ACCELERATED DOCUMENT DISTRIBUTION SYSTEM
REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9212210090 DOC.DATE: 92/12/11 NOTARIZED: NO DOCKET #
FACIL:50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana M 05000316
AUTH.NAME AUTHOR AFFILIATION
WEBER,G.A. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
BLIND,A.A. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-008-01:on 920928,Unit 2 Train B Emergency DG tripped on low lube oil pressure immediately after starting.Caused by oil level below admin limit.Lube oil tank level restored to its normal operating range.W/921211 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 7
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD3-1 LA	1	1	PD3-1 PD	1	1
	DEAN,W	1	1			
INTERNAL:	ACNW	2	2	AEOD/DOA	1	1
	AEOD/DSP/TPAB	1	1	AEOD/ROAB/DSP	2	2
	NRR/DET/EMEB 7E	1	1	NRR/DLPQ/LHFB10	1	1
	NRR/DLPQ/LPEB10	1	1	NRR/DOEA/OEAB	1	1
	NRR/DREP/PRPB11	2	2	NRR/DST/SELB 8D	1	1
	NRR/DST/SICB8H3	1	1	NRR/DST/SPLB8D1	1	1
	NRR/DST/SRXB 8E	1	1	REG FILE 02	1	1
	RES/DSIR/EIB	1	1	RGN3 FILE 01	1	1
EXTERNAL:	EG&G BRYCE,J.H	2	2	L ST LOBBY WARD	1	1
	NRC PDR	1	1	NSIC MURPHY,G.A	1	1
	NSIC POORE,W.	1	1	NUDOCS FULL TXT	1	1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM P1-37 (EXT. 504-2065) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED
TOTAL NUMBER OF COPIES REQUIRED: LTTR 29 ENCL 29

R I D S / A D D S

Indiana Michigan
Power Company
Cook Nuclear Plant
One Cook Place
Bridgman, MI 49106
616 465 5901

INDIANA MICHIGAN POWER

December 11, 1992

United States Nuclear Regulatory Commission
Document Control Desk
Rockville, Maryland 20852

Operating Licenses DPR-74
Docket No. 50-316

Document Control Manager:

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

92-008-01

Sincerely,

A. A. Blind
Plant Manager

/sb

Attachment

c: D. H. Williams, Jr.
A. B. Davis, Region III
E. E. Fitzpatrick
P. A. Barrett
R. F. Kroeger
B. Walters - Ft. Wayne
NRC Resident Inspector
W. M. Dean - NRC
J. G. Keppler
M. R. Padgett
G. Charnoff, Esq.
D. Hahn
INPO
S. J. Brewer
B. A. Svensson

180043

IE22 1/1

NRC FORM 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
D. C. COOK NUCLEAR PLANT - UNIT 2	0 5 0 0 0 3 1 6	1 OF 0 6

TITLE (4) UNIT 2 TRAIN B EMERGENCY DIESEL GENERATOR TRIPPED ON LOW LUBE OIL PRESSURE IMMEDIATELY AFTER STARTING

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 9	2 8	9 2	9 2	0 0 8	0 1	1 2	1 1	9 2		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	5
POWER LEVEL (10)	0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check one or more of the following)* (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER *(Specify in Abstract below and in Text, NRC Form 366A)*
20.405(a)(1)(iii)	X 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
G. A. WEBER - PLANT ENGINEERING SUPERINTENDENT	AREA CODE 6 1 6 4 6 5 - 5 9 0 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
A	E K	D G	W 3 1 5	Y	X	L A	L I	M 0 4 0	N
X	L A	L A	A 3 6 5	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)

This supplemental report is being submitted to update the cause and corrective action activities.

On September 28, 1992, with Unit Two in Mode 5 (Cold Shutdown), the Unit 2 AB (Train B) Emergency Diesel Generator (EDG) was started for a routine surveillance test. Twenty-four seconds after the start, the EDG tripped on Low-Low Lube Oil Pressure. The lube oil level indicator for the EDG indicated 309 gallons. A level check of the Lube Oil Tank, via dip stick indicated that there was actually 127 gallons present. The administrative low level limit required for engine operation is 400 gallons. The Unit 2 AB EDG became inoperable, due to loss of oil inventory, sometime following the last successful test of the EDG on September 1, 1992. The oil loss was the result of a seal leak on the Before and After Pump. The oil loss (3 gallons per day) went unrecognized as an adverse trend in the intervening period.

The following actions were taken prior to returning the EDG to service on October 5, 1992: The EDG lube oil tank level was restored to its normal operating range; a lift check was performed on two of the EDG bearings; all visible bearing surfaces were inspected for signs of abnormal wear; the defective pump seal was replaced; the cause of the lube oil level gauge error was corrected; and the low lube oil level alarm was repaired. Other corrective actions include the enhancement of procedures used for routine trending and evaluation of lube oil tank level.

