Commonwealth Edison
Dresden Nuclear Power Station
6500 North Dresden Road
Morris, Illinois 60450
Telephone 815/942-2920

March 3, 1994

GFSLTR 94-0062

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

License Event Report 3-94-004, Docket 050249, is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.36(c)(2) and 50.73(a)(2)(i).

Gary F. Spedl
Station Manager
Dresden Station

GFS:slb

Enclosure

cc: J. Martin, Regional Administrator, Region III
NRC Resident Inspector's Office
File/NRC
File/Numerical

08-184

(L:\WK_PROC\PLNTMGR\GFS94\0062.94)

IE22

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
Dresden Nuclear Power Station, Units 2 and 3	0 5 0 0 0 2 4 9	1 of 0 5

Title (4)

Dresden Unit 3 Inability to Meet Technical Specification 3.9 Limiting Condition for Operation Due to Redundant Emergency Diesel Generators Inoperable

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 2	0 3	9 4	9 4	--- 0 0 4	--- 0 0		0 2	2 5	9 4	Unit 2	0 5 0 0 0 2 3 7
										N/A	

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIRMENTS OF 10CFR (Check one or more of the following) (11)				
POWER LEVEL (10)	N	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)	
0 9 9		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)	
0 7 7		20.405(a)(1)(ii)	X 50.36(c)(2)	50.73(a)(2)(vii)	Other (Specify in Abstract below and in Text)	
		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)		

LICENSE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
Ismael Rivera Jr. Ext.2549	8 1 5 9 4 2 - 2 9 2 0

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
X	L C	R G	P 0 7 0	Y						
X	L A	C L R	E 1 4 7	Y						

SUPPLEMENTAL REPORT EXPECTED (14)				Expected Submission Date (15)	Month	Day	Year
X	Yes (If yes, complete EXPECTED SUBMISSION DATE)		NO		0 9	3 0	9 4

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

On February 3, 1994 during performance of the High Voltage Rounds, the High Voltage Operator (HVO) discovered that the Unit 2/3 Emergency Diesel Generator (EDG) Air Start System regulator leaking by creating a potential downstream pressure of approximately 245 psig. Attempts to adjust the regulator failed. Upon further inspection of the air start components, it was identified that the air start motors had a nameplate rating of 200 psig. A concern was raised as to the integrity of the airstart motors and other system components downstream of the air regulator which were potentially subjected to an air pressure higher then the nominal range 175-190 psig. The redundant Unit 3 EDG had been inoperable since February 2,1994 at 0902 hours pending an investigation into the cause of a High Crankcase Pressure trip received during the performance of the monthly operability surveillance. The Unit 2/3 EDG was declared inoperable and Unit 3 entered into a 24 hour Limiting Condition for Operation (LCO) and Unit 2 entered into a 7 day LCO.

The root cause of the regulator leak is currently unknown, pending the results of a vendor failure analysis of the component. The root cause of the High Crankcase Pressure trip is water intrusion of the lube oil. This resulted from the lube oil cooler deteriorating as a result of a lack of preventative maintenance. The results of the failure analysis will dictate what preventative actions need to be implemented to prevent any further regulator failures, and the lube oil cooler will be inspected/replaced on a vendor recommended frequency of twelve years.

PLANT AND SYSTEM IDENTIFICATION:

General Electric-Boiling Water Reactor-2527 MWt rated core thermal power.

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX)

EVENT IDENTIFICATION:

Dresden Station Inability to Meet Technical Specification 3.9 Limiting Condition for Operation Due to Redundant Emergency Diesel Generators Inoperable

A. CONDITIONS PRIOR TO EVENT:

Unit: 2 (3) Event Date: 02/03/94 Event Time: 0425

Reactor Mode: N (N) Mode Name: Run Power Level: 99% (77%)

Reactor Coolant System (RCS) Pressure: 1000 (1001) psig

B. DESCRIPTION OF EVENT:

On February 2, 1994, at 0925 hours, with Unit 2, at 99% rated core power and Unit 3 at 77% rated core power, during the performance of Dresden Operating Surveillance (DOS) 6600-01, Diesel Generator Surveillance Tests, for the Unit 3 Emergency Diesel Generator (EDG) [EK], the Unit 3 EDG tripped on High Crankcase Pressure (HCP) operating at rated load for three to four minutes. Dresden Station Unit 3 was entered into a 7 day Limiting Condition for Operating (LCO) pending the outcome of the investigation initiated by the System Engineer.

