



**INDIANA  
MICHIGAN  
POWER®**

A unit of American Electric Power

Indiana Michigan Power  
One Cook Place  
Bridgman, MI 49106  
IndianaMichiganPower.com

June 23, 2010

AEP-NRC-2010-48  
10 CFR 50.73

Docket No. 50-315

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Unit 1  
LICENSEE EVENT REPORT 315/2010-002-00  
MANUAL AUXILIARY FEEDWATER ACTUATION IN RESPONSE TO  
MAIN FEEDPUMP FAILURE

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

LER 315/2010-002-00: "Manual Auxiliary Feedwater Actuation in Response to Main Feedpump Failure"

There are no commitments contained in this submittal.

Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Manager, at (269) 466-2649.

Sincerely,

Joel P. Gebbie  
Site Vice President

JEN/jmr

Attachment

c: INPO Records Center  
J. T. King – MPSC, w/o attachment  
S. M. Krawec – AEP Ft. Wayne, w/o attachment  
MDNRE – WHMD/RPS, w/o attachment  
NRC Resident Inspector  
M. A. Satorius – NRC Region III  
P. S. Tam – NRC Washington DC

JE22  
NRC

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

<b>1. FACILITY NAME</b> Donald C. Cook Nuclear Plant, Unit 1	<b>2. DOCKET NUMBER</b> 05000315	<b>3. PAGE</b> 1 of 3
---	-------------------------------------	--------------------------

**4. TITLE**  
Manual Auxiliary Feedwater Actuation in Response to Main Feedpump Failure

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	02	2010	2010	-- 002 --	00	06	23	2010	FACILITY NAME	DOCKET NUMBER

<b>9. OPERATING MODE</b> 1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> (Check all that apply)			
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
<b>10. POWER LEVEL</b> 098	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

<b>12. LICENSEE CONTACT FOR THIS LER</b>	
FACILITY NAME Michael K. Scarpello, Regulatory Affairs Manager	TELEPHONE NUMBER (Include Area Code) (269) 466-2649

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	

<b>14. SUPPLEMENTAL REPORT EXPECTED</b>				<b>15. EXPECTED SUBMISSION DATE</b>		MONTH	DAY	YEAR
YES (If Yes, complete EXPECTED SUBMISSION DATE).	X	NO						

**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On May 2, 2010, at 0855 hours, following rising bearing temperatures on the Unit 1 East Main Feedwater Pump (MFP), Donald C. Cook Nuclear Plant Control Room Operators initiated the Rapid Power Reduction procedure in an effort to quickly lower power to remove the failing East MFP from service. Within 3 minutes of initiating the power reduction, Operators received Hi and Hi-Hi vibration alarms and reports of an oil leak on the East MFP. Operators then manually tripped the East MFP at approximately 98% power and entered the procedure for Loss of One Main Feed Pump, which directs manually starting Auxiliary Feedwater (AFW) pumps as required. Operators started both Motor Driven AFW Pumps and the Turbine Driven AFW Pump. Power was stabilized at approximately 48%.

The cause of the East MFP bearing failure was a loss or reduction of lubrication oil supply to the bearing. An exact cause for the loss or reduction of lubrication oil supply could not be determined. Completed corrective actions involved disassembly, inspection, and repairs of the East MFP. Work included replacement of the failed bearing and bearing housing, replacement of the outboard hydraulic rubber-type hose with a corrugated metal hose, and a flush of the oil system for the pump.

Manually starting the AFW Pumps in response to actual plant conditions resulting from equipment failure was reported in accordance with 10 CFR 50.72(b)(3)(iv)(A), Event Notification 45893 was submitted on May 2, 2010. The event is also reportable as a Licensee Event Report in accordance with 10 CFR 50.73(a)(2)(iv)(A).

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Donald C. Cook Nuclear Plant, Unit 1	05000315	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 of 3
		2010	-- 002	-- 00	

**17. NARRATIVE** *(If more space is required, use additional copies of NRC Form (366A))*

**Conditions Prior to Event**

98% reactor power

**Description of Event**

On May 2, 2010, at 0855 hours, following rising bearing temperatures on the Unit 1 East Main Feedwater Pump (MFP) [SJ] [P], Donald C. Cook Nuclear Plant (CNP) Control Room Operators initiated the Rapid Power Reduction procedure in an effort to quickly lower power to remove the failing East MFP from service. Within three minutes of initiating the power reduction, Operators received Hi and Hi-Hi vibration alarms [ANN] and reports of an oil leak from the pump. Operators then manually tripped the East MFP at approximately 98% power and entered the procedure for Loss of One Main Feed Pump, which directs manually starting Auxiliary Feedwater (AFW) [BA] pumps [P] as required. Operators started both Motor Driven AFW Pumps and the Turbine Driven AFW Pump and continued to reduce power. Power was stabilized at approximately 48%.

