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SUBJECT: Informs NRC of proposed reactor vessel surveillance capsule withdrawal schedule for facility, fulfilling requirement of 10CFR50, App H, Paragraph II. B. 3. Schedule will provide for removal of capsules in logical order of increasing fluence.

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January 26, 1987

10 CFR 50, App. H, II.B.3

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Proposed Reactor Vessel Surveillance Capsule Withdrawal Schedule

Reference: 1) Letter from C. W. Giesler (WPSC) to Dr. H. R. Denton (NRC), dated April 29, 1986

This letter is to inform the NRC of the proposed reactor vessel surveillance capsule withdrawal schedule for the Kewaunee Nuclear Power Plant (KNPP). This fulfills the requirement of 10 CFR 50, Appendix H, paragraph II.B.3.

Wisconsin Public Service Corporation (WPSC) intends to follow the surveillance capsule withdrawal schedule submitted as part of Proposed Amendment No. 71 (reference 1), which revised the KNPP heatup and cooldown curves. Included in the Amendment was a final report developed by Southwest Research Institute that provided the technical justification for the development of the revised curves. A surveillance capsule withdrawal schedule (attachment 1) was submitted as part of the final report.

The proposed withdrawal schedule is based on the guidelines of ASTM E185-82. Specifically:

° KNPP's third surveillance capsule T will be removed when the calculated accumulated neutron fluence of the capsule corresponds to the calculated end of life (EOL) fluence at the reactor vessel 1/4 T location.

° KNPP's fourth surveillance capsule P will be removed when the calculated accumulated neutron fluence of the capsule corresponds to the calculated EOL fluence at the reactor vessel inner wall location.



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° KNPP's fifth surveillance capsule S will be removed at a time not less than once or greater than twice the peak EOL vessel fluence.

KNPP's first two surveillance capsules V and R were removed at 1.25 effective full power years (EFPY) and 4.5 EFPY respectively. KNPP's sixth surveillance capsule M is a spare.

Although the proposed withdrawal schedule is based on ASTM E185-82, it is not in strict conformance with ASTM E185-82. ASTM E185-82 would require that KNPP's third surveillance capsule be removed at the time the accumulated neutron fluence of the capsule corresponds to the approximate EOL fluence at the reactor vessel 1/4 T location or 6 EFPY, whichever comes first. For KNPP's third surveillance capsule, 6 EFPY would have come first. Due to the orientation of the capsules, and the resulting lead factors, if the third capsule would have been removed after 6 EFPY, the accumulated neutron fluence would have been less than that accumulated by the second surveillance capsule R (see attachment 2). Therefore, if the third surveillance capsule was removed in accordance with ASTM E185-82, the resulting data would have been meaningless and the third capsule wasted.

Based on the above information, WPSC believes that the proposed withdrawal schedule will provide for the removal of the remaining surveillance capsules in logical order of increasing neutron fluence and will provide for the collection of meaningful data on the effect of neutron irradiation on KNPP's reactor vessel cross section at EOL.

In addition, it should be noted that in the future it may be necessary to change the proposed withdrawal schedule. The EOL projected fast fluences are revised following the analysis of the most recently removed surveillance capsule. If it becomes necessary to revise the withdrawal schedule, WPSC will inform the NRC accordingly.

Sincerely,

D. C. Hintz
Vice President - Nuclear Power

PIS/jal

Attachment

cc - Mr. Robert Nelson, US NRC
US NRC, Region III

Attachment 1

PROPOSED SURVEILLANCE CAPSULE WITHDRAWAL SCHEDULE

| Capsule Code | Position[f] (Degrees) | Lead Factor[g] West. | Lead Factor[g] SwRI | Removal Time | Capsule Fluence ($n/cm^2$, E>1MEV) |
|---|---|---|---|---|---|
| V | 77° | 3.37 | 3.34 | 1.25 EFPY[a] | $5.99 \times 10^{18}$ |
| R | 257° | 3.37 | 3.34 | 4.50 EFPY[a] | $2.07 \times 10^{19}$ |
| T | 67° | 1.94 | 1.98 | 11 EFPY[b] | $3.3 \times 10^{19}$ |
| P | 247° | 1.94 | 1.98 | 17 EFPY[c] | $5.0 \times 10^{19}$ |
| S | 57° | 1.79 | 1.96 | 25 EFPY[d] | $7.5 \times 10^{19}$ |
| M | 237° | 1.79 | 1.96 | (e) | --- |

(a) Capsule Removed and Fluence Measured (WCAP 9878)

