

JUL 27 1977

MEMORANDUM FOR: K. R. Goller, Assistant Director for Operating Reactors, Division of Operating Reactors

FROM: L. C. Shao, Chief, Engineering Branch, Division of Operating Reactors

SUBJECT: KEWAUNEE - REVIEW OF PRESSURE-TEMPERATURE OPERATING LIMITS (TAC 6595)

Plant Name: Kewaunee  
NSSS Vendor: Westinghouse  
Docket Number: 50-305  
Responsible Branch and Project Manager: ORB-1, D. Neighbors  
Requested Completion Date: August 1, 1977  
Technical Review Branch: Engineering Branch  
Review Status: Complete

In letter dated July 8, 1977, Wisconsin Public Service Corporation submitted the results of tests on material surveillance capsule V (WCAP 8908) and Proposed Amendment No. 25 regarding pressure-temperature operating limits for Kewaunee.

Specimens in capsule V received an average fast fluence of  $5.59 \times 10^{18}$  n/cm<sup>2</sup>. This fluence resulted in a 195°F increase in RT<sub>NDT</sub> at the 50 ft.-lb. level and a drop in upper shelf energy from 126 to 82 ft.-lb. for weld material. The weld material has a copper content of 0.20% and a predicted shift in RT<sub>NDT</sub> of about 140°F at  $5.59 \times 10^{18}$  n/cm<sup>2</sup> according to Regulatory Guide 1.99, Revision 1. Base material showed no perceptible increase in RT<sub>NDT</sub> at this fluence. The ASTM A533 Grade B Class 2 correlation monitor material had an increase in RT<sub>NDT</sub> of 95°F at 50 ft.-lb. The end-of-life fluence for the reactor vessel at 1/4T location based on 32 EFY at 1650 MW and dosimeter analysis was calculated to be  $2.7 \times 10^{19}$  n/cm<sup>2</sup>.

The proposed pressure-temperature operating limits were based on the test results obtained from surveillance capsule V. They were calculated in accordance with Appendix G, ASME Code Section III and WCAP 7924, and for operation through 6.6 EFY. At that time the neutron fluence is estimated to be  $5.59 \times 10^{18}$  n/cm<sup>2</sup> at the 1/4T location. The limiting material is weld material with a 0°F initial RT<sub>NDT</sub> and an RT<sub>NDT</sub> of 195°F for a fluence of  $5.59 \times 10^{18}$  n/cm<sup>2</sup>.

We have reviewed the proposed pressure-temperature operating limits for Kewaunee and conclude that they are in accordance with Appendix G,

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JUL 27 1977

10 CFR Part 50 and are acceptable for operation through 6.6 EFPY. Conformance with Appendix G, 10 CFR Part 50 in establishing safe operating limitations will ensure adequate safety margins during operation, testing, maintenance and postulated accident conditions and constitute an acceptable basis for satisfying the requirements of NRC General Design Criterion 31, Appendix A, 10 CFR Part 50.

Because the surveillance capsule indicated a greater shift in RT<sub>NDT</sub> than anticipated, Wisconsin Public Service Corporation stated that they planned to modify their schedule for subsequent surveillance capsule withdrawals. We reviewed their planned withdrawal schedule and conclude that it meets the requirements of Appendix H, 10 CFR Part 50 and is acceptable.

L. C. Shao, Chief  
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