

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



February 2, 2005

AEP:NRC:2573-11
10 CFR 50.73

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
SUPPLEMENTAL LER FOR UNIT 2 SHUTDOWN IN ACCORDANCE
WITH TECHNICAL SPECIFICATION 3.8.1.1, A.C. SOURCES, ACTION B

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

LER 316/2003-001-01: "Unit 2 Shutdown in Accordance With Technical Specification 3.8.1.1, A.C. Sources, Action b."

This supplemental report exceeds the expected submission date provided in the initial report. Indiana Michigan Power Company is revising the procedure controlling submittal of LERs to establish administrative controls for timeliness of the supplemental report.

There are no commitments contained within this submittal. Should you have any questions regarding this correspondence, please contact Mr. Toby K. Woods, Compliance Supervisor, at (269) 466-2798.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jensen', written over a circular scribble.

Joseph N. Jensen
Site Vice President

RAJ/jen

Attachment

JE22

c: J. L. Caldwell – NRC Region III
K. D. Curry – AEP Ft. Wayne
J. T. King – MPSC
C. F. Lyon – NRC Washington DC
MDEQ – WHMD/HWRPS
NRC Resident Inspector
Records Center – INPO

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.

1. FACILITY NAME Donald C. Cook Nuclear Plant Unit 2	2. DOCKET NUMBER 05000-316	3. PAGE 1 of 4
--	--------------------------------------	--------------------------

4. TITLE
Unit 2 Shutdown In Accordance With Technical Specification 3.8.1.1, A.C. Sources, Action b

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
1	26	2003	2003	-- 001	-- 01	02	02	2005	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (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)						
10. POWER LEVEL 100%	<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)						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input 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 checked="" 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							

12. LICENSEE CONTACT FOR THIS LER	
FACILITY NAME Toby Woods, Compliance Supervisor	TELEPHONE NUMBER (Include Area Code) (269) 466-2798

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPX
X	EK	65	Woodward	Yes					

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

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

On January 26, 2003, at 0426 hours, Donald C. Cook Nuclear Plant (CNP) Unit 2 was manually shut down in accordance with Technical Specification 3.8.1.1, A.C. Sources, Action b, and normal plant operating procedures, due to the CD Emergency Diesel Generator (EDG) approaching its allowed inoperability time. All remaining safety related equipment performed as required during the shutdown. No anomalies were noted. The CD EDG was removed from service on January 23, 2003, at 0400 hours for planned maintenance and testing. During the post-maintenance testing, unexpected KW load fluctuations were experienced with the EDG. The need for additional troubleshooting prevented completion of the planned maintenance and testing activities within the 72-hour allowed outage time. This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(A) and NUREG-1022, Revision 2, Section 3.2.1, which requires each licensee to submit an LER for the completion of any nuclear plant shutdown required by the plant's technical specifications. This LER is a supplement which reports the root cause and corrective actions for the event. The root cause was unexpected binding of the governor linkage due to insufficient configuration control complicated by a lack of expertise in maintaining the obsolete governing system. Improvements to procedural controls and training of engineering and maintenance personnel were performed to address the condition.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Donald C. Cook Nuclear Plant Unit 2	05000316	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 of 4
		2003	- 001	-- 01	

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

Conditions Prior to Event

Unit 1 – Mode 5, 0 percent power
Unit 2 – Mode 1, 100 percent power

Description of Event

On January 23, 2003 at 0400 hours, the CD EDG was removed from service for a planned maintenance outage of approximately 31 hours. The planned maintenance consisted of troubleshooting and repairing the slow start circuit, relocating the front bank fuel return header, replacing the spider assembly for the engine driven fuel oil pump, and cleaning and inspecting the auto voltage regulator droop circuit potentiometer. None of the activities performed at this time affected the governor system or fuel rack linkage.

At 2332 hours on January 24, 2003 the CD EDG was started for its operability run following the completed maintenance activities. Load oscillations of approximately 150 KW in the downward direction occurred. The decision was made to replace the Electronic Governor Module (EGM). Following replacement of the EGM, the CD EDG was started for tuning of the newly installed module. It was determined that the tuning attempt was unsuccessful (unable to control load swings). The EDG was secured to install a different EGM.

At 1906 hours on January 25, 2003, the diesel was started to tune the second governor control module. Additional delays were encountered during the tuning process when it was determined that the control room synchroscope was not functioning. After troubleshooting and correcting this problem, the EDG load was increased to 2750 KW. After approximately one minute, load fluctuations of approximately 100 KW were observed, and shortly thereafter the load underwent a step increase of approximately 1000 KW for a short period of time, and then returned to about 2750 KW. Load was maintained at that level for several minutes to monitor for additional perturbations, which did not occur. The diesel load was reduced to 1150 KW and stabilized to allow gathering of data.

