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JAFP-16-0172
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U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Subject: Response to Request for Additional Information – Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1), Implementation of BWRVIP-05 at James A. FitzPatrick Nuclear Power Plant

James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
License No. DPR-59

Reference:
1) ENOI letter, Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1), Implementation of BWRVIP-05 at James A. FitzPatrick Nuclear Power Plant, JAFP-16-0137, dated September 8, 2016
2) NRC letter, James A. FitzPatrick Nuclear Power Plant – Request for Additional Information (RAI) Re: Relief Request for Proposed Alternative for the Implementation of BWRVIP-05 (CAC No. MF8361), ML16280A573, dated October 18, 2016

Dear Sir or Madam:

On September 8, 2016, Entergy Nuclear Operations, Inc. (ENOI) submitted an application for a proposed relief request for James A. FitzPatrick Nuclear Power Plant (JAF) [Reference 1]. The proposed relief request would provide an alternative to American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, 2001 Edition through the 2003 Addenda, Table IWB-2500-1, Examination Category B-A, Item No. B1, 11, which requires volumetric examination of the reactor vessel circumferential shell welds each inservice inspection interval. The NRC reviewed the submittal and determined that additional information was required to process the proposed alternative [Reference 2].

The JAF response to this request is provided in the Attachment. Information supporting the response is provided in the Enclosure.

There are no new regulatory commitments made in this letter. Should you have any questions, please contact the Regulatory Assurance Manager, Mr. William C. Drews, at (315) 349-6562.

Very truly yours,

William C. Drews
Regulatory Assurance Manager

WCD/mh
cc next page

Attachment: Response to Request for Additional Information
Enclosure: Engineering Change 36037

cc: USNRC, Region I Administrator
USNRC, Project Manager
USNRC, Resident Inspector

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Attachment

Response to Request for Additional Information
(2 pages)

Response to Request for Additional Information

Question

Basis for Request

Section 2.V "Capsule withdrawal schedule" of Renewed License No. DPR-59 for JAFNPP states:

> "All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of the most recent NRC-approved version of the Boiling Water Reactor Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP) appropriate for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the NRC prior to implementation. All capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the NRC, as required by 10 CFR Part 50, Appendix H."

Section 16.10.1.26 "Reactor Vessel Surveillance Program" of the Updated Final Safety Analysis Report for JAFNPP indicates that the applicable ISP is BWRVIP-116 "BWR Vessel and Internals Project Integrated Surveillance Program (ISP) Implementation for License Renewal," which received the NRC staff's safety evaluation on March 1, 2006 (ADAMS Accession No. ML060800240). Table 3-3 "ISP and ISP(E) Test Matrix Results" of BWRVIP-116 for JAFNPP indicates that the remaining capsule is not to be tested (standby capsules). Changes to the capsule withdrawal schedule in Table 3-3 of BWRVIP-116 for the JAFNPP could affect neutron fluence values, and therefore, the RT_{NDT} values in Table 1 of RR-19, which could thus invalidate the technical basis for the proposed alternative.

Request

Please confirm that to date, there has been no changes to the capsule withdrawal schedule contained in Table 3-3 of BWRVIP-116 or any surveillance test results since the license renewal application for the JAFNPP that could invalidate the technical basis for the proposed alternative.

Response

There have been no changes to the capsule withdrawal schedule since the James A. FitzPatrick Nuclear Power Plant (JAF) license renewal application in 2006. BWRVIP-86, Revision 1-A merged BWRVIP-86-A and BWRVIP-116 into a single, updated implementation plan for the ISP. UFSAR section 16.10.1.26 was updated to reflect this change to the BWRVIP. Table 3-3 in BWRVIP-116 corresponds to Table 4-8 in BWRVIP-86 Revision 1-A.

Capsule surveillance tests, since the JAF license renewal application, include an ISP Representative Surveillance Plate Material from LaSalle Unit 1 in 2010 (Reference 1, page 4-19 and page 4-23). JAF was notified by Electric Power Research Institute (EPRI) Letter 2012-029 (Reference 2) and the test results were evaluated via Engineering Change 36037 (Enclosure). In addition, these test results were incorporated into BWRVIP-135, Integrated Surveillance Program (ISP) Data Source Book and Plant Evaluations, Revision 3, (Reference 3, page 2-26), by updating the Representative Surveillance Materials section for FitzPatrick. The evaluation of the LaSalle coupon surveillance results on JAF concluded that there is no change to the JAF properties or P-T curves.

