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ComEd

October 22, 1999
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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

SUBJECT: Reactor Vessel Material Surveillance Capsule W Test Results and Schedule for Completing Assessment of Reactor Vessel Materials Data

REFERENCES:

(1) Letter from H.G. Stanley (ComEd) to U.S. NRC, "Supplemental Information Pertaining to Technical Specification Amendment Regarding Pressure-temperature Curves Byron and Braidwood Nuclear Power Stations," dated January 8, 1998.

(2) Letter from R.A. Capra (U.S. NRC) to O.D. Kingsley (ComEd), "Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2, Acceptance for Referencing of Pressure-temperature Limits Report," dated January 21, 1998.

(3) Letter from R.A. Capra (U.S. NRC) to O.D. Kingsley (ComEd), "Integration of Reactor Pressure Vessel Surveillance Program for Byron and Braidwood, Units 1 and 2," dated January 16, 1998.

Pursuant to 10 CFR 50 Appendix H, reactor vessel material surveillance capsule W was withdrawn from the Braidwood Unit 1 Reactor vessel on October 22, 1998, and tested in accordance with ASTM E 185-82. Appendix H requires a summary technical report of the capsule test results to be submitted within one year of the date of capsule withdrawal. Therefore, this letter is being submitted by October 22, 1999. The Attachment to this letter contains the summary technical report, documented in WCAP-15316, "Analysis of Capsule W from Commonwealth Edison Company Braidwood Unit 1 Reactor Vessel Radiation Surveillance Program," Revision 1, October 1999.

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Appendix H also requires that, if necessary, an expected date for submittal of revised pressure-temperature limits or operating procedures be provided with the surveillance capsule report. Commonwealth Edison (ComEd) Company proposes to submit an integrated assessment of the impact of testing both the Braidwood Unit 1 capsule W and the Braidwood Unit 2 capsule W (withdrawn on May 1, 1999). The schedule for this impact assessment will be submitted with the Braidwood Unit 2 surveillance capsule W report on or before May 1, 2000. This impact assessment will include not only the newly revised fluence values, but also the impact of new surveillance data on materials inputs such as data credibility, conservatism, best-estimate chemistry, chemistry factor, and margin term. Since Braidwood Station, Units 1 and 2, share a beltline weld wire heat, and Braidwood Station, Units 1 and 2, have an integrated surveillance program pursuant to Appendix H which was accepted by NRC in Reference 3, it is appropriate to perform an assessment of the impact of both of the capsules on material properties following completion of the Braidwood Unit 2 capsule W testing. Since this re-evaluation will impact the manner in which materials data are utilized, it constitutes a change in Pressure and Temperature Limits Report (PTLR) methodology. For this reason, revised Braidwood, Units 1 and 2, PTLRs will also be submitted to the NRC as part of this integrated assessment.

In Reference 1, ComEd committed to re-evaluate all applicable previous surveillance capsules and vessel fluence estimates utilizing ENDF/B-VI neutron cross-section libraries in accordance with WCAP-14040-NP-A, "Methodology Used To Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves", dated January 1996, at the next scheduled capsule withdrawal for each Braidwood Station unit. This has been accomplished for Braidwood Unit 1 and is documented in the Attachment.

Further, in Reference 1, ComEd committed to re-evaluate all values of Adjusted Reference Temperature (ART) resulting from the new fluence values, along with an evaluation of their impact on pressure-temperature limits. The following assessment fulfills that commitment for Braidwood Station Unit 1.

The reactor vessel calculated peak surface fluence at 16 Effective Full Power Years (EFPY), as determined in the Attachment, is 1.00E+19 neutrons/cm2 (E>1.0 MeV). This fluence is lower than the 1.120E+19 value used previously for the calculation of the 16 EFPY pressure-temperature limits currently found in the Braidwood Station Unit 1 PTLR. Using the ART calculation methodology of Regulatory Guide 1.99 , "Radiation Embrittlement of Reactor Vessel Material," Revision 2, the new lower fluence values would result in lower fluence factors, lower predicted shifts, lower margin terms, and, ultimately, lower ART values. For this reason, the ART values used in the calculation of the pressure-temperature limits for Braidwood Unit 1 are conservative based on a re-evaluation of fluences utilizing ENDF/B-VI neutron cross-section libraries.

Based on Reference 2, the Braidwood, Units 1 and 2, integrated assessment submittal will also include:

1) A re-evaluation of the appropriate method for determining the best-estimate chemical composition as additional chemical composition data become available;

2) An assessment of the impact of the assumption that the vessel beltline welds have the same initial Nil Ductility Reference Temperature value as

3) A re-evaluation of the method for assessing the credibility of the surveillance data, including the method for accounting for differences in irradiation environment and chemical composition differences.

Should you have any questions concerning this letter, please contact Mr. T. W. Simpkin at (815) 458-2801, extension 2980.

Respectfully,

Timothy J. Tulon
Site Vice President
Braidwood Station

TJT/dc/dh

Attachment: Westinghouse Report WCAP-153176, Revision 0, "Analysis of Capsule W from ComEd Braidwood Unit 1 Reactor Vessel Radiation Surveillance Program."

cc: Regional Administrator-USNRC, Region III
NRC Senior Resident Inspector-Braidwood Station

bcc: NRC Project Manager, NRR Braidwood and Byron Stations
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ATTACHMENT

Westinghouse Report WCAP-15316, Revision 0, "Analysis of Capsule W from ComEd Braidwood Unit 1 Reactor Vessel Radiation Surveillance Program."