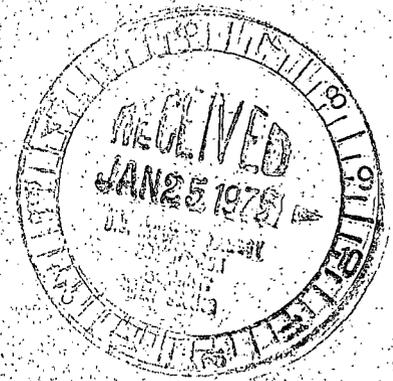


VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261  
January 23, 1975



Regulatory Docket File

Mr. Norman C. Moseley, Director  
Directorate of Regulatory Operations  
United States Atomic Energy Commission  
Region II - Suite 818  
230 Peachtree Street, Northwest  
Atlanta, Georgia 30303

Serial No. 402  
PO&M/JTB:clw

Docket No. 50-280  
License No. DPR-32

Dear Mr. Moseley:

Pursuant to Surry Power Station Technical Specification 6.6.B.1,  
the Virginia Electric and Power Company hereby submits forty (40) copies  
of Abnormal Occurrence Report No. AO-S1-74-16.

The substance of this report has been reviewed by the Station Nuclear  
Safety and Operating Committee and will be placed on the agenda for the next  
meeting of the System Nuclear Safety and Operating Committee.

Very truly yours,

*C. M. Stallings*

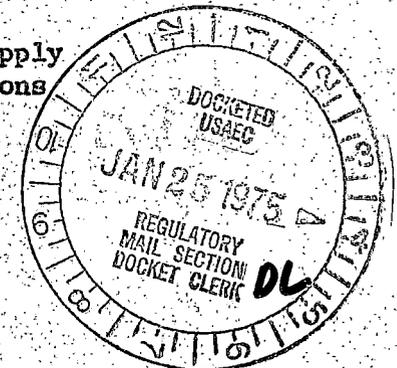
C. M. Stallings  
Vice President-Power Supply  
and Production Operations

Enclosures

40 copies of AO-S1-74-16

cc: Mr. K. R. Goller, Assistant Director ✓  
for Operating Reactors

Mr. Bryce P. Scholfield  
Supervisor, Radiological Health Section  
Department of Health



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Received w/ Ltr Dated 1-23-75

ABNORMAL OCCURRENCE REPORT

REPORT NO. AO-S1-74-16

UNPLANNED RELEASE OF LOW LEVEL RADIOACTIVE  
COMPONENT COOLING WATER TO JAMES RIVER

DECEMBER 23, 1974

DOCKET NO. 50-280  
LICENSE NO. DPR-32

SURRY POWER STATION

VIRGINIA ELECTRIC AND POWER COMPANY

## I. INTRODUCTION

In accordance with Technical Specification 6.6.B.1 for Surry Power Station, Operating License Number DPR-32, this report describes an abnormal occurrence which occurred on December 20, 1974. The Directorate of Regulatory Operations, Region II, was notified on December 20, 1974.

The occurrence reported herein is classified as an abnormal occurrence pursuant to Technical Specification 1.0.I.3 which states that "An abnormal occurrence is defined as: any uncontrolled or unplanned release of radioactivity from the site."

The occurrence described herein resulted in the release of radioactive component cooling water to the James River.

## II. SUMMARY OF OCCURRENCE

On December 20, 1974 at about 0200 hours with both units at cold shutdown, a radiation monitor alarm occurred on RM-SW-107. This device monitors the service water leaving the component cooling heat exchangers. Component cooling heat exchanger 1-CC-E-1C was immediately isolated from both the service water and component cooling water systems. The shell pressure of 1-CC-E-1C was observed to decrease to less than component cooling system pressure thus indicating a leak. It is estimated that this leak resulted in the release of 349 gallons of low level radioactive component cooling water to the James River.

## III. ANALYSIS OF OCCURRENCE

Subsequent to the isolation of 1-CC-E-1C from the service water system, the strip chart for RM-SW-107 was analyzed. An upward trend

in service water radioactivity was indicated for a period of 11 hours and 15 minutes prior to the isolation of 1-CC-E-1C. A downward trend in service water radioactivity started after 1-CC-E-1C was isolated.

1-CC-E-1C was opened so that the actual tube leakage could be observed. When the shell side of 1-CC-E-1C was pressurized to component cooling system pressure, pin-hole leaks were observed in two tubes. This leakage was measured to be .376 and .139 gallons per minute, respectively. Thus the actual total leak rate from 1-CC-E-1C was .515 gpm. As a conservative estimate, this rate of leakage existed for 11 hours and 15 minutes, and resulted in the release of 349 gallons of low level radioactive component cooling water to the James River via the service water system.

#### IV. CORRECTIVE ACTION TO PREVENT RECURRENCE

The initial corrective action taken was to isolate 1-CC-E-1C from the service water system. In order to prevent recurrence the following corrective action has been implemented:

1. A tube which failed previously in 1-CC-E-1C has been extracted and cut into sections for analysis. Preliminary results of the analysis indicate that the mode of failure was mechanical in nature and not related to corrosion phenomena.
2. Procedures have been instituted which prohibit the use of component cooling system pump and heat exchanger combinations which could stress heat exchanger tubes and cause further failures.

3. RM-SW-107 is being monitored and readings logged every two hours to ensure that trends are detected in a timely manner.
4. Two tubes from 1-CC-E-1C have been removed for further inspection.

V. ANALYSIS AND EVALUATION OF SAFETY IMPLICATIONS OF THE OCCURRENCE

The concentration of the radionuclides present in the component cooling water during the leak were as follows: Cesium 134- $4.81 \times 10^{-5}$   $\mu\text{Ci/ml}$ , Cesium 137- $1.94 \times 10^{-4}$   $\mu\text{Ci/ml}$ . During the leak, the percentages of MPC released for each radionuclide are as follows: Cs<sup>134</sup>-. $473 \times 10^{-3}\%$ , Cs<sup>137</sup>-. $85 \times 10^{-3}\%$ . This represents a prorated aggregate of  $1.32 \times 10^{-3}\%$  MPC.

The above figures are based on the following additional assumptions: no radioactive decay of the radionuclides of interest, and three circulating water pumps running for the duration of the release.

Therefore, it can be concluded that no 10 CFR 20 limits were exceeded as a result of this unplanned release. The limit specified in Technical Specification 3.11.A.2 has not been exceeded for the present calendar quarter.

VI. CONCLUSIONS

The licensee concludes that:

1. The unplanned release was due to tube failure and subsequent leakage in component cooling heat exchanger 1-CC-E-1C.

2. An insignificant amount of radioactivity was released to the environment and all radionuclide concentrations were within 10 CFR 20 limits.
3. The occurrence described herein did not affect the safe operation of the station.
4. The occurrence described herein did not affect the health and safety of the general public.