(b) Projected Fluence = 1.0 x 1/4T E.O.L. Vessel Fluence

(c) Projected Fluence = 1.0 x Peak E.O.L. Vessel Fluence

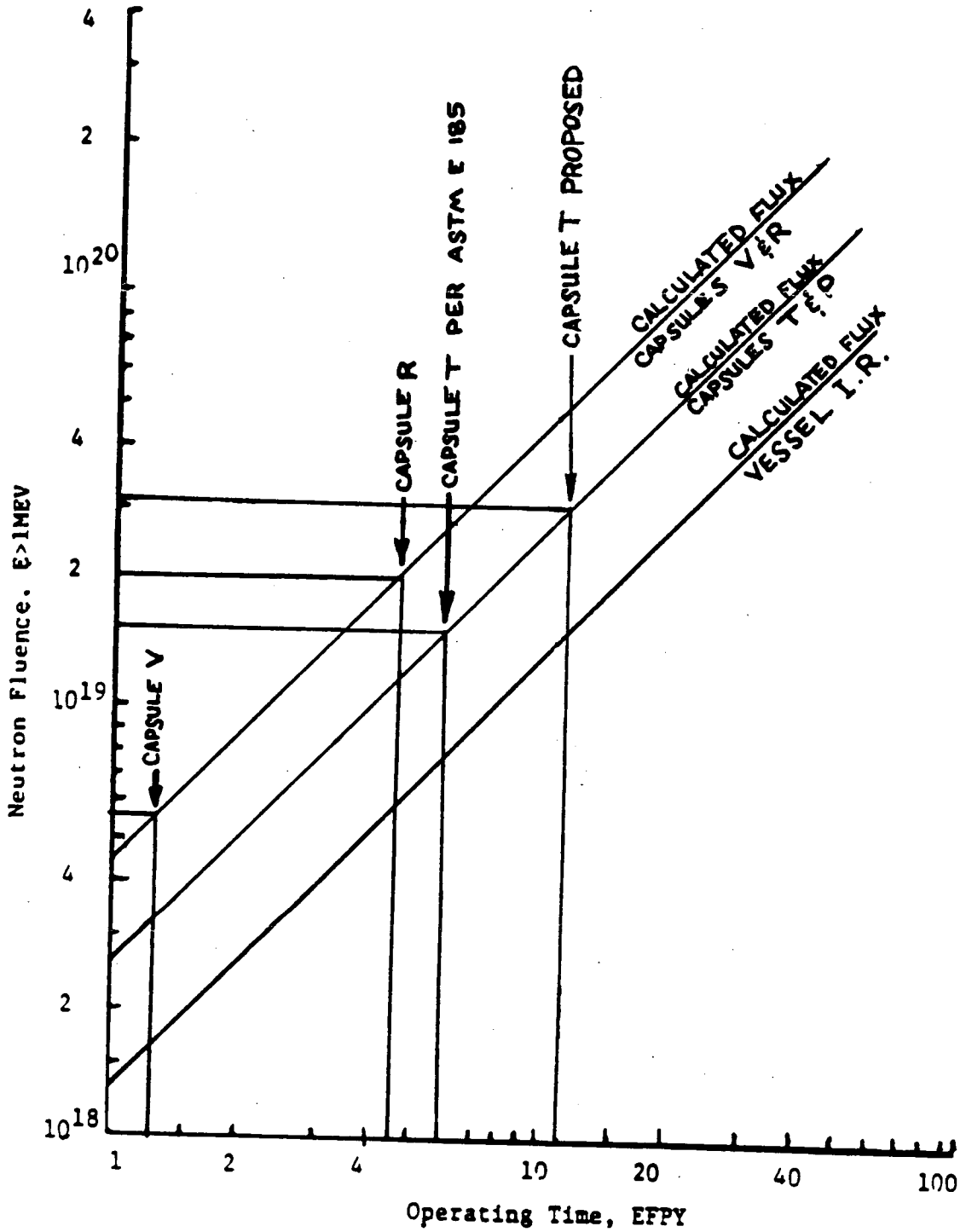
(d) Projected Fluence = 1.5 x Peak E.O.L. Vessel Fluence

(e) Spare Capsule

(f) Position of the Capsule in the reactor core. Used to determine the lead factor for a capsule.

(g) Lead Factor is defined by ASTM 185-82 as "the ratio of the neutron flux density at the location of the specimens in a surveillance capsule to the neutron flux density at the reactor pressure vessel inside surface at the peak fluence location."

Attachment 2




CALCULATED FLUENCES AS A FUNCTION OF OPERATING TIME