U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

CONTROL BLOCK / / / / / / / (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

/0/1/ /V/A/N/A/S/1/ (2) /0/0/-/0/0/0/0/0/-/0/0/ (3) /4/1/1/1/1/ (4) / / / (5)
LICENSEE CODE — LICENSE NUMBER — LICENSE TYPE — CAT

/0/1/ REPORT SOURCE /L/ (6) /0/5/0/0/0/3/3/8/ (7) /0/7/0/9/8/3/ (8) /0/8/0/8/8/3/ (9)
DOCKET NUMBER — EVENT DATE — REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

/0/2/ / On July 9, 1983, the "A" Service Water Supply Header to the Unit 1 and 2 Charging/
/0/3/ / Pump Lube Oil Coolers and Air Compressors was isolated to install a temporary /
/0/4/ / patch to a pinhole leak. The redundant "B" header was available during the event/
/0/5/ / therefore, the health and safety of the general public were not affected. This /
/0/6/ / event is within the Action Statement of T.S. 3.7.4.1 and reportable pursuant to /
/0/7/ / T.S. 6.9.1.9.b. /
/0/8/ / /

	SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUBCODE	VALVE SUBCODE
/0/9/	/W/A/ (11)	/E/ (12)	/D/ (13)	/P/I/P/E/X/X/ (14)	/A/ (15)	/Z/ (16)

	LER/RO REPORT NUMBER	EVENT YEAR	SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE	REVISION NO.
(17)		/8/3/	/-/ /0/4/8/	/\/	/0/3/	/L/	/-/ /0/

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
/B/ (18)	/A/ (19)	/Z/ (20)	/Z/ (21)	/0/0/0/0/ (22)	/Y/ (23)	/N/ (24)	/A/ (25)	/G/3/4/4/ (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

/1/0/ / A study completed by Lehigh University determined the cause of the pinhole leaks /
/1/1/ / to be aggressive water and, to a lesser degree, bacterial reduction of the mild /
/1/2/ / steel piping. On July 9, 1983 the piping was isolated and a temporary patch was /
/1/3/ / installed. The pipe will be replaced at a future time when the header can be /
/1/4/ / isolated completely. /

	FACILITY STATUS	%POWER	OTHER STATUS (30)	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION (32)
/1/5/	/E/ (28)	/1/0/0/ (29)	/ NA /	/A/ (31)	/ Operator Observation /

	ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
/1/6/	/Z/ (33)	/Z/ (34)	/ NA /	/ NA /

PERSONNEL EXPOSURES

	NUMBER	TYPE	DESCRIPTION (39)
/1/7/	/0/0/0/ (37)	/Z/ (38)	/ NA /

PERSONNEL INJURIES

	NUMBER	DESCRIPTION (41)
/1/8/	/0/0/0/ (40)	/ NA /

LOSS OF OR DAMAGE TO FACILITY (43)

	TYPE	DESCRIPTION
/1/9/	/Z/ (42)	/ NA /

PUBLICITY

	ISSUED	DESCRIPTION (45)
/2/0/	/N/ (44)	/ NA /

NRC USE ONLY / / / / / / / / / / / / / /

NAME OF PREPARER E. Wayne Harrell PHONE (703) 894-5151

IE 22

Virginia Electric and Power Company
North Anna Power Station, Unit No. 1 Attachment: Page 1 of 2
Docket No. 50-338
Attachment to LER 83-048/03L-0

Description of Event

On July 9, 1982 , the "A" Service Water Supply Header to the Charging Pump Lube Oil Coolers and Air Compressors for both units was isolated to temporarily repair a pinhole leak.

Probable Consequences of Occurrence

The integrity of the Service Water Piping was not jeopardized by this pinhole leak as the failure mechanism is localized corrosion and not generalized thinning of the pipe wall. Since the leak did not affect the operability of the system, the system operability was only affected when one header was isolated to patch the leak.

The redundant Service Water Loop was operable throughout the work and the affected loop was returned to service well within the 72 hour action statement. The health and safety of the general public were not affected.

Cause of Event

A study has been completed by Lehigh University to determine the cause of the pin holes occurring on service water piping. This study indicated that the corrosion was caused by a combination of "aggressive water" and bacterial reduction of the mild steel piping. Lake Anna water analysis shows that there is a very low dissolved solids content and the water has a high affinity to dissolve whatever it contacts. In addition, the total alkalinity and hardness levels are very low. All of this contributes to the water being very aggressive or corrosive to metal piping. This corrosive activity is further increased by aerating the service water through the spray system. This provides oxygen to the system which aids the corrosion process. This study estimated that 80 percent of the corrosion present in the Service Water System is attributed to the aggressive water process.

The biological investigation provided positive indication of three types of bacteria in service water which cause corrosion. These are sulfate reducers (sulfide producers), ensheathed iron bacteria and filamentous iron bacteria. The study indicated that 20 percent of the corrosion present is attributed to this bacteria.

Immediate Corrective Action

On July 9, 1983, the affected section of pipe was isolated and a temporary patch was installed to reduce the volume of water that was draining into the auxiliary building sump.

Scheduled Corrective Action

Three and four inch diameter Service Water piping will be replaced with low carbon stainless steel piping which is more resistant to the aforementioned corrosion.

Action Taken To Prevent Recurrence

Feasibility studies for long term solution of Service Water cooling system problems have been completed and are being reviewed by management.

Generic Implications

Similar events have been reported previously. This failure is generic to both units at North Anna Power Station. It is felt that no gross failures will occur since failures of this nature produce small pinhole leaks which are randomly located in the piping.

Vepco

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION
P. O. BOX 402
MINERAL, VIRGINIA 23117

August 8, 1983

Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 2900
Atlanta, Georgia 30303

Serial No. N-83-108
NO/CLF: 11
Docket No. 50-338

License No. NPF-4

Dear Mr. O'Reilly:

Pursuant to North Anna Power Station Technical Specifications, the Virginia Electric and Power Company hereby submits the following License Event Report applicable to North Anna Unit No. 1.

Report No.	Applicable Technical Specifications
LER 83-048/03L-0	T.S. 6.9.1.9.b

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: Document Control Desk (1 copy)
016 Phillips Bldg.
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555