

April 30, 1990

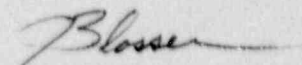
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
ULNRC-2205

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 90-004-00
AN EMERGENCY DIESEL GENERATOR WAS INOPERABLE DUE TO
OIL SPLASHED ONTO THE GENERATOR DURING AN OIL TRANSFER

The enclosed Licensee Event Report is submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) concerning the operation of the Callaway Plant with a condition prohibited by the plant's Technical Specifications (T/S). This condition resulted when the 'A' Diesel Generator (D/G) was discovered to have been inoperable without the T/S action requirements being met. This condition is also reported as an invalid failure of the 'A' D/G.


J. D. Blosser
Manager, Callaway Plant


TPS/JKB/lrj

Enclosure

cc: Distribution attached

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PDR ADUCK 05000483
S PDC

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cc distribution for ULNRC-2205

Mr. A. Bert Davis
Regional Administrator
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

American Nuclear Insurers
c/o Dottie Sherman, Library
The Exchange Suite 245
270 Farmington Avenue
Farmington, CT 06032

Manager, Electric Department
Missouri Public Service Commission
P. O. Box 360
Jefferson City, MO 65102

Records Center
Institute of Nuclear Power Operations
Suite 1500
1100 Circle 75 Parkway
Atlanta, GA 30339

NRC Resident Inspector

Mr. Anthony T. Gody, Jr. (2 copies)
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop 13-E-21
Washington, D.C. 20555

Mr. O. Maynard
Wolf Creek Nuclear Operating Corp.
P. O. Box 411
Burlington, KS 66839

Mr. Merlin Williams
Supt. of Regulatory Quality &
Administrative Services
Wolf Creek Nuclear Operating Corp.
P. O. Box 411
Burlington, KS 66839

Mr. R. L. Hague
Chief, Project Section 3C
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

bcc distribution for ULNRC-2205

D. F. Schnell (400)
G. L. Randolph
R. P. Wendling (470)
J. V. Laux
A. C. Passwater/D. E. Shafer/D. J. Walker (470)
G. A. Hughes
Z170.0003 (QA Record)
Z40LER (Z170.09 Commercial Record)
M. S. Evans
D. E. Young
H. Wuertenbaecher, Jr. (100)
S. J. Bellers/D. R. Oelrichs
S. L. Auston (470)(NSRB)
N. Date (Sandra Auston) (470)
E210.0001
Z40ULNRC
A160.0761

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Callaway Plant Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 4 8 3 1 OF 0 5										PAGE (3) 1 OF 0 5	
TITLE (4) An Emergency Diesel Generator Was Inoperable Due To Oil Splashed Onto The Generator During An Oil Transfer																					
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 3	3 0	9 0	9 0	0 0 4	0 0 0 4	3 0	9 0	0				0 5 0 0 0 0									
OPERATING MODE (9) 1			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																		
POWER LEVEL (10) 1 0 0			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)(vi)			<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
			20.405(a)(1)(iii)			<input checked="" type="checkbox"/> 50.73(a)(2)(i)			50.73(a)(2)(viii)(A)			Special Report									
			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)(k)												
LICENSEE CONTACT FOR THIS LER (12)																					
NAME J. D. Blosser, Manager, Callaway Plant										TELEPHONE NUMBER 3 1 4 6 7 6 - 8 1 9 0											
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																					
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC												
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR							
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO											

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

At about 1000 CDT on 3/30/90, licensed utility personnel, conducting a system walkdown, discovered standing oil on the generator end of the 'A' Diesel Generator (D/G). Oil had splashed through the ventilation screens into the generator itself. Initially, utility system engineers determined the small quantity of oil would not affect the D/G operability. The plant was at 100% reactor power and normal operating temperature and pressure. The D/G was taken out of service at 1202 to clean up the oil and Technical Specification (T/S) 3.8.1.1 actions were entered. The system engineers then performed an internal inspection of the D/G and, based on the location and quantity of the oil found, concluded the 'A' D/G had been inoperable. T/S 3.8.1.1 actions b and d had not been completed within the required one and two hour time limits. The condition was determined to have been an invalid D/G failure.