Manually starting the AFW Pumps in response to actual plant conditions resulting from equipment failure is reportable in accordance with 10 CFR 50.72(b)(3)(iv)(A), Event Notification 45893 was submitted to the NRC on May 2, 2010. The event is also reportable as a Licensee Event Report (LER) in accordance with 10 CFR 50.73(a)(2)(iv)(A).

**Cause of Event**

The Unit 1 East MFP was removed from service at approximately 98% power due to a failed outboard journal bearing. The failure was caused by a loss or reduction of lubrication oil supply [SL] to the bearing.

Potential causes for the loss or reduction of lubrication oil supply were investigated, but an exact cause for the loss or reduction of lubrication oil supply could not be determined.

**Analysis of Event**

Manually starting the Unit 1 AFW Pumps as part of procedurally directed action in response to the loss of one main feed pump is a conservative action to take to assure that feedwater is maintained to the unit's Steam Generators (SGs) [TB] when main feedwater flow has been significantly reduced while reducing reactor and turbine power. This action does not disable any equipment, nor does it adversely affect mitigation of any plant events. In the event a reactor trip is not avoided, the AFW Pumps would either be already operating or on the verge of being manually started, avoiding dependence on automatic actuation circuitry to provide AFW to the SGs. Thus, manually starting AFW Pumps reduces risk during an event such as this, where main feedwater flow is severely curtailed, by removing reliance on automatic actuation to start the AFW Pumps via the additional operator direction to start AFW Pumps "as required" based on operator judgment.

**Corrective Actions**

Completed Corrective Actions:

The Unit 1 East MFP was disassembled, inspected, and repaired. Work included replacement of the failed bearing and bearing housing, replacement of the outboard hydraulic rubber-type hose [HOSE] with a corrugated metal

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Donald C. Cook Nuclear Plant, Unit 1	05000315	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 of 3
		2010	-- 002	-- 00	

**17. NARRATIVE** (If more space is required, use additional copies of NRC Form (366A))

hose, and a flush of the oil system for the pump. The Unit 1 East MFP was returned to service on May 15, 2010 at 0225.

**Planned Corrective Actions:**

Inspection of the bearing housing orifices will be added to the MFP maintenance procedure.

Activities will be planned for the next refueling outages to inspect the lubricating oil supply systems on the Unit 1 West MFP and both of the Unit 2 MFPs, and any hydraulic rubber-type hoses will be replaced with corrugated metal hoses.

**Previous Similar Events**

LERs for both units for the past three years were reviewed for similar events related to 10 CFR 50.73(a)(2)(iv)(A) reporting criteria for system actuation. Actuation of the AFW System is an expected response to reactor trips. The following were identified:

**05000316-2009-001-00 Unit 2 Manual Reactor Trip**

On July 26, 2009, at 1506 hours, Donald C. Cook Nuclear Plant (CNP) Unit 2 Control Room Operators performed a manual reactor trip in response to a malfunctioning reactor coolant pump (RCP) seal.

**05000315-2008-006-01 Manual Reactor Trip due to Main Turbine High Vibrations**

On September 20, 2008, at 2005 hours, CNP Unit 1 control room operators initiated a manual reactor trip from 100% power following Hi-Hi vibration alarms on all main turbine supervisory instrumentation vibration points.

**05000315-2008-001-00 Unit 1 Manual Reactor Trip**

On February 2, 2008, at 0530 hours, CNP Unit 1 operators initiated a manual reactor trip from 93% power when main turbine bearing vibration reached the manual trip setpoint.

**05000315-2007-001-00 Unit 1 Automatic Reactor Trip**

On August 28, 2007, at 1354 hours, CNP Unit 1 received a reactor trip and main turbine trip signal as a result of low SG #11 water level coincident with a steam flow – feedwater flow mismatch.