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ACCESSION NBR:9112260303 DOC.DATE: 91/12/16 NOTARIZED: NO DOCKET #
 FACIL:50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana M 05000316
 AUTH.NAME AUTHOR AFFILIATION
 CARTEAUX,P.F. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
 BLIND,A.A. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 91-010-00:on 911115,reactor tripped as result of lo-lo
 steam generator water level in steam generator 21.Caused by
 defective instrument isolation valve.Valve bonnet replaced &
 cam disc repositioned on valves A & D.W/911216 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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NRR/DLPQ/LHFB10	1 1	NRR/DLPQ/LPEB10	1 1
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REG FILE 02	1 1	RES/DSIR/EIB	1 1
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EXTERNAL: EG&G BRYCE,J.H	3 3	L ST LOBBY WARD	1 1
NRC PDR	1 1	NSIC MURPHY,G.A	1 1
NSIC POORE,W.	1 1	NUDOCS FULL TXT	1 1

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616 465 5901



December 16, 1991

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

Operating Licenses DPR-74
Docket No. 50-316

Document Control Manager:

In accordance with the criteria established by
10 CFR 50.59 entitled Licensee Event Report System, the
following report is being submitted:

91-010-00

Sincerely,

A. A. Blind
Plant Manager

AAB:sb

Attachment

c: D. H. Williams, Jr.
A. B. Davis, Region III
E. E. Fitzpatrick
P. A. Barrett
B. F. Henderson
R. F. Kroeger
B. Walters - Ft. Wayne
NRC Resident Inspector
T. Colburn - NRC
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G. Charnoff, Esq.
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INPO
S. J. Brewer/B. P. Lauzau
B. A. Svensson

EXPIRES: 4/30/92

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 RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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 2										DOCKET NUMBER (2) 0 5 0 0 0 3 1 6				PAGE (3) 1 OF 0 3										
TITLE (4) Reactor Protection System Actuation Due to Low-Low Steam Generator Level When Steam Pressure Increased from Main Turbine Control Valve Closure																								
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 NAMES				DOCKET NUMBER(S)											
1	1	1	5	9	1	9	1	0	1	0	0	1	2	1	6	9	1	0	5	0	0	0		
OPERATING MODE (9) 1			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																					
POWER LEVEL (10) 1 0 0			20.402(b)				20.405(c)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)				73.71(b)									
			20.406(a)(1)(i)				50.38(c)(1)				50.73(a)(2)(v)				73.71(c)									
			20.406(a)(1)(ii)				50.38(c)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
			20.406(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)													
			20.406(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)													
			20.406(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)													
LICENSEE CONTACT FOR THIS LER (12)																								
NAME P. F. Carteaux - Safety and Assessment Superintendent										TELEPHONE NUMBER AREA CODE 6 1 6 4 6 5 1 5 9 0 1														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																								
CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS														
E	T	G	I	S	V	H	O	3	7	N														
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR								
YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO												

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On November 15, 1991 at 1113 hours, the Unit 2 reactor tripped as a result of a low-low Steam Generator (SG) water level in SG #21. Prior to the reactor trip, instrumentation was being installed on the main turbine control fluid circuit. The purpose of this instrument was to investigate oscillations of control valve A which was scheduled to be tested later that evening. A pressure indicator which measures the output of the turbine operating device was to be isolated and another transmitter was to be installed in parallel to it. However, unknown to personnel involved, worn threads on the stem of the manual isolation valve prevented the pressure indicator from being completely isolated. As a drain plug was removed to vent pressure from the instrument isolation valve, pressure on the output of the operating device was also decreased. This effectively lowered the setpoint supplied to the speed governor, which compares actual turbine speed to the operating device setpoint, and fully closed the high pressure and low pressure turbine control valves. With the steam supply isolated, SG pressure rapidly increased and caused SG level to decrease below the reactor trip setpoint.

The root valve's bonnet was replaced and damaged stem threads were repaired. During the outage, repairs were also completed to reduce the turbine load swings experienced during valve testing. A review of the work control process will be performed to identify any enhancements that can be added to reduce the probability of an unplanned actuation occurring from similar activities in the future. Any change indicated by the review will be implemented by March 30, 1992.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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 2

DOCKET NUMBER (2)

0 5 0 0 0 3 1 6

LER NUMBER (6)

YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
91	010	00

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

Conditions Prior to Occurrence

Unit 2 in Mode 1 at 100 percent of Rated Thermal Power (RTP).

