

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

3
 ACCESSION NBR: 9604160090 DOC. DATE: 96/04/10 NOTARIZED: NO DOCKET #
 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana M 05000315
 AUTH. NAME AUTHOR AFFILIATION
 SCHOEPP, P. American Electric Power Co., Inc.
 BLIND, A.A. American Electric Power Co., Inc.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 96-002-00: on 960317, RT on low FW flow coincident w/low
 SG level due to failed FW differential pressure controller.
 Stabilized all safety sys operated normally in response to
 trip signal & unit. W/960410 ltr.

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

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American Electric
Cook Nuclear Plant
One Cook Place
Bridgman, MI 49106
616 465 5901



April 10, 1996

United States Nuclear Regulatory Commission
Document Control Desk
Rockville, Maryland 20852

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:

96-002-00

Sincerely,

A handwritten signature in dark ink, appearing to read "A. A. Blind".

A. A. Blind
Site Vice President

/clc

Attachment

c: H. J. Miller, Region III
E. E. Fitzpatrick
P. A. Barrett
R. F. Kroeger
M. A. Bailey - Ft. Wayne
S. J. Brewer
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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)
05000 315

Page 1 of 3

TITLE (4)
Reactor Trip on Low Feedwater Flow Coincident with Low Steam Generator Level Due to Failure of the Feedwater Differential Pressure Controller

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	17	96	96	-- 002 --	00	04	10	96	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 101.6: (Check one or more) (11)							
POWER LEVEL (10)	100	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)	x 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)(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)	50.73(a)(2)(ii)	50.73(a)(2)(x)					

LICENSEE CONTACT FOR THIS LER (12)

NAME
Paul Schoepf, Plant Engineering SuperintendentTELEPHONE 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)

At 1527 hours on March 17, 1996, with Unit 1 at 100% Rated Thermal Power, a reactor trip signal was received. This signal was generated as a result of low feedwater flow coincident with low Steam Generator level in the number 4 Steam Generator. The low level resulted from the failure of the Main Feedpump (MFP) differential pressure controller, which automatically controls the differential pressure between feedflow pressure into the SG, and main steam pressure exiting the Steam Generator. The Operators took manual control of the feedpumps to regain level in the Steam Generator, however, the reactor trip logic conditions were met before level could be restored and the trip signal was generated.

All safety systems operated normally in response to the trip signal and the unit was stabilized in Mode 3. The event was determined to have been caused by a failure in an integrated circuit logic chip in the main feedpump differential pressure controller. The failed controller was replaced and subsequently returned to the manufacturer for further analysis. The event was determined to have no actual or potentially adverse effect on the health and safety of the public.

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 (MNBB 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)
		YEAR	SEQUENTIAL	REVISION	
Cook Nuclear Plant - Unit 1	0500 315	96	-- 002 --	00	2 OF 3

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

Conditions Prior to Occurrence:

Unit 1 in Mode 1, Power Operations, at 100 percent Rated Thermal Power

Description of Event:

At 1527 hours on March 17, 1996, Unit 1 tripped from 100% Rated Thermal Power as a result of low feedwater flow coincident with low Steam Generator (SG) level in the number 4 SG. The low level resulted from the failure of the Main Feedpump (MFP) differential pressure controller (EIS/JB-PDC), which automatically controls the differential pressure between feedflow pressure into the SG and Main Steam pressure exiting the SG.

The controller failure caused the speed, and thus discharge pressure, of both main feedpumps to decrease. Hence the main feedwater flow to all 4 Steam Generators decreased below that necessary to maintain Steam Generator level, and when two-out-of-three level instruments in the number 4 Steam Generator reached the low level setpoint, the units reactor automatically tripped. The operators took manual control of each of the feedpump controllers to restore the main feedwater pumps' speed in an effort to increase the feedwater flow to the Steam Generators before the unit tripped. However, the logic conditions were met before level could be restored and the trip signal was generated.

All safety systems operated normally in response to the trip signal. Originally, it had been suspected that a Main Steam Safety Valve had lifted, but review of the separate Steam Generator pressure traces revealed no characteristics normally attributed to the opening and reseating of a safety relief valve. It has been concluded that an Auxillary Steam safety associated with the condensate system lifted. The four hour ENS phone call stated that the Motor Driven Auxillary Feedpumps had been manually started by the operators, however, it was later determined that the pumps had automatically started.

Post-trip temperature decreased to approximately 535 degree Fahrenheit due to leak-by of two secondary system valves from the main steam lines to the moisture separator reheaters. Manual isolation and tightening of these valves by the operators arrested the temperature decrease and restored T_{ms} to the 547 degree Fahrenheit value. The unit was stabilized in Mode 3, and the differential pressure controller was replaced.

Cause of the Event:

This event was caused by a failure in the main feedpump differential pressure controller. The controller that failed has been returned to the manufacturer for failure determination. There were no other obvious indications of failure on the controller circuit cards such as charred components or appearances of poor connections.

LICENSEE EVENT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Cook Nuclear Plant - Unit 1	0500 315	YEAR	SEQUENTIAL	REVISION	3 OF 3
		96	-- 002 --	00	

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

Analysis of Event:

This event is being reported per 10 CFR 50.73(a)(2)(iv) as an event that resulted in automatic actuation of Engineered Safety Features (ESF), including the Reactor Protection System (RPS).

A reactor trip due to low main feedwater flow in coincidence with low Steam Generator level in the number 4 Steam Generator. All control rods inserted, both Motor Driven Auxiliary Feedwater Pumps and the Turbine Driven Auxiliary Feedwater automatically started, and a Feedwater Isolation occurred.

The unit successfully transferred to the normal offsite power supply, and the emergency diesel generators remained in standby. This event did not have any actual or potentially adverse impact on the health and safety of the public.

Corrective Action:

The failed feedpump differential pressure controller has been replaced. The failed controller has been returned to the manufacturer for further analysis. Discussions have been initiated with the controller manufacturer to determine the failure mechanism and explore actions to mitigate the consequences of future failures.

Failed Component Identification:

Component Name: 1-RU-5, Feedpump Differential Pressure Controller
Manufacturer: Kent-Taylor
Model: XL-170
EIS Code: JB-PDC

Previous Similar Events:

None