On February 3, 1994, during the performance of the High Voltage Rounds, the High Voltage Operator (HVO) found the Unit 2/3 EDG Air Start System pressure regulator at a reading of 245 psig; the nominal range is 175-190 psig. Attempts at adjusting the pressure failed to achieve a nominal range of 175-190 psig. A visual inspection of the air start motors revealed a rating of 200 psig stamped on the casing of the air start motors. A concern was raised to the integrity of air start motors as well as the other components downstream of the regulator that could have potentially been overpressurized. The Unit 2/3 EDG was declared inoperable at 0425 hours on February 3, 1994, pending an evaluation by System and Site Engineers. Dresden Unit 2 was entered into a 7 day LCO and Dresden Unit 3 entered into a 24 hour LCO due to the Unit 3 EDG being in an inoperable condition.

Following a thorough evaluation by System and Site Engineering, the Unit 2/3 EDG was declared operable. Dresden Unit 2 was removed off of the 7 day LCO at 1100 hours on February 3, 1994.

Upon a successful operability surveillance following the corrective maintenance, the Unit 3 EDG was declared operable and Dresden Unit 3 removed off of a 7 day LCO at 1150 hours on February 6, 1994.

C. APPARENT CAUSE OF EVENT:

This report is submitted in accordance with 10CFR50.36(c)(2), which requires notification when a limiting condition for operation is not

met, and 10CFR50.73(a)(2)(i), which requires reporting of a condition prohibited by the plants Technical Specifications.

The apparent root cause of the Unit 3 EDG HCP trip is lack of preventative maintenance resulting in water intrusion of the lubricating oil. As the operating temperature of the EDG increased under load, the small amount of water intrusion heated and eventually flashed to steam causing a pressure in the normally negative pressure (vacuum) crankcase. This phenomenon was observed during the maintenance run that was performed on the evening of February 2, 1994. During this run, the HCP trip was bypassed and the crankcase monitored through the use of a manometer.

Initially the EDG was at a vacuum as it reached rated speed, voltage and frequency. Once a load of 2550 KW was applied, a gradual increase of 0.2-0.3 inches of water per minute was observed. The pressure reached a range of 2.7-2.9 inches of water after ten minutes at rated load, at which time a decrease of pressure started to occur. By the time that the maintenance run was completed and the EDG unloaded, the crankcase pressure had decreased to 0.4 inches of water. The water intrusion occurred in the lube oil cooler. Therefore, the root cause of the lube oil cooler leak is due to a lack of preventative maintenance.had deteriorated as a result of end of life. The lube oil cooler reached its end of life as a result of a lack of preventative maintenance. The vendor recommended inspection frequency is twelve years. This lube oil cooler is part of the original supplied equipment (approximately 25 years in service). Dresden Station is in the process of implementing the current EMD-PS Owners Group recommended maintenance program which includes lube oil cooler/core inspection/replacement at twelve year frequencies. T

The apparent root cause of the leaky Unit 2/3 EDG Air Start regulator is unknown. A complete failure analysis of the regulator will be performed by the vendor.

D. SAFETY ANALYSIS OF EVENT:

The safety significant of this event is considered minimal for the following reasons:

During the period that the Unit 3 EDG was inoperable, the Unit 2/3 EDG was available to provide a source of emergency electrical supply for Dresden Unit 3. At the time that the Unit 2/3 EDG Starting Air System regulator had been observed to have leaked, increasing the regulator pressure reading to 245 psig, the HVO opened the strainer blowdown valve and verified that the pressure had dropped and held at the required range of 175-190 psig. The reading that was reflected on the gage was an accumulation of a volume of air. In the event that the Unit 2/3 EDG had been required to start, the air start motors would have been subjected to the regulated air flow of 175-190 psig. Dresden Unit 2 had the dedicated Unit 2 EDG available and operable through the duration of this event.