Although the method of introduction of the oil into the generator is not positively known, the similarity of the oil and the evaluation of other activities in the room strongly indicates that the oil must have been introduced as a result of the filling of the auxiliary lube oil tank between 0055 and 0152 on 3/30/90. That process has been evaluated and improved. The collector rings and stator windings were cleaned and the effected brushes were replaced. The D/G was declared operable at 2340.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Callaway Plant Unit 1	05000483	90	004	00	02	OF	05

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Background Information

On 3/27/90 to 3/29/90, routine preventive maintenance was performed on 'A' Diesel Generator (D/G) ⁽¹⁾. At 1303 CDT on 3/29/90, the D/G successfully completed a one hour load test surveillance. At 0152 on 3/30/90, the 'A' D/G auxiliary lube oil tank ⁽²⁾ was filled with 110 gallons of oil ⁽³⁾ to replace the oil made up to the D/G crank case and rocker lube oil systems ⁽⁵⁾.

Description of Event

At about 1000 on 3/30/90, licensed utility personnel, not assigned to the operating crew, conducting a system walkdown ⁽⁴⁾ of the 'A' D/G for training, discovered standing oil on the end block of the generator shaft and on cooling water piping to the journal bearing. Some oil also appeared to have been splashed through the ventilation screens into the generator itself. The Control Room licensed operators were immediately notified and utility system engineers were dispatched to investigate and determine the effect of the oil on the D/G. Based on an external inspection of the generator at approximately 1050, the engineers determined the small quantity of oil (less than a pint) would not affect the D/G operability. The plant was at 100% reactor power and normal operating temperature and pressure.

Following preparation of the appropriate work authorizing documents, the D/G was taken out of service at 1202 to clean up the oil and Technical Specification (T/S) action statements 3.8.1.1 b and d were entered. The system engineers performed an internal inspection of the D/G and found the distribution of oil was significant because it covered the ring surface of both collector rings for approximately 120 degrees of the circumference and had been absorbed by some brushes. Based on the location and quantity of the oil found, they determined the D/G may not have been fully capable of performing its intended safety function, and therefore they concluded the 'A' D/G had been inoperable due to the presence of the oil. The collector rings and stator windings were cleaned and the effected brushes were replaced. The D/G was declared operable at 2340 following completion of the required surveillance run.

Basis for Reportability

This report is submitted pursuant to 10CFR50.73(a)(2)(i)(B) to report a condition prohibited by the plant's T/S in that T/S 3.8.1.1 actions b and d were not completed within the required one and two hour time limits, respectively, from when the inoperable condition was known to have existed. T/S 3.8.1.1 action b requires offsite A.C. sources to be demonstrated operable within one hour. Action d requires that all systems, subsystems, trains, components, and devices that depended on the remaining D/G as a source ⁽⁵⁾ of emergency power, and the turbine-driven auxiliary feedwater pump ⁽⁵⁾, be verified operable within two hours. In addition, this report is submitted in accordance with T/S 4.8.1.1.3 to report the invalid D/G failure. It is considered an invalid failure because it is directly attributable to

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Calhaway Plant Unit 1	0 5 0 0 0 4 8 3	9 0	— 0 0 4	— 0 0 0	3	OF	0 5

TEXT (If more space is required, use additional NRC Form 366A's) (17)

operating error. Therefore, the surveillance test interval of T/S Table 4.8-1 is not affected. This position is consistent with Regulatory Guide 1.108.C.2.e(2).

