

CATEGORY 1

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 HARRISH, J.V. Washington Public Power Supply System
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SUBJECT: Forwards "WNP-2 RPV Surveillance Matls Testing & Analysis,"
 rept, IAW 10CFR50, App H. Util evaluated surveillance matl test
 results to determine whether analyses in NEDO-32205 are
 applicable to WNP-2 reactor vessel matl.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • Richland, Washington 99352-0968

April 24, 1997
GO2-97-077

Docket No. 50-397

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

Gentlemen:

Subject: WNP-2, OPERATING LICENSE NPF-21 SUBMITTAL OF "WNP-2 RPV SURVEILLANCE MATERIALS TESTING AND ANALYSIS" REPORT

Reference: Letter GI2-95-220, dated September 15, 1995 NRC to JV Parrish (SS), "Applicability of General Electric Topical Report, NEDO-32205, Revision 1, To The Washington Public Power Supply System (WPPSS) Nuclear Project No. 2 (WNP-2) (TAC No. M90064)"

In accordance with the Code of Federal Regulations, Title 10, Appendix H to Part 50, the Supply System hereby submits the "WNP-2 RPV Surveillance Materials Testing and Analysis" report. In addition to the report, the Reference requested the Supply System to evaluate the surveillance material test results to determine whether the analyses in NEDO-32205 are applicable to the WNP-2 reactor vessel material. The results of this assessment are included with the submittal of the surveillance test report. The required submittals are discussed below.

Appendix H Report

The attached report, "Washington Public Power Supply System WNP-2 Surveillance Materials Testing and Analysis," (Attachment 1) contains the results of the surveillance capsule testing that was performed in accordance with 10 CFR Part 50, Appendix H. The surveillance capsule was withdrawn from the reactor vessel during the Spring 1996 outage. The capsule was sent to General Electric for testing and analysis. The results of this work are contained in the report.

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SUBMITTAL OF "WNP-2 RPV SURVEILLANCE MATERIALS TESTING AND ANALYSIS" REPORT

The following discussion summarize the results of the analyses. The 30 ft-lb shifts and changes in upper shelf energy (USE) are well within the values predicted by Regulatory Guide 1.99, Rev. 2. From the surveillance test results it is clear that after 11 cycles of operation, the 30 ft-lb shifts and the USE of the base plate and the weld show little change after accumulating a peak irradiation fluence ($E > 1 \text{ MeV}$) of $1.55 \times 10^{17} \text{ n/cm}^2$ at 7.2 effective full power years (EFPY) (normalize full power of 3323 Mwt, the reactor was at uprated power level of 3486 Mwt for Cycle 11 from June 9, 1995 to March 2, 1996).

The adjusted reference temperature (ART) values for the reactor vessel beltline materials are expected to remain within the temperature and USE limits of 10 CFR 50 Appendix G (< 200 degrees Fahrenheit and $> 50 \text{ ft-lb.}$, respectively) for at least 32 EFPY of reactor operation.

The current pressure temperature limit curves still bound the results of the General Electric report. The limiting beltline plate material ART based on the General Electric analysis is 83.8 degrees Fahrenheit for 32 EFPY. WNP-2's current pressure temperature limit curves for 32 EFPY use an ART of 99.9 degrees Fahrenheit. Even though our current curves are still bounding, the Supply System will submit to the NRC within two years of this letter new pressure temperature limit curves for WNP-2 utilizing the results of the surveillance materials testing and analysis report.

NEDO-32205, Revision 1 Applicability to WNP-2

The Reference requested the Supply System to assess the applicability of NEDO-32205, Revision 1. The NEDO is still applicable to WNP-2 since the surveillance material specimens are not machined from the limiting plate heat of material. The heat of material used in the surveillance program demonstrated an increase in USE during the testing as documented in Attachment 1. However, no credit was taken for these results when evaluating the limiting plate material or weld material to the guidelines of Regulatory Guide 1.99, Rev. 2. The results of the assessment to NEDO-32205, Rev. 1, show that the limiting plate material and weld material are still bounded by the equivalent margin analysis as developed in the NEDO document. The USE for the reactor vessel beltline materials are expected to remain within limits of 10 CFR 50 Appendix G for at least 32 EFPY of reactor operation. The results of these assessments are documented on the Plant Applicability Verification Form (Attachments 2 and 3).



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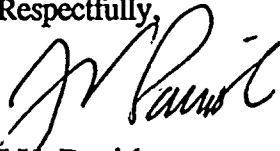


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SUBMITTAL OF "WNP-2 RPV SURVEILLANCE MATERIALS TESTING AND ANALYSIS" REPORT

The attached documents complete the requirements identified in 10 CFR 50, Appendix H and WNP-2's assessment of NEDO-32205, Rev. 1 and its applicability.

Respectfully,



J.V. Parrish
Chief Executive Officer
Mail Drop 1023

Attachments

cc: EW Merschoff - NRC RIV
KE Perkins, Jr. - NRC RIV, WCFO
TG Colburn, NRR

NRC Sr. Resident Inspector - 927N
DL Williams - BPA/399
PD Robinson - Winston & Strawn

SUBMITTAL OF "WNP-2 RPV SURVEILLANCE
MATERIALS TESTING AND ANALYSIS" REPORTEQUIVALENT MARGIN ANALYSIS
PLANT APPLICABILITY VERIFICATION FORM
FOR WNP-2BWR/3-6 PLATESurveillance Plate USE:%Cu = .11%Capsule Fluence = 1.55×10^{17} n/cm²Measured %-Decrease = increased 3% (Charpy Curves)R.G. 1.99 Predicted % Decrease = 8% (R.G. 1.99, Figure 2)Limiting Beltline Plate USE:%Cu = .15%32 EFY Fluence = 3.86×10^{17} n/cm²R.G. 1.99 Predicted % Decrease = 11% (R.G. 1.99, Figure 2)Adjusted % Decrease = NA (R.G. 1.99, Position 2.2)

$11\% \leq 21\%$, so vessel plates are bounded by equivalent margin analysis
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EQUIVALENT MARGIN ANALYSIS
PLANT APPLICABILITY VERIFICATION FORM
FOR WNP-2

BWR/2-6 WELD

Surveillance Weld USE:

%Cu = .03%

Capsule Fluence = 1.55×10^{17} n/cm²

Measured % Decrease = increased 12% (Charpy Curves)

R.G. 1.99 Predicted % Decrease = 6% (R.G. 1.99, Figure 2)

Limiting Beltline Weld USE:

%Cu = .10

32 EFPY Fluence = 5.14×10^{17} n/cm²

R.G. 1.99 Predicted % Decrease = 12% (R.G. 1.99, Figure 2)

Adjusted % Decrease = NA (R.G. 1.99, Position 2.2)

$12\% \leq 34\%$, so vessel welds are
bounded by equivalent margin analysis

