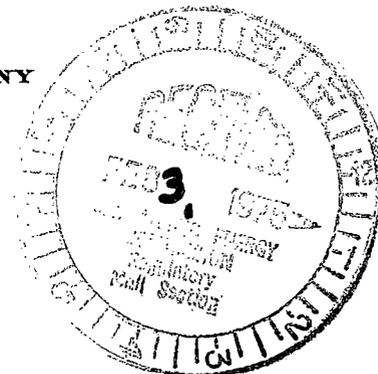


VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

January 24, 1975

Regulatory Docket File



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

Serial No. 412
PO&M/JTB:clw
Docket No. 50-280
License No. DPR-32

Dear Mr. Moseley:

The Virginia Electric and Power Company hereby submits forty (40) copies of Special Report No. SR-S1-74-06.

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.

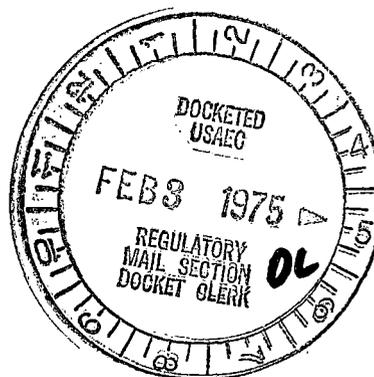
Very truly yours,

C. M. Stallings

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

Enclosure

cc: Mr. K. R. Goller
(39 copies SR-S1-74-06)



1112

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Received w/ Ltr Dated 1-24-75

SPECIAL REPORT

SR-S1-74-06

SAFETY INJECTION PIPE SUPPORTS

NOVEMBER 20, 1974

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

SURRY POWER STATION

VIRGINIA ELECTRIC AND POWER COMPANY

I. INTRODUCTION

As a result of the recent discovery of damaged pipe restraint anchors on the Unit No. 2 safety injection (SI) accumulator discharge lines, an inspection of Unit No. 1 pipe restraints was conducted. The inspection revealed damaged anchors similar to those found on Unit No. 2, as described in Special Report Number SR-S2-74-01. The results of the investigation are contained herein.

II. DISCUSSION

Pipe restraints H-4, H-10 and H-16 rigidly support SI accumulator discharge lines SI-45, SI-46 and SI-47, respectively. These pipe restraints, identical to those of Unit No. 2, are designed to withstand loads (including seismic) during normal system operation. Each restraint is constructed of three built-up stainless steel beams, joined to a stainless steel ring reinforcement which is welded to the pipeline it supports. The restraint legs are arranged in a "Tee" configuration, with two (2) of the beams joined diametrically opposite each other on the ring reinforcement, and the third beam situated at right angles to each beam. Each beam is welded to its stainless steel baseplate which is anchored to a two-foot thick concrete floor. Rigid attachment of the baseplate to the concrete floor is accomplished by the insertion of bolt anchor fasteners in the concrete, and the insertion of six (6) inch long bolts into the anchor fasteners to hold the baseplate to the concrete. A bed of grouting, one (1) inch thick (as per the original specification), is placed between the baseplates and the concrete floor.

The SI piping anchors on Unit No. 1 were subject to similar load transients as described in SR-S2-74-01 for Unit No. 2 anchors. As a

result, they sustained similar damage, as detailed below. Damage to Loop A anchors consisted of very minor cracking of the grout with no physical evidence of damage to the concrete or the concrete fasteners. Damage to the Loop B anchor consisted of a semicircular crack around the base of one of three anchor baseplates, propagating down to the concrete fasteners with some cracking and spalling of the grout. Loop C damage consisted of some cracking and spalling of the grout, with some of the concrete fasteners pulled out approximately $\frac{1}{4}$ inch. There was no evidence of damage to the concrete. Some pipe supports and hangers adjacent to the damaged pipe restraints were also found to have received minor damage. This was anticipated, however, considering water hammer and flashing vibrations exerted similar forces on adjacent hangers.

The safety injection piping in Unit Nos. 1 and 2 is similar; therefore, since Loop B is the same in both units the analysis performed for Unit No. 2 restraints is applicable to Unit No. 1. The physical evidence in Unit No. 1 revealed that the movement of the pipe was much less than that of Unit No. 2; therefore, the stresses were lower.

Since Loops A and C of Unit No. 1 received relatively minor damage, an attempt was made to re-tighten each fastener that showed evidence of pulling out. If the bolt failed to tighten, then that bolt was replaced by a $\frac{3}{4}$ in x 10 in. Hilti-Kwik bolt. The loose and cracked grout was removed and repoured. On Loop B, the damaged concrete was found to have shallow surface cracks penetrating in depth to approximately four (4) inches, i.e. to the bottom of the fasteners. This concrete was chipped out to expose good concrete and Hilti-Kwik bolts ($\frac{3}{4}$ in. x 10 in.) were installed to permit anchoring into unaffected concrete. An epoxy bonding agent was applied to the exposed concrete and new concrete poured to the

original level. The baseplate was then re-grouted to complete the anchor. The adjacent damaged pipe supports and hangers were fixed by re-tightening existing 3/4 in. fasteners where possible or by installing the next larger size (7/8 in. diameter) fasteners.

Non-destructive tests were conducted to determine if damage had occurred to adjacent piping and welds. Ultrasonic testing of welds on the three (3) SI loops, from the weld downstream of the second check valve in the accumulator discharge line up to and including the weld into the reactor cold leg piping, was performed. The test results revealed no significant indications.

III. CONCLUSIONS

The damaged restraints were the result of flashing and water hammer shock experienced during the early operation of the unit (Special Report SR-S2-74-01). As a result of modifications made to the safety injection system operating procedure, the water hammer and flashing have not recurred. The corrective action performed assures the ability of the restraints to function as originally intended.

The events described herein did not affect the safe operation of the station or the health and/or safety of the general public.