

Docket No. 50-29

MAR 16 1978

Yankee Atomic Electric Company 1978
ATTN: Mr. Robert H. Groce
Licensing Engineer
20 Turnpike Road
Westboro, Massachusetts 01581

Gentlemen:

This is in response to your application for license amendment dated December 14, 1977, which supersedes your initial application dated September 8, 1977. You proposed a change to the Technical Specifications for the Yankee-Rowe reactor to reduce the required number of operable incore neutron detectors from 17 to 12.

We have reviewed your request and find that the additional information identified in the enclosure to this letter is required to complete our review. We have discussed the items in the enclosure during recent telephone conversations with your staff.

To maintain our review schedule your response is required by April 10, 1978. Please provide your schedule for submittal of this information.

Sincerely,

Original Signed by:
Dennis L. Ziemann
Dennis L. Ziemann, Chief
Systematic Evaluation Projects
Branch
Division of Operating Reactors

Enclosure:
Request for Additional
Information

cc w/enclosure:
See next page

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Yankee Atomic Electric Company

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cc: Mr. Donald G. Allen, President
Yankee Atomic Electric Company
20 Turnpike Road
Westboro, Massachusetts 01581

Greenfield Community College
1 College Drive
Greenfield, Massachusetts 01301

REQUEST FOR ADDITIONAL INFORMATION
CONCERNING PROPOSED REDUCTION OF INCORE NEUTRON
DETECTOR THIMBLES AT YANKEE-ROU
DOCKET NO. 50-29

1. Provide the results of your study that demonstrates the ability to detect fuel misloadings during startup tests with the reduced compliment of incore detector thimbles, considering the following:
 - a. The incore detector system must be able to detect severe fuel misloadings. The most severe misloadings which would go undetected should be computed, and the presence of such a misloading should be assumed in the preparation of the technical specifications. A 2D PDQ for the misloaded core should be adequate to generate activations to be used in this study. A sufficient number of cases should be run to give a meaningful statistical data base.
2. Provide the results of your study to determine the increased uncertainty in the peaking factors when they are computed for use of the reduced compliment of incore detector thimbles, considering the following:
 - a. Increased uncertainty during operations could be addressed in two ways. Whichever method is chosen, a sufficient number of cases should be run to give a meaningful statistical data base.
 - (1) Compare previous cycle maps.
 - (a) Take activation signals from previous maps.
 - (b) In a random fashion discard all but N of these activations.
 - (c) Run INCORE with these N activations.
 - (d) Compare these INCORE results with those obtained in the original map to determine the increase in uncertainty.
 - (2) Compare with PDQ
 - (a) Run PDQ which computes detector activations and power distribution
 - (b) Pick a random sample of N of these activations.
 - (c) Run INCORE with these N activations.
 - (d) Compare these INCORE results with the PDQ results to determine the uncertainty due to the synthesis procedure.

3. Describe how you plan to monitor core tilt, and provide your analysis to support the proposed method. In addition, please respond to the following:
 - a. Monitoring core tilt via loop flows and temperature has been suggested by Yankee Rowe. Has this method been demonstrated viable?
 - b. It seems reasonable that the technical specifications be revised to require that at least one set of quadrant symmetric detector paths remain operable which would be used to monitor core tilt. If the core tilt is to be based on this only, then the four traces (one per quadrant) should be taken in succession. Further, to check the data, these traces should be taken once at the beginning of the map and once at the end.
4. Propose changes to the Technical Specifications, as appropriate, based on the results of the above studies for the reduced compliment of incore neutron detector thimbles. For your response you may consider the following:
 - a. Call the number of remaining operable paths N . There will be uncertainty in the results of incore measurements when N is reduced below some critical (yet to be determined) number. Below this critical number the uncertainty will increase as N decreases. This increased uncertainty should be factored into the technical specifications. Maximum operating flexibility at all times would be assured if the uncertainty factored into the technical specifications were a function of the current value of N .