This supplemental report is being submitted to update the cause and corrective action activities.

Conditions Prior to Occurrence:

Unit Two in Mode 5 (Cold Shutdown)

Description of Events:

On September 28, 1992, while performing the regularly schedule surveillance run of the Unit 2 AB Diesel Generator (EIIS:DG/EK), a Low-Low Lube Oil Supply Pressure trip signal was received, causing the 2-AB Diesel to trip 24 seconds after it had been started. The oil level in the Lube Oil Sump Tank (EIIS:TK/LA) was measured via dipstick reading, which determined that the level was indeed low, 127 gallons vs. a normal operating level range of 500 to 650 gallons. The Low Tank Level Alarm (EIIS:LA/LA) which operates at a setpoint corresponding to a level of approximately 395 gallons, did not actuate. The Lube Oil Sump Tank Level Gauge (EIIS:LI/LA) indicated a level of 309 gallons subsequent to the trip event.

The Unit 2 AB EDG became inoperable sometime following the last successful test of the EDG on September 1, 1992. At that time, there was an actual lube oil inventory of approximately 211 gallons. This is based on a known loss of 3 gallons per day and an actual level of 127 gallons on September 28, 1992.

This event was determined to be reportable on October 20, 1992, when a conclusion could not be made as to when the EDG had reached a critical lube oil level and became inoperable. Both EDGs are required to be operable, per Technical Specification 3.8.1.1, while in Modes 1, 2, 3, and 4. Unit 2 was in Modes 1, 2, 3, or 4 until September 25, 1992 when Mode 5 (Cold Shutdown) was entered.

Cause of Event:

The Low-Low Lube Oil Supply Pressure Trip was the result of an abnormally low level in the Lube Oil Sump Tank. The operation of the shaft driven lube oil pump, which occurs automatically as the engine starts to roll, drew the oil level down to the point of uncovering the foot valve in the suction line, at which point, the oil supply to the pump was interrupted. Normally, a time delay relay in the lube oil pressure trip circuit delays trip actuation by 20 seconds, which permits the shaft driven pump to come up to speed and establish normal discharge pressure. With the tank level extremely low, this did not occur.

The low lube oil inventory resulted from a failure to recognize that the low lube oil level was below the administrative limit and that the weekly lube oil sump tank level data indicated an adverse trend. Based on gauge readings taken by Operations, the Lube Oil Sump Tank level had dropped from 737 gallons on May 29, 1992 to 327 gallons on September 23, 1992. The tank level reading is taken once a week as part of an Operations Department procedure. The only reading available to the Operator for comparison is the previous week's reading. These two data points (i.e., current and previous week's readings) are not sufficient for identifying trends.

Cause of Event continued:

On September 2, 1992, the indicated Lube Oil Sump Tank level was below the administrative limit of 400 gallons. Four consecutive weekly readings were taken with a level of 383 gallons or less without recognizing that this administrative tank level limit of 400 gallons had been exceeded. The data sheet did not list the administrative limit for the EDG Lube Oil Sump Tank Level; this limit is only identified in the Operator Tour Procedure.

Contributing factors include:

- Inaccurate Lube Oil Sump Tank Level indication. At the time of the trip, the level gauge read 42 percent, which corresponds to approximately 309 gallons of oil. Several checks of the sump tank level with a dip stick determined an oil level of 10 inches, which corresponds to 127 gallons. The 182 gallon difference between indicated and actual level was attributed to the presence of air in the sensing line. The level gauge was removed for a calibration check and was found to be functioning properly.

  Subsequent to the trip event, a Design Change replaced the percent level gauges with gauges which read out directly in gallons. During the gauge change-out, it was observed that one of the new gauges pegged high when installed. The problem was solved by venting air from the sensing line. Air in the sensing line takes the place of oil. Since air is of much lower density than oil, the effect of the air in the sensing line is to produce a false high reading. The potential errors caused by air in the line fit well with the observed mismatch between indicated and actual level observed subsequent to the trip event. For example, with an actual tank level of 10 inches (127 gallons) a 12 inch column of air in the sensing line would result in an indicated level of approximately 360 gallons, which agrees reasonably well with the indicated (gauge) reading of 309 gallons at the time of the trip.

  Initially, we could not conclusively determine how the air was introduced in the sensing line. Through close monitoring of the EDG Lube Oil Tank Levels, we have demonstrated that air is entering the level instrument sensing line while drawing oil samples. The sample point is located on the same pipe (and at a slightly lower elevation) than the level gauge, allowing air to enter the line while the sample valve was open. Since the current level instruments have proven to be unreliable, they are no longer used as a means of monitoring EDG Lube Oil Tank levels, only the dip stick method is being used at this time.