At 0017 hours on January 26, 2003, a shutdown of the Unit 2 reactor commenced in accordance with the Limiting Condition for Operation (LCO) for Technical Specification 3.8.1.1, A.C. Sources, Action "b", due to the inability to return the CD EDG [EK] to an OPERABLE status within the allowed outage time. All remaining safety related equipment performed as required and no anomalies were noted. On January 26, 2003, at 0426 hours, Donald C. Cook Nuclear Plant (CNP) Unit 2 entered Mode 3.

Following the step load increase of 1000 KW, a visual inspection of the governor and fuel rack linkage was conducted. This inspection determined that a washer was installed on the wrong side of the connecting pin between the output shaft lever and the Heim end of the attached linkage arm. This led to mechanical binding. With troubleshooting complete, reassembly of the linkage occurred and several tuning and post maintenance testing runs were conducted. No additional problems were identified. The CD EDG was declared OPERABLE at 0830 hours on January 27, 2003. This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(A) and NUREG-1022, Revision 2, Section 3.2.1, which requires each licensee to submit an LER for the completion of any nuclear plant shutdown required by the plant's technical specifications.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Donald C. Cook Nuclear Plant Unit 2	05000316	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 of 4
		2003	- 001	-- 01	

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

Cause of Event

The root cause for this event is:

An inadequate configuration control process that did not assure correct installation of the 2CD Emergency Diesel Generator governor linkage which led to mechanical binding. This condition was further complicated by the lack of expertise in maintaining and diagnosing the aging obsolete governor system.

Analysis of Event

There were three conditions that had potential safety significance. One was the initial load swings caused by a malfunction of the diesel speed control system. The second was the load spike that was caused by the binding in the fuel racks. The third was the forced shutdown of Unit 2 as a result of not being able to restore CD EDG within its allowed outage time of 72 hours.

The initial load swings were not safety significant since the EDG would have been able to perform its safety function. This conclusion was supported by an evaluation that determined that the EDG would have remained within the Technical Specification and Administrative Technical Requirement frequency limits when operated in isochronous mode.

The load spike was associated with the binding of the fuel racks while increasing load. It was determined that for a rack binding force initially in excess of EGB (hydraulic governor) output, the CD EDG would exceed its minimum and maximum Technical Specification allowable frequency limits, the engine would not trip on overspeed, but the engine could reach stall conditions if the fuel racks remained bound for the time that was approximated during the event, coincident with an increase in load. Based on event data and field inspections, there is reasonable assurance that the rack binding was intermittent and while the more restrictive Administrative Technical Requirement limits would have been momentarily exceeded, the EDG would have continued to perform its safety function.

While the CD EDG was declared inoperable Unit 2 was placed in a condition of inherently higher risk for the duration of the allowed outage time, due to the loss of one train of emergency AC power. Additionally, as a result of not restoring the CD EDG within the allowed outage time, Unit 2 was required to perform a shutdown to comply with Technical Specification requirements.

The normal process for shutting down a unit, by reducing power to below 20% and then performing a manual reactor trip presents a more substantial risk to the plant than either performing a slow controlled shutdown, or maintaining the plant at power. This type of shutdown places a heavy reliance on safety systems to function correctly during and following the shutdown. During the shutdown, all remaining safety related equipment performed as required and no anomalies were noted. Thus, there was no actual safety significance associated with the shutdown of Unit 2.

In summary, there were no safety consequences as a result of the event. There was not a valid demand for the CD EDG to perform its safety function for the duration of the event. There was no safety consequence as a result of the shutdown of Unit 2 since all safety systems functioned as required.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Donald C. Cook Nuclear Plant Unit 2	05000316	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 of 4
		2003	- 001	-- 01	

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

Corrective Actions

Immediate actions:

The CD EDG was restored to operable condition following replacement of the EGM and restoration of fuel rack linkage configuration.

Corrective Actions to Prevent Recurrence:

1. Performed a review of EDG control system configuration documents to ensure that CNP specific configuration documents are established and available. (CRA 03025002-07,-48,-49,-51,-52, 03061006-01, -02 action complete)

2. Evaluated the level of expertise needed by station personnel for repair, replacement, adjustment, and tuning. Provided additional training to personnel. (CRA 02277047-027, 03025002-05,-06 action complete)

3. Reviewed the EDG control system procedures to identify components that require procedures for repair, replacement, or adjustment and tuning. Created new procedures to support EDG subsystem maintenance or enhanced existing procedures where needed. (CRA 02277047-027, 03025002-04, 02347041-02 action complete)

Previous Similar Events

LER 50-316/2002-007-00, Unit 2 Technical Specification 3.8.1.1 Allowed Outage Time Exceeded. CNP has reviewed the corrective actions associated with the similar LER and determined that the corrective actions implemented would not have prevented the occurrence of this event.