



December 11, 2017

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

James A. FitzPatrick Nuclear Power Plant
Renewed Facility Operating License No. DPR-59
NRC Docket No. 50-333

Subject: Submittal of Relief Requests Associated with the Fifth Inservice Inspection (ISI) Interval

- References:
- 1) Letter from J. Barstow (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Submittal of Relief Requests Associated with the Fifth Inservice Inspection (ISI) Interval," dated August 10, 2017
 - 2) Email from B. Venkataraman (U.S. Nuclear Regulatory Commission) to T. Loomis (Exelon Generation Company, LLC), "FitzPatrick - Request for Additional Information - Relief Request 15R-02 Regarding the Use of BWRVIP Guidelines instead of ASME Code (CAC: MG0116; EPID: L-2017-LLR-0083)," dated November 29, 2017

In the Reference 1 letter, Exelon Generation Company, LLC (EGC) submitted relief requests associated with the fifth Inservice Inspection (ISI) interval for the James A. FitzPatrick Nuclear Power Plant (JAFNPP). In the Reference 2 email, the U.S. Nuclear Regulatory Commission requested additional information concerning Relief Request 15R-02 regarding the use of BWRVIP guidelines instead of ASME Code requirements. Attached is our response to this request.

There are no regulatory commitments in this letter.

If you have any questions concerning this letter, please contact Tom Loomis at (610) 765-5510.

Respectfully,

James Barstow
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Response to Request for Additional Information - Relief Request 15R-02
Regarding the Use of BWRVIP Guidelines instead of ASME Code

cc: Regional Administrator, Region I, USNRC
USNRC Senior Resident Inspector, JAFNPP
Project Manager [JAFNPP] USNRC

Attachment

**Response to Request for Additional Information - Relief Request I5R-02 Regarding the
Use of BWRVIP Guidelines instead of ASME Code**

RAI-1:

Section 3.0.3.2.7, "BWR Vessel Internal Programs" of the safety evaluation for license renewal of JAFNPP, "Safety Evaluation Report Related to the License Renewal of James A. FitzPatrick Nuclear Power Plant" (ADAMS Accession No. ML080250372) indicated that, "The staff determined that the current basis for inspecting the core plate rim hold-down bolts at JAFNPP relies solely on inspections performed in accordance with ASME Code Section XI, Table IWB-2500-1, B-N-1 requirements...The staff concluded that the current basis for examining the core plate would not be sufficient to manage either stress relaxation or cracking of the core plate rim hold-down bolts during the period of extended operation [(PEO)]." This section also states that JAFNPP committed to take the following actions:

1. Install core plate wedges prior to the PEO, or,
2. Complete a plant-specific analysis to determine acceptance criteria for continued inspection of the core plate rim hold down bolting in accordance with BWRVIP-25, "BWRVIP Core Plate Inspection and Flaw Evaluation Guidelines" and submit the inspection plan, along with the acceptance criteria and justification for the inspection plan, to the NRC two years prior to the PEO for NRC review and approval.

In light of the above, either BWRVIP-25 should be included in Table 1 as one of the applicable BWRVIP documents for Item B13.40 (Integrally Welded Core Support Structure) or provide justification provided for excluding it. Please note that BWRVIP-25 is the basis for not performing the ASME Code, Section XI, VT-3 examination on accessible surfaces of the core plate.

Response:

BWRVIP-25 has been added to Table 1. Attached is the revised relief request.

RAI-2:

Enclosure 2 to I5R-02 is the reactor internals inspection history updated for refueling outage 22 (January 2017). The NRC staff reviewed this history and found that Enclosure 2 does not include inspection history for Item B13.10, Reactor Vessel Interior. Please clarify whether the absence of inspection results for Item B13.10 in Enclosure 2 means that no relevant indications were noted for this item in all past examinations.

Response:

Inspection of B13.10 items is not required by the BWRVIP program; therefore, inspection results for B13.10 items are not included in Enclosure 2. However, a review of the examination results as documented in the Owner's Activity Reports (OAR) since 2000 for B13.10 overview examinations has not identified any code rejectable indications.

RAI-3:

The NRC staff noted that BWRVIP-139, "BWR Vessel Internals Project, Steam Dryer Inspection and Flaw Evaluation Guidelines" is not listed in Section 5 of I5R-02 as one of the guidance

BWRVIP reports. Provide justification why BWRVIP-139 is not needed for either Steam Dryer Hold-down Brackets or Steam Dryer Support Brackets listed in Table 1 under Item B13.30.

Response:

BWRVIP-139 does not contain inspection guidance for the steam dryer hold down brackets or the steam dryer support brackets. Inspection guidance for these items is contained in BWRVIP-48, which is included in this relief request.

**Request for Relief for the Use of BWRVIP Guidelines in Lieu of Specific ASME Section XI Code Requirements on Reactor Pressure Vessel Internals and Components Inspection
In Accordance with 10 CFR 50.55a(z)(1)**

1. ASME Code Component(s) Affected:

Code Class:	1
Reference:	IWB-2500, Table IWB-2500-1
Examination Category:	B-N-1 and B-N-2
Item Number:	B13.10, B13.20, B13.30, and B13.40
Description:	Use of BWRVIP Guidelines in Lieu of Specific ASME Section XI Code Requirements on Reactor Pressure Vessel Internals and Components Inspection
Component Number:	Vessel Interior, Interior Attachments within Beltline Region, Interior Attachments beyond Beltline Region, and Core Support Structure

2. Applicable Code Edition and Addenda:

The Inservice Inspection Program is based on American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, 2007 Edition through the 2008 Addenda.

