10 CFR 50.73

Virginia Electric and Power Company
North Anna Power Station
P. O. Box 402
Mineral, Virginia 23117

February 21, 1994

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

NAPS:MPW
Docket No. 50-338
50-339
License No. NPF-4
NPF-7

Dear Sirs:

Pursuant to North Anna Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Units 1 & 2.

Report No. 50-338/94-001-00

This Report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Management Safety Review Committee for its review.

Very truly yours,

G. E. Kane
Station Manager

Enclosure:

cc: U.S. Nuclear Regulatory Commission
101 Marietta Street, N.W.
Suite 2900
Atlanta, Georgia 30323

R. D. McWhorter
NRC Senior Resident Inspector
North Anna Power Station

IE22

NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
North Anna Units 1 & 2	05000 338	1 OF 4

TITLE (4)
Voluntary Report - Emergency Diesel Generator Fuel Oil Transfer Pumps 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)
									North Anna Unit 2	05000 339
01	22	94	94	— 001 —	00	02	21	94		DOCKET NUMBER(S) 05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
		20.402(b)	20.405(b)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	100	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)	X OTHER
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
		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 (Include Area Code)
Greg Kane, Station Manager	(703) 894-2101

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
E	DC	MO	W120	Y						

SUPPLEMENTAL REPORT EXPECTED (14)

	YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 22, 1994, at 0038 hours, with Units 1 & 2 operating at 100 & 95 percent power, respectively, (Mode 1) the fourth of eight Emergency Diesel Generator (EDG) fuel oil transfer pumps was declared inoperable. The inoperable pumps included one pump to the Unit 1 H EDG, both pumps to the Unit 1 J EDG, and one pump to the Unit 2 H EDG. Technical Specification (TS) 3.8.1.1 requires a separate fuel oil system to be operable for each EDG. Subsequently, the 1J EDG was declared inoperable and the appropriate TS action was entered. The TS Action on 1J EDG was cleared on January 22, 1994 when the IJA fuel oil transfer pump were declared operable. This event is being reported as a Voluntary Licensee Event Report due to possible industry impact.

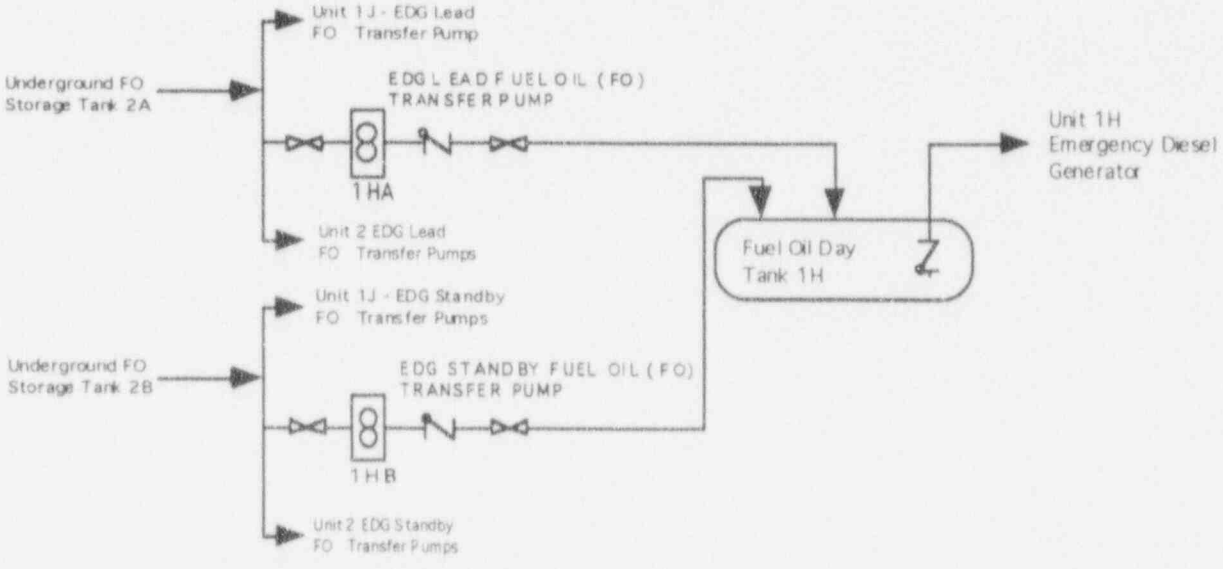
The primary cause of the inoperable FO transfer pumps was improper greasing of the pump motor bearings. In addition, the severe cold weather (i.e. minus 2 degrees Fahrenheit on January 19, 1994, to 23 degrees Fahrenheit on January 21, 1994) was also a contributing factor in that it caused additional torque on the motors due to grease hardening.

No significant safety consequences resulted from this event because both Unit 2 EDGs and one Unit 1 EDG were available throughout this time period. The second Unit 1 EDG was returned to operable status within the time required by the TS Action. Therefore, the health and safety of the public were not affected at any time during this event.

1.0 Description of the Event

On January 22, 1994, at 0038 hours, with Units 1 & 2 operating at 100 & 95 percent power, respectively, (Mode 1) the fourth of eight Emergency Diesel Generator (EDG) fuel oil transfer pumps (EIIS System DC, EIIS Component P) was declared inoperable. The inoperable pumps included one pump to the Unit 1 H EDG, both pumps to the Unit 1 J EDG, and one pump to the Unit 2 H EDG. Technical Specification (TS) 3.8.1.1 requires a separate fuel oil system to be operable for each EDG. Subsequently, the 1J EDG was declared inoperable and the appropriate TS action was entered. The TS Action on 1J EDG was cleared on January 22, 1994 when the IJA fuel oil transfer pump were declared operable. This event is being reported as a Voluntary Licensee Event Report due to possible industry impact.