In conclusion, surveillance test results since the license renewal period have been evaluated for JAF. These results do not invalidate the technical basis of the proposed alternative.

Response to Request for Additional Information

References:

1. EPRI report, Updated BWR Integrated Surveillance Program (ISP) Implementation Plan, BWRVIP-86 Revision 1-A, dated October 2012
2. EPRI letter, Evaluation of the LaSalle Unit 1 120° Surveillance Capsule Data for Application to FitzPatrick and Pilgrim Stations, 2012-029, dated January 13, 2012
3. EPRI report, Integrated Surveillance Program (ISP) Data Source Book and Plant Evaluations, BWRVIP-135 Revision 3, dated December 2014

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Enclosure

Engineering Change 36037
(5 pages)

Table of Contents

1.0 Description

1.1. Description of Problem –

This EC documents new input data and its disposition for the pressure-temperature (P-T) limit curves in the PTLR, Appendix F in the Technical Requirements Manual. The new input data comes from the BWRVIP as a result of a reactor vessel surveillance capsule analysis of material identified in the Integrated Surveillance Program.

P-T curves represent minimum required temperature for reactor vessel operation to prevent brittle fracture of this important pressure boundary.

JAF is committed to the Integrated Surveillance Program (ISP) per Tech Spec amendment 285 as described in FSAR section 4.2.7. NRC approved this program as a generic approach to 10CFR50 Appendix H compliance via an SER that is given in BWRVIP-86 Revision 1 (the SER for this document has not been incorporated into the document, so it is separately referenced as 2.3.6). Per the ISP, limiting fracture toughness material (weld and plate) in each BWR reactor vessel is matched to representative material in surveillance capsules in certain target plants. When the capsules are removed and analyzed from the target plants, each plant for which that material, whether weld or plate, is representative must review the results per instructions in BWRVIP-135 R2 Section 3.

Those instructions are:

- review of BWRVIP ISP capsule test reports from capsules containing its representative materials,
- review of BWRVIP-135 latest revision (its own plant summary and the material appendices applicable to the plant's representative surveillance materials),
- determination of the effects on plant operations parameters (e.g., P-T limits, cold hydro test temperatures), and
- submission of the results of those determinations to the NRC when required. This requirement is to comply with 10CFR50 Appendix H that requires the capsule report to include a determination of whether or not a change in Technical Specifications is required as a result of the surveillance data and the expected date that the revised Technical Specifications will be submitted. Because ISP capsule reports will typically represent more than one plant, each plant must address this requirement separately, directly to the NRC.

The objective of this EC is to comply with the FSAR 4.2.7 requirement as detailed in Section 3 of BWRVIP-135.

1.2. Description of Change

This section will be divided into four bullets representing the separate instructions given in section 1.1 above:

- Review of BWRVIP ISP capsule test report – see reference 2.3.3 for the report of the LaSalle 1 120^{o} capsule report. The capsule contains specimens from their surveillance plate C6345-1, which is designated in the ISP as representative of the limiting JAF plate C3376-2 (see reference 2.3.1 page A-24).
  The JAF PTLR Table 4 lists the vessel beltline materials being controlled under 10CFR50 Appendix H. Limiting material is that with the highest Adjusted Reference Temperature (ART). JAF is actually limited by weld, not plate material, as can be seen in this Table 4.
  Reference 2.3.3 indicates that the LaSalle Unit 1 fluence was calculated using RAMA methodology, an approved RG-1.190 method (also used for JAF fluence). Flux wire activities demonstrate acceptable agreement between calculated and measured fluence, and uncertainty analysis demonstrates that there is no bias adjustment necessary. Plate chemistry was reported, in reference 2.3.3 from various sources and agrees with data published in references 2.3.1 and 2.3.2. Charpy testing of the LaSalle capsule material was performed in accordance with approved ASTM standards (E185-82 and E23-02). Results of the C6345-1 specimen test series show a greater than predicted, but less than Predicted Shift + Margin, as defined in RG-1.99R2. The measured Upper Shelf energy (USE) was actually higher than the unirradiated data (see reference 2.3.4 p A-5).

