

Indiana Michigan
Power Company
500 Circle Drive
Buchanan, MI 49107 1395



May 7, 2003

AEP:NRC:2573-07

Docket No. 50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Unit 2
UNIT 2 TECHNICAL SPECIFICATION 3.7.1.2 LIMITING
CONDITION FOR OPERATION EXCEEDED FOR
AUXILIARY FEEDWATER SYSTEM

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

LER 316/2003-003-00: "Unit 2 Technical Specification 3.7.1.2 Limiting Condition for Operation Exceeded for Auxiliary Feedwater System."

Should you have any questions regarding this correspondence, please contact Ms. Pamela B. Cowan, System Engineering Manager, at (269) 466-2549.

No new commitments have been identified in this submittal.

Sincerely,

A handwritten signature in black ink, appearing to read 'Joseph E. Pollock'.

Joseph E. Pollock
Site Vice President

RAM/jen

Attachment

IE22

c: L. Brandon – Michigan Department of Health
H. K. Chernoff – NRC Washington DC
K. D. Curry – AEP Ft. Wayne
J. E. Dyer – NRC Region III
J. T. King - MPSC
MDEQ – DW & RPD
NRC Resident Inspector
Records Center - INPO
J. F. Stang, Jr. – NRC Washington DC

bc: A. C. Bakken, III, w/o attachment
M. J. Finissi
J. B. Giessner
D. W. Jenkins, w/o attachment
J. A. Kobyra, w/o attachment
B. A. McIntyre, w/o attachment
J. E. Newmiller
T. P. Noonan
J. E. Pollock
D. J. Poupard
M. K. Scarpello, w/o attachment
T. K. Woods, w/o attachment

LICENSEE EVENT REPORT (LER)(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory information 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 Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@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 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.

1. FACILITY NAME

Donald C. Cook Nuclear Plant Unit 2

2. DOCKET NUMBER

05000-316

3. PAGE

1 of 4

4. TITLE

Unit 2 Technical Specification 3.7.1.2 Limiting Condition for Operation Exceeded for Auxiliary Feedwater System

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	
03	08	2003	2003	-- 003 --	00	05	07	2003	FACILITY NAME	DOCKET NUMBER	
9. OPERATING MODE			1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
10. POWER LEVEL			100%	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)	
				20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)	
				20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)	
				20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)	
				20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER	
				20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		Specify in Abstract below	
				20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		or in NRC Form 366A	
				20.2203(a)(2)(v)		X	50.73(a)(2)(i)(B)	50.73(a)(2)(vii)			
				20.2203(a)(2)(vi)			50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)			
				20.2203(a)(3)(i)			50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)			

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Richard Meister, Regulatory Compliance	(269) 465-5901, x 1707

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

14. SUPPLEMENTAL REPORT EXPECTED

X	YES (If Yes, complete EXPECTED SUBMISSION DATE).	NO
X		

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR
07	11	2003

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

At 0400 hours on March 5, 2003, Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.1.2, Action "a" was entered to perform routine maintenance on the Unit 2 West Motor Driven Auxiliary Feedwater (MDAFW) pump. During post-maintenance testing, a loud "buzzing" noise was heard emanating from the vicinity of the pump motor. A supporting/refuting evaluation was performed, which eliminated the pump, breaker, or system alignment as the possible source of the noise. At this point, the decision was made to replace the suspect motor. Initially, Donald C. Cook Nuclear Plant (CNP) had expected to complete the replacement of the West MDAFW pump motor within the allowed outage times specified in TS 3.7.1.2. However, unanticipated delays prevented the completion of this activity within the allowed outage time. Therefore, on March 8, 2003, CNP requested, and was granted, enforcement discretion on March 8, 2003.

The apparent cause of the Unit 2 West MDAFW pump motor noise was a loose rotor or stator bar. CNP is conducting an investigation into the cause of the pump motor noise. The suspect motor has been sent off site to a qualified vendor for as-found condition analysis. The cause for CNP's failure to complete the motor replacement within the allowed outage time is under investigation. This LER will be supplemented (upon completion of the investigation) to include the cause and corrective actions to prevent recurrence.

CNP determined that no net increase in risk was associated with extending the TS 72-hour allowed outage time by an additional 36 hours to restore the West MDAFW pump to an operable status. Although the proposed action deviated from a requirement in TS 3.7.1.2, it did not affect any safety limits, setpoints in the TS, or other operational parameters, nor did it affect any margins assumed in the accident analyses. In addition, the redundant Unit 2 East MDAFW pump and TDAFW pump continued to be operable to perform their required design function. The Unit 2 West MDAFW pump motor was replaced with a spare motor and the pump was declared operable at 0246 hours on March 9, 2003.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER				3. PAGE
		YEAR	SEQUENTIAL NUMBER		REVISION NUMBER	
		2003	--	003	--	00

Donald C. Cook Nuclear Plant Unit 2

05000-316

2 of 4

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

Conditions Prior to Event

Unit 1 – Mode 1, 100 percent power

Unit 2 – Mode 1, 100 percent power

Description of Event

At 0400 hours on March 5, 2003, Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.1.2, Action "a" was entered to perform routine maintenance on the Unit 2 West Motor Driven Auxiliary Feedwater (MDAFW) pump. During post-maintenance surveillance testing of the pump, a loud "buzzing" noise (lasting approximately one second) was heard emanating from the vicinity of the pump motor. Due to the presence of the noise, infrared thermography of the motor was performed during the surveillance. No abnormalities were indicated.

