

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) NORTH ANNA POWER STATION, Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 3 9 1					PAGE (3) 1 OF 4							
TITLE (4) 2H EDG TRIPS																						
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)									
1	0	1	9	8	4	8	4	0	1	1	0	2	0	4	1	9	8	5	0 5 0 0 0			
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																			
POWER LEVEL (10)			20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)							
1			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)				<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
			20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)				VOLUNTARY 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)(ix)											
LICENSEE CONTACT FOR THIS LER (12)																						
NAME E. WAYNE HARRELL										TELEPHONE NUMBER AREA CODE 7 1 0 3 8 1 9 4 1 - 1 5 1 1 5 1												
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																						
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS												
X	E	K D G	C 4 7 0	Y																		
X	E	K D G	C 4 7 0	Y																		
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)

ABSTRACT

On October 19, 1984, the "2H" Emergency Diesel Generator tripped on high jacket coolant temperature. The temperature switch was calibrated and the diesel was started for troubleshooting. The diesel tripped on high crankcase pressure. The diesel was inspected and had one air start valve gasket replaced. The diesel was started for troubleshooting and tripped after 11 hours due to high crankcase pressure. The lube oil strainer was cleaned, and the diesel was then tested satisfactorily. On November 2, 1984, the diesel tripped on high crankcase pressure. The crankcase ejector was cleaned, and the diesel was then tested satisfactorily.

On December 7, 1984, the "2H" diesel was removed from service for troubleshooting. Subsequently the "2J" diesel tripped on high crankcase pressure. After six operability runs, the "2H" diesel again tripped on high crankcase pressure. With both diesels inoperable, the unit was placed in Mode 5. Several damaged engine parts were replaced on each diesel generator. Both diesels were declared operable on December 11, 1984, and the unit was re-started.

On January 13, 1985, during the weekly surveillance test, the "2J" diesel tripped on high crankcase pressure. One piston and one set of piston rings were replaced and the diesel was returned to service on January 15, 1985.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

This report is being submitted as a voluntary LER.

North Anna has Fairbanks Morse, 3840 HP, Model 38TD 81/8 Diesel Generators (EIS designator DG) with 12 cylinders and 24 vertically opposed pistons.

On October 19, 1984, while performing the 24 hour surveillance run required by T.S. 4.8.1.1.2(c.8) on the "2H" Emergency Diesel Generator, the diesel tripped on high jacket coolant temperature. The temperature switch was subsequently calibrated and the diesel was retested.

On October 20, 1984, during the retest, the diesel tripped on high crankcase pressure. In an effort to troubleshoot the diesel, a technical representative from Fairbanks-Morse was called in. The upper and lower crankcase covers were removed and the diesel was inspected for mechanical problems and debris. No debris was found. However, while the diesel was being turned over with starting air, one of the air start valve gaskets was found to be leaking. The gasket was replaced. No cylinder leakage was detected during this test and the crankcase covers were replaced.

The diesel was started again on October 22, 1984, for the 24 hour surveillance run. The diesel ran for approximately eleven hours and tripped on high crankcase pressure. The diesel technical representative had the lube oil strainer cleaned and re-installed. The diesel was then started for the 24 hour surveillance and completed the run without incident.

On November 2, 1984, during the normally scheduled monthly surveillance, the "2H" EDG tripped on high crankcase pressure after approximately 20 minutes. The crankcase air ejector was cleaned and the diesel successfully passed the surveillance test. Up to this point no clear cause for the crankcase pressure trips or the higher than normal crankcase pressures could be determined. It was decided to instrument the "2H" EDG during its next run with continuous monitors.

On December 3, 1984, during the next monthly surveillance test, additional instrumentation was installed to continuously monitor the "2H" EDG crankcase pressure as well as other parameters. The diesel failed to start in the required 10 seconds due to a problem with the air start distributor. During the second test on December 3, the diesel successfully passed the 2 hour surveillance test; however, crankcase pressure was slightly positive during part of the test. Just prior to this test, the crankcase pressure switch was replaced. Bench testing of the old crankcase pressure switch showed it could not be calibrated and that it would trip randomly at various points. The malfunctioning crankcase pressure switch could explain earlier diesel trips which appear to have occurred below the trip setpoint.

