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TO:
Mr. A. Schwencer

FROM:
Rochester Gas & Electric Co.
Rochester, New York
L. D. White, Jr.

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2/11/77

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Ltr. furnishing response to our 1/12/77 request for information on fuel rod bowing and on DNBR margins presently available...

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LEON D. WHITE, JR.
VICE PRESIDENT

TELEPHONE
AREA CODE 716 546-2700

February 11, 1977

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Operating Reactors Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555



Dear Mr. Schwencer:

This letter is in response to your request of January 12, 1977 for information on fuel rod bowing and on DNBR margins presently available. We have reviewed our fuel design in detail with our supplier, Westinghouse Electric Corporation, and have obtained the DNBR margins which are presently available.

Protection against reaching DNB ratios less than 1.30 is provided in two plant protection setpoints, the underfrequency trip setpoint and the overtemperature ΔT setpoint. The underfrequency trip provides protection for the loss-of-flow design basis accident while the overtemperature ΔT trip provides protection for other potentially limiting DNB related transients. The present Technical Specification limit for the underfrequency trip setpoint is 57.5 Hz, however a change in the Technical Specification limit to 55 Hz was requested by application dated November 1, 1976. The analysis supporting this application showed a minimum DNBR during the loss of flow accident of 1.615 for a trip setpoint of 55 Hz and a frequency decay rate of 5 Hz/sec., for a margin of 24.2% to a DNBR of 1.30. In addition, margins are available in the DNBR analysis for the thermal diffusion coefficient of 3.0% and for the pitch reduction of 3.3%. Thus, a total margin of 30.5% is available for the loss of flow design basis accident.

The analysis supporting selection of the Technical Specification limit on the overtemperature ΔT trip setpoint was originally performed for Cycle 3 and was submitted to the NRC on February 16, 1973. In this analysis a 9.9% DNBR penalty for densification heat flux spike and a 10.0% DNBR penalty for fuel rod flattening were incorporated. As neither of these penalties are required now, they provide for a margin of 19.9%. In addition, the thermal diffusion coefficient and pitch reduction margins are available, yielding a total margin of 26.2%. Analysis for Cycle 5, submitted to the NRC on March 26, 1975, resulted in a slight increase in the overtemperature ΔT trip setpoint, thereby using 4.0% of the DNBR margin. Inasmuch as the overtemperature ΔT has not been changed since the Cycle 5 analysis, a DNBR margin of 22.2% is now available.

1501

DATE February 11, 1977
TO Mr. A. Schwencer, Chief
Operating Reactors Branch #1

In addition to reviewing the DNBR margins available, we have reviewed fuel inspection data. As discussed in our letter of August 18, 1976, no fuel rod bowing has been seen in television examination of fuel assemblies with assembly average burnups in excess of 25,000 MWD/MTU. Any assessment of potential DNBR penalties should, in our opinion, be consistent with these actual measured data.

In summary, DNBR margins of at least 22.2% are available. In addition, no fuel rod bowing has been observed in Ginna 9 grid, stainless steel guide tube, 14 x 14 fuel.

Very truly yours,



L.D. White, Jr.