The motor was instrumented for another run to collect data to assist in determining the source and cause of the noise. The motor was started and the following data was collected during the five-minute run:

- Electromagnetic Interference (EMI) testing utilizing the hand-held EMI unit. The data did not indicate the presence of a degraded condition.
- Vibration monitoring of the motor. The data did not indicate the presence of a degraded condition or a degrading trend.
- Oil samples were collected from the motor and pump bearings. Visual examination indicated no problems in the oil, nor any evidence of bearing degradation.

Following the five-minute run, the circuit breaker was checked and preventive maintenance was performed, which ruled out the circuit breaker as the cause for the noise.

In addition, a motor characterization test was performed. This test checks the condition of the insulation in the motor and power cables from the circuit breaker. It also checks the electrical connections and the inductance of the motor stator windings. The test results indicated no abnormalities or evidence of degradation.

The condition monitoring tests that were performed prior to and following the manifestation of the noise did not indicate any degraded condition. However, based on the prior experience of the personnel involved, the noise was believed to indicate a potentially degraded condition in the motor. As such, the following actions were performed:

- The pump and motor were rotated by hand and both were found to rotate freely.
- The pump was uncoupled from the motor and each component was rotated by hand. Both were found to rotate freely.
- The motor was run uncoupled and a similar noise was heard.

Donald C. Cook Nuclear Plant (CNP) decided to replace the suspect West MDAFW pump motor with a spare motor. This decision was based on the results of a supporting/refuting evaluation performed by CNP, which eliminated the pump, breaker, or system alignment as the possible source of the noise. The spare pump motor, which was functionally the same, had a different frame size. However, the spare motor was identical to the frame size used on the Unit 1 and Unit 2 East MDAFW pumps. Because the spare was of a different frame size, changes to the motor mounting configuration were necessary. A different coupling hub was required for the spare motor, which also had a larger shaft size than the suspect motor it was replacing. In addition, the spare motor weighed more than the suspect motor (4,800 pounds versus 2,800 pounds).

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER				3. PAGE
		YEAR	SEQUENTIAL NUMBER		REVISION NUMBER	
		2003	--	003	--	00

Donald C. Cook Nuclear Plant Unit 2

05000-316

3 of 4

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

An equivalency evaluation was performed to evaluate the differences between the suspect motor and the spare motor. All critical characteristics were compared to the current motor design. CNP concluded that the differences had no adverse effect on the function or qualification of the West MDAFW pump.

Initially, CNP had expected to complete the replacement of the West MDAFW pump motor within the allowed outage times specified in TS 3.7.1.2. However, unanticipated delays prevented the completion of this activity within the allowed outage time. Therefore, on March 8, 2003, at 0127 hours, CNP received enforcement discretion from the NRC to extend the 72-hour allowed outage time by an additional 36 hours to restore the West MDAFW pump to an operable status. At the time that enforcement discretion was requested, the spare motor had been installed and an uncoupled run was successfully performed. Remaining work was to fabricate the motor coupling, align the spare motor to the West MDAFW pump, couple, and successfully perform post-maintenance testing before restoring the pump to an operable status. At 0246 hours on March 9, 2003, the Unit 2 West MDAFW pump was declared operable and the LCO for TS 3.7.1.2, Action "a" was exited.

Because the 72-hour allowed outage time for TS 3.7.1.2 was exceeded, this licensee event report (LER) is being submitted in accordance with the requirements of 10 CFR 50.73 (a)(2)(i)(B) for operation or a condition prohibited by the TS.

Cause of Event

The apparent cause of the Unit 2 West MDAFW pump motor noise was a loose rotor or stator bar. This conclusion is consistent with the EPRI Technical Report for Troubleshooting of Electric Motors.

Complications with the fit-up of the replacement motor, along with necessary procedural changes and a number of personnel errors, contributed to CNP's failure to replace the Unit 2 West MDAFW pump motor within the allowed outage time. CNP is conducting an investigation into the cause of the failure to complete the motor replacement within the allowed outage time. This LER will be supplemented (upon completion of the investigation) to document the cause and corrective actions to prevent recurrence.

Analysis of Event

The AFW system is a safety-related system that provides feedwater to the steam generators (SGs) when the main feedwater pumps are unavailable. Each unit's AFW system consists of three feedwater supply trains with diverse power sources. One train includes a turbine-driven auxiliary feedwater (TDAFW) pump supplying all four SGs. The other two trains consist of MDAFW pumps, each supplying two SGs. The MDAFW pumps are capable of supplying the corresponding sets of SGs in the opposite unit through manual cross-tie supply valves in the event of an Appendix R fire in the opposite unit.

CNP determined that no net increase in risk was associated with extending the TS 72-hour allowed outage time by an additional 36 hours to restore the West MDAFW pump to an operable status when compared with the risk associated with shutting the plant down. This conclusion supported CNP's request for enforcement discretion, which was verbally granted by the NRC on March 8, 2003, at 0127 hours. Although the proposed action deviated from a requirement in TS 3.7.1.2, it did not affect any safety limits, setpoints in the TS, or other operational parameters, nor did it affect any margins assumed in the accident analyses. In addition, the redundant Unit 2 East MDAFW pump and TDAFW pump continued to be operable to perform their required design function.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER				3. PAGE
		YEAR	SEQUENTIAL NUMBER		REVISION NUMBER	
		2003	--	003	--	00
Donald C. Cook Nuclear Plant Unit 2	05000-316					4 of 4

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

Corrective Actions

The suspect Unit 2 West MDAFW pump motor was replaced with a spare motor. The pump was satisfactorily tested and declared operable at 0246 hours on March 9, 2003.

Corrective actions to prevent recurrence will be determined upon completion of the cause investigation. This LER will be supplemented to include this information.

Previous Similar Events

None