used to verify proper valve position, secure the valve position and administratively control the position of the valve. Verification of the valves position and established controls are performed on a monthly basis. The procedure was revised to incorporate the valves categorized as intervening valves: 1-CCW-385, 1-CCW-166, 1-CCW-214, 1-CCW-220, 2-CCW-385, 2-CCW-166, 2-CCW-214 and 2-CCW-220.

LICENSEE EVENT CONTINUATION

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

Corrective Actions (cont'd)

To address the historical generic concern of B31.1 oversight, Production Engineering Personnel will review the pressure relief device piping configuration for all applicable systems, thus ensuring compliance with ASME B31.1 Power Piping Code. Completion of the review is scheduled to be completed by December 5, 1997.

Existing Engineering Specifications, ES-PIPE-1000-QCS and ES-PIPE-1013-QCN, set forth the design criteria and standards for piping installed at the Cook Nuclear Plant. The B31.1 Power Piping Code is referenced within these specifications. Piping Design Engineers are required to use these specifications and their references while performing piping design activities. The existing specification are adequate to prevent recurrence.

Failed Component Identification

Not Applicable

Previous Similar Events

315/92-001-00