- Review of the BWRVIP-135 R2 (reference 2.3.2) JAF specific material – See page 2-26 for a brief report of Representative Surveillance Materials and Summary of Available Surveillance Data. Reference 2.3.4 documents changes to this section based on the LaSalle capsule results.
  With only 1 capsule result, the CF was previously taken from RG-1.99R2 chemistry tables as 97.2^{o}F, but with the 2nd capsule a fitted CF can be found using RG-1.99R2 methods. The Chemistry Factor (CF) for the LaSalle plate will increase as a result of the 120^{o} capsule (reference 2.3.4 Table A-7-6) , but as noted in references 2.3.2 and 2.3.4, “because the representative plate material is not the same heat number as the target plate in the FitzPatrick vessel, the utility should use the chemistry factor from the Regulatory Guide 1.99, Rev. 2 tables (Regulatory Position 1.1) to determine the projected ART value for the target vessel plate.” The ART used in the JAF PTLR for the C3376-1 plate is based on the RG-1.99R2 Regulatory Position 1.1 (applies when surveillance data is limited or not available) as noted in reference 2.3.5.

- Determination of the effects on plant operations parameters (e.g., P-T limits, cold hydro test temperatures) – The bases for vessel material properties discussed in the PTLR are unaffected by the LaSalle capsule results or any other changes to reference 2.3.2. Note that the PTLR references BWRVIP-135 R1. There were no significant changes in revision 2 of this report that would have affected the PTLR.
  Because the LaSalle C6345-1 plate is designated as representative of JAF's limiting plate in the ISP, the LaSalle capsule result represents a significant input to JAF material property input to the P-T curves, notwithstanding that there is no change to the JAF properties or P-T curves. It is recommended that the PTLR be revised to incorporate the new information in the Discussion section and in the References of the PTLR. See P2E of this EC for the proposed revision to the PTLR.

- Submission of the results of those determinations to the NRC when required – As noted above there is no change to the JAF P-T curves or material property input to the ART values, so no submission to the NRC is required as a result of changes to the P-T curves. However section 5.6.7 of the Tech Specs requires, "The PTLR shall be provided to the NRC upon Issuance for each reactor vessel fluence period and for any revision or supplement thereto." Therefore it is recommended that the PTLR be revised and submitted to NRC as governed by EN-LI-113.

2.0 Documents

2.1. Affected Document List (ADL) –

- PTLR (TRM Appendix F)

2.2. Affected Equipment List (AEL) - none

2.3. Reference Documents

2.3.1 BWRVIP-86-A through Revision 1, BWR Vessel and Internals Project, Updated BWR Integrated Surveillance Program (ISP) Implementation Plan, September 2008, EPRI Report 1016575

2.3.2 BWRVIP-135 Revision 2, BWR Vessel and Internals Project, Integrated Surveillance Program (ISP) Data Source Book and Plant Evaluations," October 2009

2.3.3 BWRVIP-250NP: BWR Vessel and Internals Project, Testing and Evaluation of the LaSalle Unit 1 120^{o} Capsule, EPRI#1022850, October 2011

2.3.4 BWRVIP Letter 2012-029, R. Carter to S. Brown of Entergy, Evaluation of the LaSalle Unit 1 120^{o} Surveillance Capsule Data for Application to FitzPatrick and Pilgrim Stations, January 13, 2012 (See note in letter. Attachments to this letter will be incorporated into Revision 3 of BWRVIP-135)

2.3.5 JAF-CALC-08-00004, Evaluation of Adjusted Reference Temperatures and Reference Temperature Shifts, see also Structural Integrity File No. FITZ-10Q-301, 2/2008

2.3.6 EPRI BWRVIP letter 2011-203, Wirtz to BWRVIP members, NRC Final Safety Evaluation of BWRVIP-86, Revision 1 (Updated BWR Integrated Surveillance Program Implementation Plan), 11/14/11

3.0 Attachments

See P2E files