

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) D. C. COOK UNIT 2															DOCKET NUMBER (2) 0 5 0 0 0 3 1 6										PAGE (3) 1 OF 02								
TITLE (4) REACTOR TRIP																																	
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)														
0	2	1	8	8	4	8	4	0	0	2	0	0	0	3	1	6	8	4											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) 11010				20.402(b)				20.405(a)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)				73.71(b)																	
				20.405(a)(1)(i)				50.38(a)(1)				50.73(a)(2)(v)				73.71(c)																	
				20.405(a)(1)(ii)				50.38(a)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 365A)																	
				20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)																					
				20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)																					
20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)																									
LICENSEE CONTACT FOR THIS LER (12)																																	
NAME K. R. BAKER, OPERATIONS SUPERINTENDENT															TELEPHONE NUMBER AREA CODE 616 465-5901																		
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																	
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC																								
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)

A TURBINE TRIP/REACTOR TRIP OCCURRED FROM FULL POWER WHILE PLACING THE MOISTURE SEPARATOR REHEATER (MSR) STEAM COILS IN SERVICE. THE TURBINE TRIP OCCURRED WHEN THE OPERATOR (AN SRO) ATTEMPTED TO RESTORE THE MSR TUBE BUNDLES TO SERVICE FOLLOWING THEIR ISOLATION ON AN EXTREME HIGH COIL DRAIN TANK LEVEL. THE OPERATOR HAD INTENDED TO ISOLATE ALL THE STEAM TO THE TUBE BUNDLES BY ISOLATING THE BYPASS VALVES AROUND THE MAIN STEAM SUPPLY VALVES AND THE INDIVIDUAL BUNDLE STEAM SUPPLY VALVES, BUT HE NEGLECTED TO CLOSE THE MAIN STEAM SUPPLY VALVES THEMSELVES. WHEN THE INDIVIDUAL BUNDLE STEAM SUPPLY VALVES WERE REOPENED, THE TUBE BUNDLES WERE ALMOST IMMEDIATELY PRESSURIZED TO 800 PSI. THE UNIT TRIPPED FROM AN APPARENT HIGH LEVEL IN THE MSR SHELL WHICH HAPPENED BEFORE THE STEAM SUPPLY VALVES TO THE BUNDLES WERE FULLY OPENED. THE APPARENT HIGH LEVEL MAY HAVE BEEN AN ACTUAL LEVEL OR VIBRATION FROM THERMAL SHOCK DUE TO THE RAPID REPRESSURIZATION OF THE STEAM TUBE BUNDLES. PROCEDURE CHANGES ARE BEING MADE TO PREVENT RECURRENCE.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1) D. C. COOK UNIT 2	DOCKET NUMBER (2) 0 5 0 0 0 3 1 6 8 3	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		83	002	0	02	OF 02

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

THE HIGH PRESSURE TURBINE EXHAUST STEAM IS DIRECTED TO A LEFT AND RIGHT MOISTURE SEPARATOR REHEATER. THE SEPARATOR SECTIONS REMOVE EXCESS MOISTURE FROM THE STEAM AND THE REHEATER COILS REHEAT THE STEAM BEFORE IT ENTERS THE LOW PRESSURE TURBINES. THE MOISTURE THAT IS REMOVED FROM THE STEAM DRAINS TO A DRAIN TANK AND IF A HIGH WATER LEVEL DEVELOPES IN THE MSR SHELL A LEVEL SWITCH TRIPS THE TURBINE. EACH REHEATER CONTAINS FOUR, TWO PASS STEAM COILS THAT ARE SUPPLIED BY MAIN STEAM. EACH STEAM COIL HAS ITS OWN MOTOR OPERATED STEAM ISOLATION VALVE WHICH IS SUPPLIED FROM THE MAIN STEAM HEADER THROUGH A MOTOR OPERATED VALVE AND AN AIR OPERATED VALVE IN PARALLEL.

EACH PAIR OF STEAM COILS, NORTHWEST/NORTHEAST AND SOUTHEAST/SOUTHWEST DRAIN TO A FIRST PASS COIL DRAIN TANK AND A LEVEL IS MAINTAINED IN THE TANK BY AN AUTOMATIC LEVEL CONTROL VALVE. AN EXTREME HIGH LEVEL IN A COIL DRAIN TANK WILL ISOLATE THE STEAM SUPPLY ISOLATION VALVE TO THE COILS THAT DRAINS TO THAT TANK AND THE CORRESPONDING STEAM COIL IN THE OPPOSITE MSR TO INSURE EVEN HEAT DISTRIBUTION TO THE TURBINE. DUE TO ERRATIC LEVEL CHANGES IN THE COIL DRAIN TANK DURING TURBINE VALVE TESTING, THE COIL DRAIN TANK LEVEL CONTROL VALVE IS OPENED IN MANUAL AND DRAINS ARE ALLOWED TO BLOW THROUGH.

