

# REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8707150290 DOC. DATE: 87/07/07 NOTARIZED: NO DOCKET #  
 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana & 05000315  
 AUTH. NAME AUTHOR AFFILIATION  
 BLIND, A. A. Indiana & Michigan Electric Co.  
 SMITH, W. G. Indiana & Michigan Electric Co.  
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-010-00: on 870605, inadvertent opening of reactor trip breakers occurred due to high turbine exhaust pressure. Caused by excessive leakage of low pressure steam supply isolation valve AMD-12. Procedures implemented. W/870707 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5  
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

## NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD3-3 LA	1 1	PD3-3 PD	1 1
	WIGGINGTON, D	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	AEOD/DOA	1 1	AEOD/DSP/ROAB	2 2
	AEOD/DSP/TPAB	1 1	DEDRO	1 1
	NRR/DEST/ADE	1 0	NRR/DEST/ADS	1 0
	NRR/DEST/CEB	1 1	NRR/DEST/ELB	1 1
	NRR/DEST/ICSB	1 1	NRR/DEST/MEB	1 1
	NRR/DEST/MTB	1 1	NRR/DEST/PSB	1 1
	NRR/DEST/RSB	1 1	NRR/DEST/SGB	1 1
	NRR/DLPQ/HFB	1 1	NRR/DLPQ/QAB	1 1
	NRR/DOEA/EAB	1 1	NRR/DREP/RAB	1 1
	NRR/DREP/RPB	2 2	NRR/PMAS/ILRB	1 1
	NRR/PMAS/PTSB	1 1	REG FILE 02	1 1
	RES DEPY GI	1 1	RES TELFORD, J	1 1
	RES/DE/EIB	1 1	RGN3 FILE 01	1 1
EXTERNAL:	EG&G GROH, M	5 5	H ST LOBBY WARD	1 1
	LPDR	1 1	NRC PDR	1 1
	NSIC HARRIS, J	1 1	NSIC MAYS, G	1 1

**LICENSEE EVENT REPORT (LER)**

FACILITY NAME (1) D.C. Cook Nuclear Plant, Unit 1														DOCKET NUMBER (2) 0 5 0 0 0 3 1 5										PAGE (3) 1 OF 0 4								
TITLE (4) ESF Actuation (Inadvertent Opening of Reactor Trip Breakers) Due to High Turbine Exhaust Pressure as a Result of Excessive Isolation Valve Leakage																																
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	6	0	5	8	7	8	7	0	1	0	0	0	7	0	7	8	7											0 5 0 0 0				
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																													
3			20.402(b)					20.405(c)					X 50.73(a)(2)(iv)					73.71(b)														
POWER LEVEL (10)			20.405(a)(1)(i)					50.38(c)(1)					50.73(a)(2)(v)					73.71(c)														
0 0 0			20.405(a)(1)(ii)					50.38(c)(2)					50.73(a)(2)(vii)					OTHER (Specify in Abstract below and in Text, NRC Form 356A)														
			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																		TELEPHONE NUMBER														
A. A. Blind - Assistant Plant Manager																		AREA CODE														
																		6 1 6 4		6 5 4 5 9 0 1												
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																						
X	S	B	I	S	V	R	3	0	4	Y																						
SUPPLEMENTAL REPORT EXPECTED (14)																		EXPECTED SUBMISSION DATE (15)		MONTH		DAY		YEAR								
YES (If yes, complete EXPECTED SUBMISSION DATE)																		X		NO												

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

On June 5, 1987, at 0538 hours, while preparing for Unit startup, an Engineered Safety Features Actuation (inadvertent opening of the reactor trip breakers) occurred due to first stage turbine pressure reaching the 10 percent setpoint which de-energized the P-7 permissive enabling the "four of four turbine stop valves closed" reactor trip signal. The pressurization of the high pressure turbine first stage was the result of isolation valve AMO-12 (low pressure steam from left Moisture Separator Reheater) leakage which in turn pressurized the high pressure turbine.

The cause of this event has been determined to be the excessive leakage of the low pressure steam supply isolation valve AMO-12. Contributing to the event was Moisture Separator Reheater tube leakage.

The repair of both the subject isolation valve and the MSR tube leakage will be completed before the conclusion of the current refeueling outage (tentatively scheduled for August 24, 1987).

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
D.C. Cook Nuclear Plant, Unit 1	0 5 0 0 0 3 1 5	8 7	— 0 1 0	— 0 0	0 2	OF	0 4

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

Conditions Prior to Occurrence

Unit 1 in Mode 3 (Hot Standby) preparing for Unit startup, reactor sub-critical, reactor trip breakers closed, all reactor control rod shutdown banks fully withdrawn.

