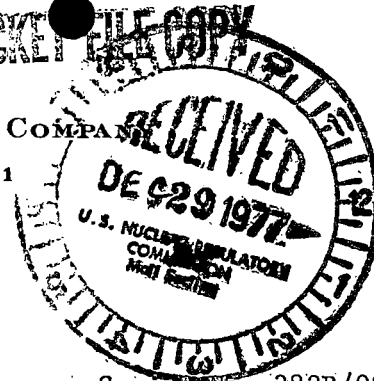


REGULATORY DOCKET FILE COPY

VIRGINIA ELECTRIC AND POWER COMPANY

RICHMOND, VIRGINIA 23261

December 23, 1977



Mr. Edson G. Case, Acting Director
Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Serial No. 382B/092477
PO&M/ALH:wbh
Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

ATTN: Mr. Robert W. Reid, Chief
Operating Reactors Branch 4

Dear Mr. Case:

The purpose of this letter is to provide information requested by Mr. David Shum of your staff to support his review of our proposed modifications to the low head safety injection and recirculation spray pumps at Surry. The information requested is provided in the attachment to this letter.

Very truly yours,

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

Attachment

cc: Mr. James P. O'Reilly

NRC REQUEST FOR INFORMATION
REGARDING PROPOSED RS/LHSI MODIFICATIONS

NRC Question

Is it possible to provide the Westinghouse calculated mass and energy release rates and energy distribution for a PSDER at Surry?

Response

As part of our contract for steam generator replacement, Westinghouse is committed to provide calculated mass and energy release rates and energy distributions for a PSDER at Surry. We are currently reviewing necessary system data so that the analysis can be conducted. A firm schedule for completion has not been agreed upon, but we are making every effort to get this information as soon as possible.

NRC Question

What is the IRS pump operating point for the temporary modification discussed in the September 12, 1977 submittal?

Response

The operating point for the IRS pump is 3500 GPM whenever the calculated available NPSH is greater than or equal to 11.0 FT-H₂O. The flow rate is conservatively assumed to decrease to 3000 GPM when the calculated available NPSH falls below 11.0 FT-H₂O. The actual pump flow will gradually decrease as available NPSH decreases. This relationship of flow and NPSH is shown on figure 3 of the September 12, 1977 submittal.

NRC Question

What is the friction head loss versus time for the IRS, ORS and LHSI pumps for the proposed temporary and permanent fixes?

Response

The following Table presents data from which the friction loss, for any flow rate of IRS, ORS, LHSI pumps, may be calculated:

	IRS-3500GPM	ORS-2250GPM	LHSI
Height of Containment Sump Floor Above Centerline of 1st Stage Impeller-FT	7.9	9.1	8.6
IRS Friction Loss-FT	0.8	-	-
ORS Friction Loss-FT			
1 Pump Operation	-	2.7	-
2 Pump Operation	-	3.5	-
LHSI Friction Loss-FT			
1 Pump at 3500GPM	-	-	7.2
2 Pumps at 2600GPM ea.	-	-	4.0

During the recirculation phase of LOCA, the ORS and LHSI pump friction losses will remain constant with time since the flow rates of these pumps will remain constant. The IRS pump flow rate will vary with available NPSH which has already been discussed. Using the transient curves provided in the September 12 and November 22, 1977 submittals, the variation of IRS NPSH and thus flow and friction loss with time can be calculated

NRC Question

Why doesn't the LOCTIC computer code used for NPSH analyses use the ASME steam tables that can be used below 530F?

Response

The notes at the bottom of table 6 in both the September 12, 1977 and November 22, 1977 submittals which gave rise to this question need clarification. An examination of the figures showing NPSH versus time in each of our submittals shows that the limiting case for LHSI NPSH is a PSDER with minimum ESF for all values of service water temperature. Therefore it is not really necessary to calculate the available NPSH for other conditions.

Regardless of this fact, we have discussed the possibility of using the ASME steam tables in the LOCTIC Code with our Architect Engineer. Their staff has informed us that it can be done, but the time and expense required to do so are extensive. Furthermore, the A-E staff feels that this effort is unwarranted since the LOCTIC Code as it now exists adequately calculates the limiting LHSI NPSH case; namely a PSDER with minimum ESF.

We concur with the feeling of the A-E staff and do not believe that the expense required to insert ASME steam tables into LOCTIC can be justified.