E. CORRECTIVE ACTIONS:

Immediately following the Unit 3 EDG trip, the System Engineer ensured that an oil sample be taken and sent to the System Material Analysis Department (S.M.A.D.) and requested the Instrument Maintenance Department (IMD) verify the calibration on the Unit 3 EDG Crankcase

Pressure Detector (CPT). A visual air box inspection did not reveal any abnormalities. A maintenance run was performed on the Unit 3 EDG along with engine analysis. During this run, the HCP trip was bypassed and the crankcase monitored through the use of a manometer. Initially the EDG was at a vacuum as it reached rated speed, voltage and frequency. Once a load of 2550 KW was applied, a gradual increase of 0.2-0.3 inches of water per minute was observed. The pressure reached a range of 2.7-2.9 inches of water after ten minutes at rated load, at which time a decrease of pressure started to occur. By the time the maintenance run was completed and the EDG unloaded, the crankcase pressure had decreased to 0.4 inches of water. The lube oil wear metals analysis indicated a rise in lead content. However, there were no other wear metals indicative of potential problems. The engine analysis identified cylinder # 10 as potentially producing high volume of blow-by. This initially was believed to be a contributing factor to the crankcase pressure.

During the course of the day, as contingency plans were being developed, an Operations' Supervisor reported that the coolant level had dropped 2-3 inches in the sight glass. S.M.A.D. was contacted and asked if any abnormal water trends had appear in the lube oil analysis. They stated that dissolved water content had risen to 5 times the previous level. It was then that the System Engineer decided to conduct a thorough internal engine inspection and identify the reason for the loss of coolant.

The coolant system was pressurized and the engine inspected for signs of water intrusion. The source of the water intrusion was identified to be in the lube oil cooler. The lower main bearings, liners, pistons and the rest of the engine internals were found to be in satisfactory condition with no signs of water intrusion. The lube oil cooler was removed and the core replaced. The lube oil cooler was reinstalled and both the lube oil and coolant were freshly replenished.

The removed lube oil cooler core was inspected upon removal and found to have began to deteriorate. The solder used on the core had started to come loose. A sample was sent to S.M.A.D. and confirmed to be of a high lead content. This was identified as the source of the rise in lead content in the lube oil. Dresden Station is in the process of implementing the EMD-PS Owners Group recommended maintenance program which includes a twelve year inspection/replacement frequency on the lube oil cooler. Implementation will consist of a review of appropriate maintenance procedures and revision, if required, which will be complete by November 30, 1994. The Unit 2/3 EDG lube oil cooler was replaced in February of 1988 as a result of identified external leaks. The Unit 2 EDG lube oil cooler will be replaced during the first available Unit 2 EDG planned maintenance outage following completion of the scheduled Unit 3 refuel outage. In the interim, lube oil analysis will continue to be used to monitor the wear metals for any abnormal trends.

Upon completion of the maintenance activity, a maintenance run was performed at which time the crankcase was verified to be operating at a desired vacuum. The operability run was performed and the Unit 3 EDG declared operable at 1150 hours on February 6, 1994.

Upon discovery of the Unit 2/3 EDG air start system regular overpressurization, the System Engineer was immediately notified. Along with Site Engineering, a thorough operability evaluation was

initiated. After discussions with MKW-Power Systems, the authorized nuclear vendor for EMD EDGs, the determination was made that the components downstream of the air regulator which potentially could have been overpressurized, maintained their integrity and operability was not affected. The bases of conclusion is that the vendor indicated that the air start system components are tested at 150% of their rated pressure of 200 psig at the vendor's facility. Furthermore, the pilot solenoid valve is rated at 275 psig. The Unit 2/3 EDG was started to functionally demonstrate the starting capability of the system. Upon successful completion of the starting sequence, the Unit 2/3 EDG was declared operable at 1100 hours on February 2, 1994.

The air regulator has been returned to the vendor for a complete failure analysis and the Y-strainer (2/3-6699-100) will be replace with one rated at 250 psig at the next available EDG maintenance outage. The completion dates for these actions is May 30, 1994. The engine skid mounted copper tubing will be replaced with stainless steel tubing per exempt change P12-0-93-212.

There has been a history of starting air regulator failures for all three EDGs dating back to a Unit 2 EDG event on 9/4/84. The current model air regulator is a non-relieving model which was incorporated as a result of regulator depressurization events that occurred in 1990 and reported in DVR 12-2-90-153. The air regulator had been in service since 10/24/93. The Unit 2 EDG's regulator has been in service since 2/14/93 and the Unit 3 EDG's regulator since 10/17/92, which were replaced as a result of scheduled maintenance and not failures. The air regulators are currently on an operating cycle frequency replacement.

F. PREVIOUS OCCURRENCES:

There are no similar previous licensee events reports of these occurrences.

G. COMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Electro-Motive Division	Lube Oil Cooler	N/A	8366328
Parker	Air Regulator	N/A	08R715L

An NPRDS search did not identify any similar occurrences.