Description of Event

On June 5, 1987, at 0538 hours, an Engineered Safety Features Actuation (inadvertent opening of the reactor trip breakers) occurred due to one of two first stage turbine pressure instruments (EIIS/TP) reaching the 10 percent setpoint which de-energized the P-7 permissive enabling the "four of four turbine stop valves closed" reactor trip signal. The pressurization of the high pressure turbine first stage (EIIS/TA) was the result of isolation valve AMO-12 [low pressure steam supply from left Moisture Separator Reheater (MSR) (EIIS/ISV)] leakage which in turn pressurized the high pressure turbine.

The pressurization began when an auxiliary steam flow control valve (ARV-60) (EIIS/FCV) was opened to supply the main feedwater pumps (EIIS/P) to facilitate low flow operation. It has been concluded that this is when leakage through AMO-12 began. The leakage of AMO-12 allowed the auxiliary steam (125 psig) to enter the left MSR.

The normal drain from the left MSR to the 5B high pressure feedwater heater (EIIS/HX) was closed due to high levels within the heater. The MSR alternate drains to the main condenser (EIIS/COND) were also closed which is the normal system alignment at this point in the startup sequence.

With the MSR drains closed the only flowpath available for the auxiliary steam was into the high pressure turbine via the cross under piping. The cross under piping contains four, 2 inch drain lines to the condenser. It appears, however, that the mass from steam leaking through AMO-12 combined with existing MSR tube leakage [as had been identified earlier (see LER 50-315/87-009-00)] exceeded the capacity of these drains and resulted in the pressurization of the high pressure turbine. This in turn actuated the reactor trip sequence [opening of the reactor trip breakers (EIIS/BKR), insertion of the reactor control rod shutdown banks (EIIS/ROD)]. There was no automatic or manual actuation of the intermediate head safety injection system (EIIS/BQ).



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

Operations personnel immediately implemented special Emergency Operating Procedure 1-OHP-4023.E-0 to verify proper response of the automatic protection system (EIIS/JC) and to assess plant conditions for initiating appropriate recovery action.

The NRC was notified of the event via the ENS at 0752 hours, June 6, 1987.

With the exception of the leakage of both the low pressure steam supply isolation valve and the MSR tubes there were no inoperative structures, components, or systems that contributed to this event.

#### Cause of Event

The cause of this event has been determined to be the excessive leakage of the low pressure steam supply isolation valve (AMO-12). Contributing to the event was MSR tube leakage.

#### Analysis of Event

This Engineered Safety Features Actuation, which resulted in a reactor trip, is reportable pursuant to 10 CFR 50.73 (a)(2)(iv).

The Engineered Safety Features Actuation signal was generated as a result of one of two first stage shell pressure instruments reaching the 10 percent setpoint which de-energized the P-7 permissive enabling the "four of four turbine stop valve closed" reactor trip signal.

The automatic protection system responses were verified to have functioned properly as a result of the Engineered Safety Features actuation. The Reactor Trip Breakers actuated in less than 100 ms which is consistent previous data. All reactor shutdown control rod banks fully inserted as a result of the reactor trip signal. Based on the above, it has been concluded that this event does not constitute an unreviewed safety question as defined by 10 CFR 50.59. The health and safety of the public were not affected.

#### Corrective Actions

Operations personnel immediately implemented plant procedures to verify proper response of the automatic protection system and to assess plant conditions for initiating appropriate recovery actions. The repair of both the subject isolation valve and the MSR tube leakage will be completed before the conclusion of the current refueling outage (tentatively scheduled for August 24, 1987).

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104  
EXPIRES: 8/31/88

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

Failed Component Identification

Isolation Valve - Left Moisture Separator Reheater reheat steam  
to West main feedwater pump turbine

Plant Designation: 1-AMO-12

Manufacturer: Rockwell Edward

Model: 606MY, 10 inch

EIIS Code: ISV

Previous Similar Events

LER - 50-315/87-009-00



**INDIANA & MICHIGAN ELECTRIC COMPANY**

DONALD C. COOK NUCLEAR PLANT  
P.O. Box 458, Bridgman, MI 49106  
Telephone (616) 465-5901

July 7, 1987

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

Operating License DPR-58  
Docket No. 50-315

Document Control Manager:

In accordance with the criteria established by 10 CFR 50.73  
entitled Licensee Event Reporting System, the following  
report is being submitted:

87-010-00

Sincerely,

  
W. G. Smith, Jr.

WGS:afh

Attachment

cc: A. B. Davis, Region III  
J. E. Dolan  
D. L. Wigginton, NRC  
R. C. Callen, MPSC  
D. Hahn, MDPH  
G. Charnoff, Esq.  
Dottie Sherman, ANI Library  
INPO  
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R. F. Kroeger  
H. B. Brugger  
R. W. Jurgensen  
NRC Resident Inspector  
PNSRC  
J. G. Feinstein/B. P. Lauzau  
A. A. Blind  
File

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