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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Subject: River Bend Station - Unit I
Docket No. 50-458
License No. NPF-47
Extension Request for Submittal of Summary Technical Report Regarding Reactor Vessel Material Surveillance Program Capsule Test Results

References:
1. Letter, J. Strosnider (USNRC) to C. Terry (Niagara Mohawk), "BWR Integrated Surveillance Program (BWRVIP-75), May 16, 2000.
2. Entergy Operations, Inc. (EOI) Letter to NRC Committing to Use the 32 Effective Full Power Years (EFPY) Pressure-Temperature (PT) Curves Contained in Our Power Uprate Submittal, RBG-45343, dated May 8, 2000

File Nos.: G9.5, G9.25.1
RBF1-00-0155
RBG-45496

Gentlemen:

In accordance with Section IV (A.) of Appendix H to Part 50 of Title 10 of the Code of Federal Regulations (10CFR50, Appendix H), River Bend Station (RBS) hereby requests an extension to the requirement to submit a summary technical report of reactor vessel surveillance specimen capsule testing results within one year of capsule withdrawal.

On March 14, 2000, representatives of the Boiling Water Reactor Vessel and Internals Project (BWRVIP) met with the NRC staff to discuss the proposed BWR reactor pressure vessel Integrated Surveillance Program (ISP). During discussions, it became apparent that it may be appropriate for BWR licensees to seek deferral of their currently scheduled surveillance capsule withdrawal and/or deferral of the testing of previously withdrawn capsules. The staff indicated that even though their review of the ISP is incomplete, they support the concept of the deferral for support of the ISP for a period not to exceed one operating cycle.

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As a result of the meeting and to facilitate the development of deferral requests, the NRC issued guidance to the BWRVIP providing three points that each licensee's request should address (Reference 1). Using the guidance provided by the NRC and with information provided below to address the NRC technical issues, RBS requests an extension for reporting the results of testing required by 10 CFR 50, Appendix H. By applying the one cycle criteria to the test reporting schedule, we propose that the reporting time period be extended until September 2002 (18 months from the current report due date of March 2001).

NRC Guidance 1):

> Explain how this deferral is consistent with the ISP plan submitted by the BWRVIP on December 28, 1999 (BWRVIP-78). It is the staff's understanding that the proposed ISP was not designed to be an "optimized" program regarding the removal schedule of the capsules that support the ISP. Likewise, additional capsules not originally scheduled to be included in the ISP may be incorporated into later ISP designs. The licensee should address how the deferral of the removal or testing their next capsule for one cycle is either (1) an express outcome of the ISP as submitted or (2) not prohibited by the current ISP proposal (i.e., that testing of the capsule at this time is not critical to achieving data which is of particular value to the ISP).

RBS Response:

> BWRVIP-78, as submitted to the NRC in December 1999, identifies RBS surveillance weld 5P6756 as a representative weld material for the RBS vessel as well as a number of other BWR vessels in the Integrated Surveillance Program (ISP). Under the ISP, the RBS surveillance plate was also selected to represent both the RBS and Clinton beltline plate materials. However, for both RBS and Clinton, the weld materials are the limiting beltline materials.
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> The first capsule for RBS was removed during refuel outage RF-9 in March 2000 at approximately 10 EFPY. To meet the existing schedule for reporting the test results before March 2001 would require testing of the RBS material before the BWRVIP ISP is approved by the NRC and before the testing program and contracts are initiated for implementation of the ISP. A one-cycle deferral will not affect the physical changes to the surveillance material's mechanical properties and does not affect any planned use of the data (the effect on dosimetry is discussed in the response to No. 3 below). However, deferring the testing until it can be part of the ISP project will ensure consistent test data between all the ISP capsules being tested.

Additionally, the overall limiting material for the RBS (weld heat 5P6756) is also contained in Oyster Creek SSP capsule H. The target fluence of the Oyster Creek SSP capsule is estimated to be 0.1 x 1019 n/cm^2, which is similar to the fluence projected for the RBS capsule (0.13 x 1019 n/cm^2). Testing of the SSP capsule specimens, which includes weld heat 5P6756, will be completed in 2000. Use of this data is limited because it has not yet been shown that the Oyster Creek SSP data has plant-specific application to RBS in accordance with 10 CFR 50, Appendix H, Section III.C. As such, the Oyster Creek SSP capsule is not directly incorporated into the RBS licensing basis (i.e., a small-scale integrated surveillance program does not exist for RBS to use this data). These conditions are to be expressly addressed, as appropriate, in the overall BWRVIP fleet-wide ISP. However, Entergy concludes at this time, that the Oyster Creek SSP data can be judged to be sufficient for monitoring the general irradiation behavior of weld wire heat 5P6756 materials over the period of the requested deferral. This information along with information provided below sufficiently demonstrates continued safe operation of the RBS RPV during the requested deferral.

The BWRVIP's initial effort was to use the existing surveillance schedules where possible to minimize the number of license changes required to support the ISP matrix. As such, efforts to optimize the selection of capsules to be tested have not yet been pursued. However, in preparing this request, it has become evident that due to the relatively small shifts (See the response in No. 2 below) expected to occur in the River Bend capsule, the ISP test matrix may need adjusting. The importance of the River Bend capsules to the overall ISP test matrix is recognized, and actions may be needed to possibly reinsert the capsule for additional exposure (if reinserting the capsule becomes a recommendation of the BWRVIP, it will be addressed separate from this request for extension). Testing of the first River Bend capsule at this early date would preclude the ability to make modifications to the ISP program to optimize the data to be obtained from the RBS surveillance materials. Therefore, there is no negative impact to the ISP by deferring tests of the first River Bend surveillance capsule for a time equivalent to one operating cycle.

