



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 3, 2021

Mr. John J. Grabnar
Site Vice President
Energy Harbor Nuclear Corp.
Beaver Valley Power Station
Mail Stop P-BV-SSB
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT 2 – CORRECTION OF ERROR IN
REVIEW OF PRESSURE VESSEL CAPSULE Y ANALYSIS REPORT
(EPID L-2020-LLL-0023)

Dear Mr. Grabnar:

By letter dated May 17, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21131A024), the U.S. Nuclear Regulatory Commission (NRC) issued a review of the Pressure Vessel Capsule Y Analysis Report for the Beaver Valley Power Station (Beaver Valley), Unit No. 2, in response to Energy Harbor Nuclear Corp.'s letter dated October 28, 2020 (ADAMS Accession No. ML20302A376.)

The NRC staff reviewed the technical summary of the results of the mechanical property tests conducted on the fifth capsule withdrawn from the Beaver Valley, Unit No. 2 reactor vessel (RV). The report was provided in accordance with Title 10 of the *Code of Federal Regulations* Part 50 Appendix H, Section IV.

Subsequent to issuance of the technical report, the NRC was notified by Energy Harbor Nuclear Corp. that the statement "Furthermore, the licensee had installed ex-vessel dosimetry for future measurement of RV neutron fluence," in Section 3.2 on page 3 was not correct.

Enclosed is a revised page 3 of the report with the incorrect sentence removed. The revised page contains a marginal line indicating the areas of change.

If you have any questions relative to this matter, please contact me at 301-415-8004 or by e-mail to Sujata.Goetz@nrc.gov.

Sincerely,

Sujata Goetz, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosure:
Corrected page 3 of the Review of the
Reactor Pressure Vessel Capsule Y
Analysis Report

cc: Listserv

ENCLOSURE

**CORRECTED PAGE 3 OF REVIEW OF THE
PRESSURE VESSEL CAPSULE Y
ANALYSIS REPORT**

by RG 1.190. Because the M/C agreement shown by the dosimetry analysis is both consistent with the estimated uncertainty of the methodology and the agreement is consistent with RG 1.190 recommendations, the NRC staff determined that the evaluation results are acceptable.

The NRC staff's safety evaluation for WCAP-18124-NP-A contains two limitations and conditions, which the licensee discussed in Chapter 6 of WCAP-18558-NP. The first limitation and condition relates to the qualification of RAPTOR-M3G to perform fluence estimates in the extended beltline region, which is the region of the reactor vessel located axially distant (i.e., above or below) from the active fuel in the core. Because Capsule Y is axially collocated with the active fuel, the licensee stated that the limitation does not apply. The second limitation and condition relates to the use of the FERRET least squares variance reduction methodology to adjust the estimated fluence values. The licensee stated that the comparison provided in WCAP-18558-NP used unadjusted fluence values, such that the second limitation and condition is also not applicable. Since the licensee explained why neither condition and limitation was applicable, the NRC staff determined that the licensee acceptably addressed both conditions and limitations.

Based on the considerations discussed above: (1) the licensee used an NRC-approved fluence methodology that is adherent to RG 1.190 guidance; (2) plant-specific assumptions used in the fluence analysis are similarly adherent to RG 1.190; (3) the licensee demonstrated acceptable agreement between measured and calculated activity rates for the dosimetry materials; and (4) the licensee dispositioned the limitations and conditions on WCAP-18124-NP-A acceptably; therefore, the NRC staff determined that the fluence analysis supporting Capsule Y was acceptable. Based on the consistency with RG 1.190 recommendations, the NRC staff determined that the calculations are consistent with the NRC requirements contained in GDCs 14, 30, and 31.

3.2 Review of 10 CFR 50, Appendix H Reporting Requirements

Paragraph IV.A of Appendix H to 10 CFR Part 50 specifies that a summary technical report for each capsule withdrawal and the associated test results must be submitted within 1 year of the date of capsule withdrawal, unless an extension is granted by the Director, Office of Nuclear Reactor Regulation. The NRC staff finds that the licensee's submittal of WCAP-18558-NP, Revision 0, has fulfilled the reporting requirements of Paragraph IV.A of 10 CFR Part 50, Appendix H.

Paragraph IV.B of Appendix H to 10 CFR Part 50 specifies that the report must include the data required by ASTM E 185, as specified in paragraph III.B.1 of this appendix, and the results of all fracture toughness tests conducted on the beltline materials in the irradiated and unirradiated conditions. The base metal in the Beaver Valley, Unit 2, RV material surveillance program is Intermediate Shell Plate (Heat# B9004-2). The Beaver Valley, Unit 2 surveillance plate data (Heat# B9004-2) is deemed to be non-credible, whereas the surveillance weld (Heat# 83642) data is deemed to be credible. This credibility evaluation can be found in Appendix D. Based on its review of ASTM E 185-82 and the licensee's report, the NRC staff confirmed that the report includes all of the data and test results that are required by Paragraph IV.B of 10 CFR Part 50, Appendix H and ASTM E 185-82. The staff noted that Capsule Y had received fluence representative of 60 years of licensee.

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(EPID L-2020-LLL-0023) DATED: JUNE 3, 2021

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