

# YANKEE ATOMIC ELECTRIC COMPANY



20 TURNPIKE ROAD, WESTBORO, MASSACHUSETTS 01581  
TELEPHONE 617 366-9011

August 25, 1972

Regulatory

File Cy.

United States Atomic Energy Commission  
Washington, D. C. 20545

Attention: Directorate of Licensing

Reference: License No. DPR-3 (Docket No. 50-29)

Dear Sirs:



With reference to a telephone conversation on August 23, 1972 between your Mr. Burger and our Mr. Andognini, Yankee Atomic Electric Company offers the following information relative to the operation of the plant with three loops.

During the Yankee - A.E.C. discussion of Proposed Change No. 96, Yankee indicated that a study had been initiated for plant operation with three reactor coolant loops operating and that preliminary reviews indicated that this mode of operation was not limiting. However, Yankee did agree not to operate in the three loop mode until the study had been completed.

On July 14, 1972, the study was completed confirming that the preliminary reviews for this mode of operation were correct and that no special surveillance such as ECCS line-up was required when operating in this mode.

As a result of the analysis and the operational need to isolate a reactor coolant loop, Yankee operated the plant on three reactor coolant loops.

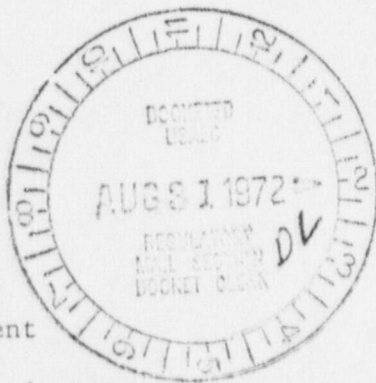
We trust that this information is satisfactory; however, should you desire additional information feel free to contact us.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

*Donald E. Vandenburg*

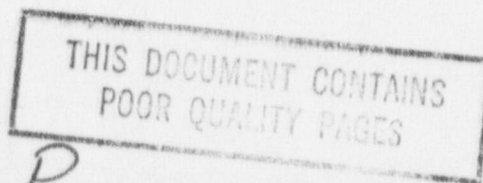
Donald E. Vandenburg  
Vice President



GCA/amw  
Attachment

cc: J. O'Reilly

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## MEMORANDUM

Regulatory

File #

To L. Heider

July 14, 1972

COMPANY OR LOCATION

FROM A. Ladieu

FILE Y 3.3.4

COMPANY OR LOCATION

SUBJECT 3-Loop Loss of Coolant Accident Analysis for Yankee Nuclear Power Station

REFERENCES

Revised 8-25-72

1. "Criteria for Emergency Core Cooling Systems for Light Water Power Reactors", AEC Interim Policy Statement published in the Federal Register, Vol. 36, June 29, 1971.
2. "Yankee Nuclear Power Station Revised Loss of Coolant Analysis", Submitted to the AEC on January 15, 1972.

DISCUSSION

This memo is in response to a request by Bill Jones for results of the analysis of the Yankee Safety Injection System performance during 3-Loop plant operation. The analysis has been done by Westinghouse and is based on the analytical methods and assumptions listed in Appendix A, Part 3 of the AEC Interim Policy Statement.<sup>(1)</sup> A complete list of assumptions is given in Reference 2.

COMMENTS

The above analysis has been completed and results are informally available. Telephoto copies of selected pages of the final report are attached.

SAFETY EVALUATION

It is concluded from the results of the analysis that the Yankee Nuclear Power Station during 3-Loop operation at 75% power complies with the criteria enumerated in Section IV.A of the AEC Interim Policy Statement.

cc: WGJ (Rowe)  
ERW  
WDH  
RJC  
JDV

A. E. Ladieu  
A. E. Ladieu - Originator  
Nuclear Engineering Section

W. D. Hinkle  
W. D. Hinkle - Reviewer  
Section Head

Figures 1 through 6 present the transients for significant parameters of the analyses. The following items should be noted:

Figures 1-16 The system pressure curve shown is the calculated pressure in the lower core region. The quality curve presents the values for the hot spot; this is the larger of the two values calculated in the core region. The core flow shown is the actual value for the core midplane. The average mass velocity can be obtained by dividing the flow rate shown by  $14.2 \text{ ft}^2$ . The hot spot mass velocity is taken to be 80 percent of the average mass velocity. The heat transfer coefficient shown is for the hot spot.

Figures 17-20 These figures show the hot spot clad temperature transients.

Figures 21-25 These figures show the core reflood transients for the worst case, the  $.5 \text{ ft}^2$  cold leg split in an active loop.

The highest clad temperature occurred for the  $.5 \text{ ft}^2$  cold leg split in an active loop and was  $1969^\circ\text{F}$ . This was also the worst break experienced in the four loop LOCA analyses. Reasons for this result are presented in the four loop LOCA analysis.

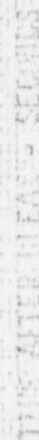
Comparison of the four breaks of the loop out of service LOCA indicates the following:

- 1) The break area for the isolated loop break is limited to the area of the pipe since the break can be fed from one direction only.
- 2) During blowdown more flow passes through the core for the isolated loop break since all flow entering the upper plenum from the intact loops is directed through the core.
- 3) For an isolated loop break, all three injection lines deliver to RCS pressure. Thus no accumulator water is spilled directly to the break.
- 4) During reflood the resistance to steam flow being vented to the break is slightly greater for the isolated loop break because steam must be



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		8-25-72	8-31-72	X			
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CLASS: <u>U</u> /PROP INFO		INPUT	NO CYS REC'D  40	DOCKET NO:  50-29			
DESCRIPTION: Ltr re tele/con on 8-23-72.... furnishing addl info to Proposed Change No. 96 & trans:				ENCLOSURES: Memorandum dtd 7-14-72 fm A. Ladie to L. Heider re 3-loop loss of coolant acci dent analysis for Yankee Nuclear Power Sta.  (40 con'f cys encl rec'd)			
PLANT NAMES: YAEC				<b>DO NOT REMOVE ACKNOWLEDGED</b>			

**FOR ACTION/INFORMATION**

DL 8-31-72

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