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

On December 7, 1984, the "2H" EDG was removed from service for preventive maintenance due to the higher than normal crankcase pressure observed during December 3, 1984 testing, and to inspect the air start system. During the inspection of the "2H" EDG air start system, the "2J" EDG tripped on high crankcase pressure. The North Anna Technical Specifications require an operability test on the "2J" EDG at least once per 8 hours while the "2H" EDG was tagged out for maintenance. The "2H" EDG maintenance was terminated and the "2H" EDG was immediately returned to service since the "2J" EDG was now inoperable.

The technical representative began troubleshooting the "2J" EDG. The number 2 and 3 upper pistons were believed to be leaking and the Number 11 cylinder liner seal was leaking. The number 2, 3 and 11 upper pistons and the Number 11 cylinder liner were replaced. Further examination of the number 2 and number 3 pistons found no indication of cracking. During this maintenance, at 0642 on December 9, 1984, the "2H" EDG tripped on high crankcase pressure. This was the 6th run of the "2H" diesel in the past 48 hours. The crankcase pressure of the "2H" EDG had been increasing and had reached the trip setpoint. The unit commenced ramping down since both diesels were now inoperable.

On December 11, 1984, following a 12 hour break-in run of the "2J" EDG the diesel was started for the 2 hour surveillance test. The diesel tripped after 6 minutes due to high crankcase pressure. The air ejector orifice was found to be clogged by a small piece of a faulty rubber hose. The hose was replaced and the diesel was tested successfully. The maintenance effort on the "2H" EDG found the Number 10 lower piston rings shattered. The lower piston, complete with new rings was replaced and the diesel was returned to service on December 11, 1984. The primary system was then heated up and the Unit placed on line December 16, 1984. The diesel failures resulted in 8 days of lost generation. A review of the above events indicated three valid start failures had occurred; therefore, Unit 2 emergency diesel generators were placed on a weekly testing frequency as required by the Technical Specifications.

On January 13, 1985, the "2J" diesel tripped on high crankcase pressure during the weekly surveillance test. The number 4 upper piston was believed to be leaking. The number 4 upper piston and piston rings and the number 4 lower piston rings were replaced. Further examination of the number 4 upper piston found no indication of cracking. The diesel was subsequently returned to service satisfactorily on January 15, 1985. A review of the failures indicates that four valid failures have occurred in the previous 100 valid tests; therefore, the Unit 2 Emergency Diesel Generators were placed on a 3 day surveillance interval.

As a result of the repeated failures of the Unit 2 diesels, Virginia Power is currently investigating the failures to attempt to determine a root cause. The existing Technical Specification surveillance requirement appears to be a contributing factor to the failures. An exigent Technical Specification change has been requested to test the EDGs in a manner more consistent with the manufacturer's recommendations. The proposed Technical Specification will reduce significantly the number of fast starts and fast loads. It will also significantly reduce the number of operability tests if one diesel is inoperable.

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

A review of the post maintenance break in procedures indicates some inconsistencies. For similar repairs, different break in sequences were used. Post maintenance break in practices are now based on the manufacturer's Technical Manual and will only be deviated if approved in advance by the manufacturer's management. Additionally, a comprehensive EDG reliability program is being developed. This program will trend certain vital parameters to try to predict failures or need for additional maintenance.

NORTH ANNA POWER STATION
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April 19, 1985

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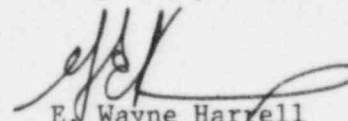
Dear Sirs:

The Virginia Power Company hereby submits the following Update Licensee Event Report applicable to North Anna Unit No. 2.

Report No. LER 84-011-02

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to Safety Evaluation and Control for their review.

Very Truly Yours,


E. Wayne Harrell
Station Manager

Enclosures (3 copies)

cc: Dr. J. Nelson Grace, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
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