ON 2/18/84 AT 0245 HOURS ALL SYSTEMS WERE OPERABLE WITH THE UNIT AT 100% POWER. MAIN TURBINE VALVE TESTS WERE COMPLETE. WHILE ATTEMPTING TO ESTABLISH AUTO LEVEL CONTROL IN THE LEFT SOUTH FIRST PASS COIL DRAIN TANK AN EXTREME HIGH LEVEL ISOLATED THE SOUTH SET OF STEAM COILS ON BOTH THE LEFT AND RIGHT MSR'S BY CLOSING THEIR INDIVIDUAL STEAM ISOLATION VALVES. THE LEFT AND RIGHT MOISTURE SEPARATOR REHEATERS WERE THEN OPERATING WITH BOTH SETS OF NORTH STEAM COILS IN SERVICE AND BOTH SETS OF SOUTH STEAM COILS OUT OF SERVICE.

THE OPERATOR (AN SRO) ATTEMPTED TO RESTORE THE ISOLATED BUNDLES TO SERVICE WITHOUT REFERRING TO THE MSR OPERATING PROCEDURE. THE MSR OPERATING PROCEDURE DOES NOT SPECIFICALLY ADDRESS MSR RESTORATION AFTER ISOLATION DURING POWER OPERATION, BUT IF IT WAS USED IT WOULD HAVE PROPERLY ISOLATED THE STEAM SUPPLY PRIOR TO PLACING THE COILS IN SERVICE. HE WAS AWARE THAT THE MAIN STEAM MOTOR OPERATED AND AIR OPERATED BYPASS VALVES MUST BE CLOSED BEFORE THE INDIVIDUAL STEAM COILS ISOLATION VALVES ARE OPENED. AFTER THE INDIVIDUAL STEAM COIL ISOLATION VALVES ARE OPEN, THEN THE BYPASS VALVE IS OPENED SLOWLY TO PREVENT THERMAL SHOCK. THE OPERATOR CLOSED THE BYPASS VALVE BUT NEGLECTED TO CLOSE THE MOTOR OPERATED MAIN SUPPLY VALVES SO THAT WHEN HE OPENED THE INDIVIDUAL STEAM SUPPLY VALVES TO THE RIGHT AND LEFT MSR SOUTH COILS, THE COILS ALMOST IMMEDIATELY PRESSURIZED TO 800 PSI. THE UNIT TRIPPED FROM AN APPARENT HIGH LEVEL IN THE MSR SHELL. IT IS BELIEVED THAT THE HIGH LEVEL TRIP WAS CAUSED BY A VIBRATION DURING THE SUDDEN PRESSURIZATION WHICH SHOOK THE MSR SHELL HIGH WATER LEVEL TRIP SWITCH RESULTING IN A FALSE INDICATION OF HIGH LEVEL. NO APPARENT DAMAGE RESULTED.

A MEMO WAS ISSUED ON 2/23/84 BY THE OPERATIONS PRODUCTION SUPERVISOR THAT REEMPHASIZES PRECAUTIONS AND ACTIONS TO BE TAKEN WHEN RESTORING COIL DRAIN TANK LEVELS AND REPRESSURIZING THE REHEATER COILS FOLLOWING ISOLATION.

AN ADDITIONAL PROCEDURE HAS BEEN WRITTEN FOR MSR RESTORATION AFTER TUBE BUNDLE ISOLATION DURING POWER OPERATION. THE PROCEDURE IS PRESENTLY IN THE REVIEW PROCESS.



INDIANA & MICHIGAN ELECTRIC COMPANY

DONALD C. COOK NUCLEAR PLANT
P.O. Box 458, Bridgman, Michigan 49106
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March 16, 1984

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

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Docket No. 50-316

Document Control Manager:

In accordance with the criteria established by 10CFR50.73 entitled
License Event Reporting System, the following report/s are being
submitted:

RO 84-002-0

Sincerely,

W.G. Smith, Jr.
Plant Manager

/cbm

Attachment

cc: John E. Dolan
J.G. Keppler, RO:III
M.P. Alexich
R.F. Kroeger
H.B. Brugger
E.R. Swanson, RO:III
R.C. Callen, MPSC
J.M. Hennigan
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Dir., M²PC

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11