

**LICENSEE EVENT REPORT (LER)**

FACILITY NAME (1)										DOCKET NUMBER (2)										PAGE (3)									
North Anna Power Station, Unit 1										0   5   0   0   0   3   3   8   1   OF   0   2																			
TITLE (4)																													
Fire Main Pipe Rupture																													
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					0   5   0   0   0   3   3   9															
1	1	2	7	8	4	8	4	-	0	2	2	-	0	1	0	1	3	0	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)																										
1			20.402(b)				20.406(e)				50.73(a)(2)(iv)				73.71(b)														
POWER LEVEL (10)			20.406(a)(1)(i)				50.36(a)(1)				50.73(a)(2)(v)				73.71(e)														
1			20.406(a)(1)(ii)				50.38(a)(2)				50.73(a)(2)(vii)				X OTHER (Specify in Abstract below and in Text, NRC Form 365A)														
			20.406(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)				Special Report														
			20.406(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)																		
			20.406(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)																		
LICENSEE CONTACT FOR THIS LER (12)																													
NAME										TELEPHONE NUMBER																			
E. Wayne Harrell										AREA CODE 7   0   3   8   9   4   -   5   1   5   1																			
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																			
B	K	P	P	S	P	X	9	9	9	No																			
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)																			
YES (If yes, complete EXPECTED SUBMISSION DATE:)										X NO																			

## ABSTRACT

On November 27, 1984, at 2102 the North Anna Fire Protection System 12" main header ruptured causing the system to be inoperable. The ruptured section of the pipe was isolated, replaced, hydro tested and returned to operable on December 3, 1984 at 1445. Backup fire hose was routed to the areas supplied by the ruptured pipe section until repairs were completed. This event is reportable pursuant to Technical Specification 6.9.2 and Action Statement b.2 of T.S. 3.7.14.1.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104  
EXPIRES: 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
North Anna Power Station, Unit 1	0 5 0 0 0 3 3 8	8 4	— 0 2 2	— 0 1	0 2	OF	0 2

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

On November 27, 1984, at 2102 the North Anna Fire Protection System main header ruptured causing the system to be inoperable. The ruptured section of pipe was isolated at 2115.

The ruptured section of pipe supplies water to two Technical Specification (T.S.) required fire hose stations (T.S. 3.7.14.5, fire hose stations F-H-1 and F-H-3). Backup fire hose was routed from operable hose stations to the two inoperable fire hose stations within the Action Statement one hour time limit.

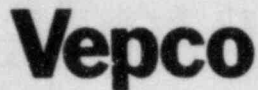
The isolation valves on either side of the fire main rupture leaked by enough to cause repeated starts of the diesel driven fire pump (1-FP-P-2). In order to prevent an excessive number of pump starts the diesel driven fire pump was placed in manual control and isolated from the main fire protection header at 0028 on 11-28-84. Dedicated fire watch personnel were stationed so that this pump could be returned to service if required.

The motor driven fire pump was made available at 0106 on 11-28-84 to provide a fire pump with auto start capability. This fire pump had been removed from service on 9-11-84 as reported in Unit 1 LER 84-009-00. The motor driven fire pump has not been fully restored to operable since the 9-11-84 event because it will not develop Technical Specification required discharge pressure but was able to supply a significant flow rate if required.

With the Motor Driven Fire Pump unable to provide normal flow and the Diesel Driven Fire Pump in manual control and isolated from the Fire Protection System main header, the fire suppression water system did not meet Technical Specification operability requirements. This event is reportable pursuant to T.S. 6.9.2 and Action Statement b.2 of T.S. 3.7.14.1. The Diesel Driven Fire Pump, which could be unisolated to supply the fire system header, was considered the backup fire suppression water system as required by T.S. 3.7.14.1 Action Statement.

The ruptured fire main pipe was replaced. The Diesel Driven Fire Pump was placed in automatic control and all isolation valves for the pump and the new pipe were opened at 1600 on November 30, 1984. A code required hydro test was conducted on December 3, 1984 and the Fire Protection System was considered operable at 1445.

Metallurgical analysis of the pipe shows that the fire protection pipe failed due to brittle fracture resulting in a twelve foot crack in one section of the flanged piping. Charpy V-notch test indicates that the pipe was very brittle with a notch toughness of approximately 1 foot-pound at 40°F, 50°F and 60°F. Other metallurgical test results are available upon request. The initial crack was probably caused by direct impact from a dirt compacting tool during pipe installation. A fire protection system pressure transient combined with the brittleness of the pipe and the initial defect caused failure of the 12" diameter mortar lined pipe.



VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION

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Washington, D.C. 20555

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NPF-7

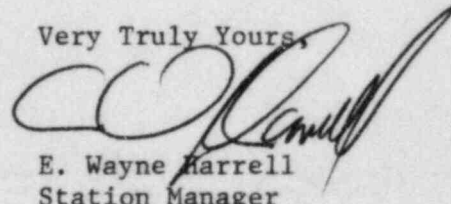
Dear Sirs:

The Virginia Power Company hereby submits the following update License Event Report applicable to North Anna Units No. 1 and 2. The LER was revised to include pipe failure analysis results.

Report No. LER 84-022-01

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)

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