Description of Event

On November 15, 1991 at 1113 hours, the Unit 2 reactor (EIIS/JE) tripped as a result of a low-low steam generator water level in SG #21. Prior to the reactor trip, instrumentation was being installed on the main turbine control fluid circuit (EIIS/TA-PC). The purpose of these instruments was to investigate oscillations of control valve A which was scheduled to be tested later that evening. A pressure indicator (LPI-15) which measures the output of the turbine operating device was to be isolated and another transmitter was to be installed in parallel to LPI-15. However, unknown to personnel involved, worn threads on the stem of the manual instrument isolation valve (EIIS/TG-ISV) prevented LPI-15 from being completely isolated. As a drain plug was being removed to vent pressure from the instrument isolation valve of LPI-15, pressure on the output of the operating device was also decreased. This effectively lowered the setpoint supplied to the speed governor, which compares actual turbine speed to the operating device setpoint, and fully closed the high pressure and low pressure turbine control valves.

With the steam supply isolated, SG pressure rapidly increased and caused SG level to rapidly decrease below the reactor trip setpoint. The reactor trip signal was generated approximately 5 seconds after the high pressure control valves were closed.

Following the reactor trip/turbine trip sequence, opening of the reactor trip breakers (EIIS/JE-BKR), insertion of reactor control rods (EIIS/AA-ROD), feedwater isolation (EIIS/JB), and automatic starting of the motor-driven and turbine-driven auxiliary feedwater pumps (EIIS/BA-P), Operations personnel immediately implemented Emergency Operating Procedure 2 OHP 4023.E-0 to verify proper response of the Automatic Protection System and to assess plant conditions for appropriate recovery actions.

As seen on previous trips, 3 of 4 main steam isolation valves (EIIS/SB-ISV) drifted off their open detents. MRV 230 drifted fully closed and MRV 210 and 220 drifted to intermediate positions. All valves were manually reopened. The highest SG pressure recorded was 1010 psig. An investigation into the cause of this valve drifting problem is ongoing.

A spurious reactor coolant letdown isolation also occurred at the time of the trip. Occasional, spurious letdown isolations have been experienced over the past year and the cause has not yet been determined. Operators returned letdown to service without incident. Although letdown isolations have little safety significance, they do provide a distraction to the Control Room operations and investigation into the root cause is ongoing.

Cause of Event

The cause of the event was a defective instrument isolation valve failing to provide isolation to a pressure indicator in the main turbine control fluid circuit. The loss of control fluid pressure resulted in closure of all turbine control valves which led to a rapid increase in steam pressure and a resulting decrease in steam generator water levels and the reactor trip.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

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LER NUMBER (6)

PAGE (3)

Donald C. Cook Nuclear Plant - Unit 2

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YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
91	010	00

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

Analysis of Event

This report is being submitted in accordance with 10CFR50.73, paragraph (a)(2)(iv), as an event that resulted in an unplanned automatic actuation of the Engineered Safety Features, including the Reactor Protection System.

The automatic protection responses, including reactor trip and its associated actuations were verified to have functioned properly as a result of the reactor trip signal. The reactor coolant letdown isolation valves were reopened, and the Main Steam Isolation Valves which drifted shut were reopened within minutes of the trip. Based on the above, it is concluded that the event did not constitute an unreviewed safety question as defined in 10CFR50.59(a)(2) nor did it adversely impact the health and safety of the public.

Corrective Actions

The instrument isolation valve for LPI-15 was disassembled and inspected. The valve bonnet was replaced due to a loose handle on the stem, which may have damaged the threads. After burrs on the threads were removed, the valve stroked freely.

During the outage, the servo cam-disk for turbine control valves A and D was inspected by a vendor representative and found to be out of position. The cam-disk was repositioned on control valves A and D, which changed the opening characteristics of the valves, and decreased the amount of load swings during control valve testing.

A review of the work control process will be performed to identify any enhancements that can be added to reduce the probability of an unplanned actuation occurring from similar activities in the future. Any change indicated by the review will be implemented by March 30, 1992.

Failed Component Identification

Component description: Main Turbine Control Fluid Pressure Setpoint Indicator Transmitter Isolation Shutoff Valve

Plant designation: 2-LPI-15-II

Manufacturer: Dresser Industries, Inc., Hancock Valve Division

Model: 8130W

EIIS Code: TG-ISV

Previous Similar Events

None