North Anna Units 1 & 2 each have two Emergency Diesel Generators (EDG) with two fuel oil (FO) transfer pumps per EDG for a total of eight FO transfer pumps. Each EDG has a lead FO transfer pump and a standby FO transfer pump. The FO transfer pumps are located in an unheated building. The four lead pumps are in one room with the four standby pumps in a separate room. Continuous forced ventilation with outside air is provided to reduce the amount of fuel fumes in the rooms. As a result, the temperature in the rooms closely follows the outside air temperature.



Technical Specification 3.8.1.1 requires a separate fuel oil system be operable for each EDG. This is consistent with the Standard Technical Specifications. It has been verified that one FO transfer pump is capable of meeting the required fuel oil demands.

On January 20, 1994, at 1259 hours, the 1H standby FO transfer pump for the 1H EDG was declared inoperable after the pump failed to start due to a thermal overload trip of the pump motor breaker (EIIS System DC, EIIS Component BKR). Maintenance trouble shooting and repair activities commenced.

On January 21, 1994, at 1618 hours, the 2H lead FO transfer pump for the 2H EDG was declared inoperable after a thermal overload trip of the pump motor breaker during a pump start. The 2H standby FO transfer pump for the 2H EDG was tested successfully. At this time the Station Nuclear Safety Operating Committee was convened and directed that all EDG FO transfer pumps must be promptly tested to ensure operability. The 1J lead FO transfer pump for the 1J EDG was declared inoperable after a thermal overload trip of the pump motor breaker during a pump start prior to 2400 hours.

On January 22, 1994, at 0035 hours, the 1H lead FO transfer pump for the 1H EDG was tested successfully. At 0038 hours, the 1J standby FO transfer pump for the 1J EDG was declared inoperable after a thermal overload trip of the pump motor breaker during a pump start. With both the 1J lead and standby FO transfer pumps inoperable the 1J EDG was declared inoperable and the appropriate TS action was entered. At 0041 hours, the 2J lead and standby FO transfer pumps for the 2J EDG were tested successfully. At 0530 hours, the 1J lead and standby FO transfer pumps were tested successfully. At 1458 hours, 1H standby FO transfer pump was tested successfully.

On January 24, 1994, at 1600 hours the last of the four inoperable FO transfer pumps, 2H lead, was tested successfully.

2.0 Significant Safety Consequences and Implications

No significant safety consequences resulted from this event because both Unit 2 EDGs and one Unit 1 EDG were available throughout this time period. The second Unit 1 EDG was returned to operable status within the time required by the TS Action. Therefore, the health and safety of the public were not affected at any time during this event.

3.0 Cause of the Event

The primary cause of the inoperable FO transfer pumps was improper greasing of the pump motor bearings. In addition, the severe cold weather (i.e. minus 2 degrees Fahrenheit on January 19, 1994, to 23 degrees Fahrenheit on January 21, 1994) was also a contributing factor in that it caused additional torque on the motors due to grease hardening.

Specifications in the Station Lubrication Manual indicate that both inboard and outboard bearings are double shielded. Double shielded bearings do not require additional greasing following installation. As part of the Preventative Maintenance Program the FO transfer pump motor bearings were being greased every 18 months with the exception of the 1H lead pump. The addition of grease to the motor bearing housing forced too much grease into the bearing. Overfilling of the bearing can lead to less than optimal lubrication of the bearings. The grease may also prevent the bearing from dissipating heat causing further over heating.

A review of the station Work Planning and Tracking System, from 1984 to 1993, indicates that the bearings were original installation components. The combination of improper greasing of the bearing in conjunction with the severe cold weather increased the motor bearing torque.

4.0 Immediate Corrective Actions

The motor for FO transfer pump, 1H standby, was disassembled and cleaned. The motor bearings were removed and new bearings installed. A new main contactor (EIIS Component CNTR) was also installed in the breaker (EIIS Component BKR).

4.0 Immediate Corrective Actions (continued)

The Unit 1 & 2 Fuel oil pump house exhaust fans (EIIS Component FAN) were secured and portable heaters were installed. Temperatures increased to 48 degrees Fahrenheit in pump house room A and 52 degrees Fahrenheit in pump house room B. The temperatures of the FO lines increased to 43 degrees Fahrenheit. The FO transfer pump, 1HB, was tested successfully.

The 1J lead and standby, along with the 2H lead FO transfer pumps tested satisfactorily upon heating of the FO pump house. No additional immediate corrective actions were performed except to heat the pump house rooms.

5.0 Additional Corrective Actions

The motor bearings for the seven remaining lead and standby FO transfer pumps were removed and new bearings installed. All eight FO transfer pumps have been tested satisfactorily.

The model Work Orders for the eight FO transfer pump motors have been changed to specify use of the Preventative Maintenance procedure which does not require greasing of double shielded bearings.

6.0 Actions to Prevent Recurrence

Since the double shielded bearings, used in the FO transfer pump motor bearings, do not require periodic grease application the Preventative Maintenance procedures have been revised to clarify manufacturers recommendations concerning grease applications. A change to the Station Lubrication Manual was also submitted to clarify manufacturers recommendations concerning grease applications.

The frequency for replacing the double shielded bearings in the EDG FO transfer pumps will be determined based on the bearing load, frequency of pump operation, and the aging of the grease. These actions along with replacement of FO transfer pump motor bearings are sufficient to preclude recurrence.

7.0 Similar Events

None.

8.0 Additional Information

EDG Fuel Oil Transfer Pump Motor data:

Manufacturer	Westinghouse
Model No.	TBEP
Motor Style	72A35856
RPM	3525