NRC Guidance 2):

Explain how the acquisition of materials property data in accordance with the facility's plant-specific Appendix H program is not necessary at this time to ensure that the integrity for the facility's reactor pressure vessel (RPV) will be maintained through the period of deferral. Examples of rationales which the staff would find acceptable include: (1) the materials in the facility's surveillance program lack unirradiated baseline data so that no meaningful estimation of material property shift

can be made; (2) the next capsule represents the first capsule to be withdrawn by the plant so that an insufficient number of data points (< 2) will be available to use the data within the Regulatory Guide 1.99, Rev. 2, "Radiation Embrittlement of Reactor Vessel Materials," Position 2 methodology for plant-specific modifications to the embrittlement correlation and the ability to monitor RPV embrittlement will not be significantly affected by a one cycle deferral; (3) the data from the capsule would not be expected to provide Charpy shift values large enough (i.e., > 56°F for welds, or > 34°F for plates and forgings) to be distinguished from the scatter in the Charpy test method.

RBS Response:

The capsule removed from the RBS reactor vessel is the first of the scheduled withdrawals. The information obtained from testing of the specimens will not provide any specific benefit until the second capsule is removed and tested to provide 2 data points. Additionally, the overall limiting material (weld material 5P6756) is contained in three Supplemental Surveillance Program (SSP) capsules of which capsule "H" from the Oyster Creek facility has already been removed and is in the process of being tested. Testing of the SSP material is representative of the RBS overall limiting material and in the event unanticipated abnormalities exist, they would be evident in the SSP test results.

The capsule removed has accumulated fluence associated with approximately 10 effective full power years (EFPY) of service. Based on the projected fluence at the capsule location and the material chemistry recorded for the RBS materials, it is predicted (based on Regulatory Guide 1.99, Rev. 2) that the shift in Charpy values will be approximately 59°F for the weld material specimens and 28°F for the base material specimens. However, if the RBS weld material specimens more closely reflect the chemistry values recorded for the same heat of material contained in the SSP program, the shift could be as low as 33°F. At best, the coupons removed from RBS during RF9 will provide data that would be marginally distinguishable from the scatter in the Charpy test method. Additionally, as discussed in the response to No. 3 below, before the deferral period begins, RBS will be using P-T limit curves based on 32 EFPY rather than a lesser EFPY reflecting current conditions. This added conservatism provides additional assurances that the RBS RPV is operated within adequate safety limits to ensure its integrity during the deferral period.

NRC Guidance 3):

Explain how deferral of the acquisition of dosimetry data from the capsule to be tested does not affect the validity of the facility's RPV integrity assessments through the period of the deferral. This is a particularly important point for facilities which intend to defer the withdrawal or testing of their first surveillance capsule. Any potential non-conservatisms in the licensee's current methodology when compared to the methodology that would be expressly acceptable to the staff, i.e., a methodology which complies with Draft Regulatory Guide (DG) 1053 (formerly DG-1025, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence"), should be evaluated, quantitatively or qualitatively. In particular, the licensee should state why their facility's currently approved P-T limit curves will be adequate over the period of deferral without the assessment of the capsule's dosimeter wire data and the associated recalculation of RPV fluences. Compensatory actions, for example, utilizing 32 EFPY P-T limit curve when the actual RPV usage is much less, may also be considered as a basis for not needing to recalculate RPV fluence for the period of deferment.

RBS Response:

Under separate cover, RBS requested NRC review and approval of a proposed power uprate. As part of the power uprate request, an additional submittal (Reference 2, dated May 8, 2000) committed RBS to using the 32 EFPY P-T curve contained in our power uprate submittal. The commitment states that we will continue to use the 32 EFPY P-T curve until we have submitted test results for the first RBS surveillance capsule specimen and received NRC approval of revised P-T limit curves. The 32 EFPY P-T curve is based on the increased flux associated with the power uprate that is scheduled to commence before the end of 2000.

The present schedule for reporting the test results of the currently removed capsule is March 2001. The restrictive (32 EFPY) P-T limit curve will be in use before the requested extension becomes effective and under separate commitment cannot be reduced to a P-T limit curve based on a lesser EFPY until the conditions described above have been satisfied. Therefore, because of the extreme conservatism that is assured by using a P-T limit curve based on 32 EFPY rather than a limit curve representing an actual EFPY, the integrity of the RPV remains compliant with existing assessments and requirements for the duration of the extension.

The removed capsule also contains dosimetry that is necessary for confirming actual fluence of the capsule. To coordinate testing with the ISP, actual testing of the

capsule and its dosimetry could be delayed within the limits of the extension. Delays of evaluating the dosimetry within these limits will not jeopardize the evaluation accuracy.

The RBS capsule contains both iron and copper dosimetry wires with a half-life of approximately 1 year and 5.3 years, respectively. General Electric has indicated that dosimetry typical of the RBS dosimetry can be accurately evaluated (within 0.5 to 1.0 percent) any time within 4 to 5 half-lifes of its removal. Therefore, with the iron wire being the shorter half-life, if testing is completed within 4 to 5 years after removal from the reactor, there is no expected reduction in the accuracy of the dosimetry evaluation. To facilitate reporting of the test results by the end of the requested extension period, testing of the capsule will have to begin no later than early to mid-year 2002. Therefore, the maximum time that could elapse between the capsule's removal and before the dosimetry is evaluated is approximately 2 years. This is well within the limits to assure an evaluation accuracy of 0.5 to 1.0 percent.

If you have any questions regarding this request or require additional information, please contact Mr. Bill Fountain at (225) 381-4625.

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