- Failure of the Lube Oil Sump Low Level Alarm to actuate. During diagnostic testing, the Low Level Alarm operated intermittently, suggesting that some foreign matter may have been in the pivots of the alarm switch. The Low Level Alarm switch mechanism was cleaned and the intermittent operation could no longer be duplicated. No foreign matter was found in the switch mechanism and a firm root cause for the intermittent switch operation could not be determined.

Cause of Event continued:

- Loss of lube oil via a seal leak on the Before and After Pump. The lube oil leak rate was previously determined to be 3 gallons per day. The Before and After Pump Seal leak was the cause of the loss of lube oil that led to the extremely low level in the sump tank. A Work Request was written to repair the leak on May 9, 1992. Due to the lack of specifics on the Work Request (leak was not originally quantified), it was assigned a low work priority. Consequently, the deficient pump seal was not repaired until after the EDG Trip.

Analysis of Event:

The Unit 2 AB EDG became inoperable sometime between September 1, 1992, when the EDG was last tested, and September 22, 1992, when the engine failed its surveillance test due to low-low lube oil trip. Since an EDG was inoperable for an undetermined amount of time this event is considered to be reportable per 10 CFR 50.73.(a)(2)(i)(B), as a condition prohibited by Technical Specifications.

This event is not considered to have had an impact on the health and safety of the public.

The potential impact of the event was mitigated by the remaining EDG, which was operable the entire month of September (with the exception of a brief 10 minute interval during surveillance testing), and could have provided sufficient power to supply the safety related equipment required for; 1) safe shutdown of Unit 2; and 2) the mitigation and control of accident conditions within the facility. The independent A.C. electrical power sources (off site power and 69 KV), and the associated distribution systems were also available throughout September.

In addition, had an accident occurred, the decay heat generated by the Reactor would be low, since Unit 2 had recently been refueled.

Corrective Actions:

The following activities were completed prior to returning the Unit 2 AB-EDG to service on October 5, 1992:

- The lube oil tank level was restored to its normal operating range.
- The mechanical seal for the Unit 2 AB EDG Lube Oil Before and After Pump was replaced, eliminating the lube oil leak.
- Two of the EDG bearings were lift checked: Bearing No. 4, since it is the most heavily loaded, and Bearing No. 7, since it is at the farthest end of the lube oil header. The accessible areas of each main bearing, including the main bearing cap and edges, were inspected to look for any signs of abnormal wear, metal particles, galling, and discoloration of metal near bearing surfaces. The lift checks were acceptable and no abnormal conditions were found. Bearing No. 4 was pulled and inspected. Some deterioration was evident and was attributed to normal wear. The bearing was replaced as a precautionary measure.

Corrective Actions continued:

- The EDG Lube Oil Sump Tank Level Gauges have been replaced, per a Design Change, with gauges that readout in gallons. The EDG Lube Oil Sump Tank levels were checked daily and have proven to be unreliable. The level instrumentation currently installed will no longer be used.

- The Lube Oil Sump Tank Low Level Alarm Switch was disassembled and cleaned. The alarm now functions properly. These level alarms are currently on a 48 month calibration frequency. No additional action is required since this is considered an isolated event.

Other actions taken or planned include:

- As an interim action, the Lube Oil Inventory Log Sheet has been revised to include the minimum allowed level for the EDG Lube Oil Sump Tanks and requires recording of daily EDG Lube Oil Tank levels. This will allow operators to readily detect any adverse trend in lube oil levels. The Operations' Tour Procedure and data review process is being evaluated to identify and resolve problems in recognizing and responding to adverse trends and administrative limits. This evaluation is scheduled to be completed by December 30, 1992.

- The Surveillance Test Procedures for the monthly EDG Operability Test will be revised by December 15, 1992, to include recording of the EDG Lube Oil Sump Tank level prior to starting the EDGs for monthly surveillances.

- All tour operators will complete a review of the Tour Procedures which lists administrative limits for similar equipment. This activity is schedule to be completed by March 31, 1993.

- The work request process is being reviewed for possible enhancements to ensure detailed information, required for proper work prioritization. This review is scheduled to be completed by December 15, 1992.

- An Engineering Review of the EDG Lube Oil Sump Tank level indication design is scheduled to be completed by January 31, 1993.

Failed Component Identification:

Component Name: Unit 2 AB Emergency Diesel Generator

Manufacturer: Worthington

Model: SWB-12

EIIS Code: DG/EK

Failed Component Identification continued:

Component Name: Unit 2 AB Emergency Diesel Lube Oil Sump Tank Level Gauge (2-LLI-210)

Manufacturer: AMETEK

Model: Part No. 29268

EIIS Code: LI/LA

Component Name: Unit 2 AB Emergency Diesel Generator Lube Oil Sump Tank Low Level Alarm (2-LLA-110)

Manufacturer: Magnetrol International, Inc.

Model: A153-F-EP-XY

EIIS Code: LA/LA

Previous Similar Events:

This is the first event of this type.