Root Cause

Although the method of introduction of the oil into the generator is not positively known, the similarity of the oil and the evaluation of other activities in the room strongly indicates that the oil must have been introduced as a result of the filling of the auxiliary lube oil tank. The D/G had successfully completed a one hour load test surveillance at 1303 on 3/29/90. No adverse operation was noticed by the operators. The oil entered the generator after that test because: it was not widely distributed in the generator area, as would be expected had the D/G been running at the time of the spill; and based on observation by several utility personnel in the room immediately following the test. A sample of the oil was visually observed and tested for conductivity. It was found to be the type of oil used in the auxiliary lube oil system. The auxiliary lube oil tank was filled between 0055 and 0152 on 3/30/90. The two involved Maintenance mechanics were interviewed. A walkdown of this process was performed by one of the two involved mechanics using the same equipment and observed by utility engineers. The personnel present in the D/G room, based on the security door card reader printout and security door log for that room, between the D/G test on 3/29/90 and the discovery of the condition on 3/30/90, were interviewed. The hose used to fill the tank was satisfactorily pressure tested on 3/31/90. No other work involving this type of oil was performed during the two days previous to the 3/29/90 D/G load test or subsequent to the load test. These actions did not positively reveal the cause of the oil splash.

Corrective Actions

- 1) The oil was cleaned from the stator windings, collector rings, and brush rigging. Two sets of brushes, which had absorbed some of the oil, were replaced.
- 2) Based on the assumption that the most likely source of the oil was the filling of the auxiliary lube oil tank, that process has been evaluated and improved. This will be discussed with mechanics who may be involved in this evolution in the future.

Starting History

A starting history of 'A' D/G as of this report date is summarized as follows:

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Callaway Plant Unit 1	0 5 0 0 0 4 8 3	9 0	— 0 0 4	— 0 0	0 4	OF	0 5

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Number of
Valid Tests107
Last 20Number of Failures
During Valid Tests4*
1Number of Failures
During Invalid Tests7#
3

* Special Reports: 84-02, 87-10, 89-03, LER 87-002-00

Special Reports: 85-01, 85-02, 85-07, 86-01, 89-02, 89-07

Surveillance tests are currently performed at least once per 31 days for 'A' D/G. This is in conformance with the schedule in T/S Table 4.8-1 which requires a test interval of not more than 31 days if the number of failures in the last 20 valid tests is one or less, or the number of failures in the last 100 valid tests is four or less.

Safety Significance

Many outside factors can adversely affect the operation of collector rings and oil contamination is one. Oil can degrade collector performance by breaking down the ring film, cause brush sticking in holders and collect dust. Oil on the ring will absorb into the brushes. This will break down the ring film and the brushes will start to ride on the metal surface. When this happens, some metal will come off the ring to the brush and start to etch the ring surface. This can lead to sparking and overheating at the brush/ring interface. The condition becomes progressively worse and will lead to rapid and severe brush wear and ring damage if not corrected. Oil on the ring surface compounds problems as it is a collector of dust and dirt. Dust under a ring and brush may initiate a burned spot on the ring surface and this condition will also become progressively worse.

The main concern with oil on the stator windings is that it becomes a collector of dust and dirt. If this condition were to exist for a long period of time, the accumulation of dust could degrade the insulation and potentially cause electrical short circuits or grounds. The windings are coated with varnish and the oil will not degrade the windings. The stator windings were cleaned with an acceptable solvent. The oil did not represent an operability concern for the stator windings.

The D/G was not operated with the oil present in the generator. It would have started, loaded, and operated for some undetermined period of time. However, the long term operability of the D/G could not be assured. The redundant D/G, as well as all offsite power sources, were continuously available during the duration of this event.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES: 6/31/86

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Callaway Plant Unit 1	0 5 0 0 0 4 8 3	9 0	— 0 0 4	— 0 0 0	5	OF	0 5

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Footnotes

The system and component codes listed below are from IEEE Standards 805 and 803A, respectively.

- (1) System - EK, Component - DG
- (2) System - LA, Component - TK
- (3) System - LA
- (4) System - EK, Component - BLK
- (5) System - BA, Component - P