3. Applicable ASME Code Requirements:

ASME Section XI, 2007 Edition with 2008 Addenda, requires the examination of components within the Reactor Pressure Vessel. These examinations are included in Table IWB-2500-1, Categories B-N-1 and B-N-2 and identified with the following Item Numbers:

B13.10 - Examine accessible areas of the reactor vessel interior each period by the VT-3 method (B-N-1)

B13.20 - Examine interior attachment welds within the beltline region each interval by the VT-1 method (B-N-2)

B13.30 - Examine the interior attachment welds beyond the beltline region each interval by the VT-3 method (B-N-2)

B13.40 - Examine surfaces of the welded core support structure each interval by the VT-3 method (B-N-2)

These examinations are performed to assess the structural integrity of the reactor vessel interior, its welded attachments, and the welded core support structure within the boiling water reactor pressure vessel.

The components/welds listed in Table 1 are subject to this request for alternative. Table 1 provides only an overview of the requirements. For more details, refer to ASME Section XI, Table IWB-2500-1 and the appropriate BWRVIP document.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 2 of 48)

4. Reason for Request:

In accordance with 10 CFR 50.55a(z)(1), the James A. FitzPatrick Nuclear Power Plant (JAFNPP) is requesting NRC approval of a proposed alternative to the ASME Section XI Code requirements provided above on the basis that use of the BWRVIP guidelines discussed below provide an acceptable level of quality and safety.

The BWRVIP Inspection and Evaluation (I&E) guidelines recommend specific inspections by BWR owners to identify material degradation with BWR components. A wealth of inspection data has been gathered during these inspections across the BWR industry. The BWRVIP I&E Guidelines focus on specific and susceptible components, specify appropriate inspection methods capable of identifying known or potential degradation mechanisms, and require re-examination at appropriate intervals. The scope of the I&E Guidelines meet or exceed that of ASME Section XI and in many instances include components that are not part of the ASME Section XI jurisdiction.

Use of this proposed alternative will maintain an acceptable level of quality and safety and avoid duplicate or unnecessary inspections, while conserving radiological dose.

5. Proposed Alternative and Basis for Use:

In lieu of the requirements of ASME Section XI, the proposed alternative is detailed in Table 1 for the JAFNPP for Examination Categories of B-N-1 and B-N-2.

The JAFNPP will satisfy the Examination Category B-N-1 and B-N-2 requirements as described in Table 1 in accordance with BWRVIP guideline requirements. This relief request proposes to utilize the associated BWRVIP guidelines in lieu of the associated Code requirements including but not limited to exam method, volume, frequency, training, successive and additional examinations, flaw evaluations, and reporting.

Not all the components addressed by these guidelines are code components. The following guidelines are applicable to this Relief Request:

- BWRVIP-03, Reactor Pressure Vessel and Internals Examinations Guidelines
- BWRVIP-18, Revision 2-A, BWR Core Spray Internals Inspection and Flaw Evaluation Guidelines
- BWRVIP-25, BWR Core Plate Inspection and Flaw Evaluation Guidelines
- BWRVIP-26-A, BWR Top Guide Inspection and Flaw Evaluation Guidelines
- BWRVIP-27-A, BWR Standby Liquid Control System/Core Plate ΔP Inspection and Flaw Evaluation Guidelines
- BWRVIP-38, BWR Shroud Support Inspection and Flaw Evaluation Guidelines
- BWRVIP-41, Revision 3, BWR Jet Pump Assembly Inspection and Flaw Evaluation Guidelines (NOTE: BWRVIP-41, Revision 4 will used upon NRC approval)
- BWRVIP-47-A, BWR Lower Plenum Inspection and Flaw Evaluation Guidelines
- BWRVIP-48-A, Vessel ID Attachment Weld Inspection and Flaw Evaluation Guidelines
- BWRVIP-76, Revision 1-A, BWR Core Shroud Inspection and Flaw Evaluation Guidelines
- BWRVIP-94, Revision 2, BWR Vessel and Internals Project Program Implementation Guide

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 3 of 48)

- BWRVIP-138, Revision 1-A, Updated Jet Pump Beam Inspection and Flaw Evaluation Guidelines
- BWRVIP-180, Access Hole Cover Inspection and Flaw Evaluation Guidelines
- BWRVIP-183, Top Guide Grid Beam Inspection and Flaw Evaluation Guidelines

Inspection services, by an Authorized Inspection Agency, will be applied to the proposed alternative actions of this relief request.

BWRs now examine reactor internals in accordance with BWRVIP guidelines. These guidelines are written for the safety significant vessel internal components and provide appropriate examination and evaluation criteria with using appropriate methods and reexamination frequencies. The BWRVIP has established a reporting protocol for examination results and deviations. The NRC has agreed with the BWRVIP approach in principle and has issued Safety Evaluations for many of these guidelines (Reference 1 – 10). Therefore, use of these guidelines, as an alternative to the subject ASME Section XI Code requirements, provides an acceptable level of quality and safety and will not adversely impact the health and safety of the public.

As additional justification, Enclosure 1 ("Comparison of Code Examination Requirements to BWRVIP Examination Requirements") provides specific examples that compare the inspection requirements of ASME Code Item Numbers B13.10, B13.20, B13.30, and B13.40 in Table IWB-2500-1, to the inspection requirements in the BWRVIP documents. Specific BWRVIP documents are provided as examples. This comparison also includes a discussion of the inspection methods. These comparisons demonstrate that use of these guidelines, as an alternative to the subject Code requirements, provide an acceptable level of quality and safety and will not adversely impact the health and safety of the public.

Enclosure 2 provides the most recent BWRVIP inspections at the JAFNPP through the 2017 outage.

When a BWRVIP Guideline refers to ASME Section XI, the technical requirements of ASME Section XI as described by the BWRVIP Guideline will be met, but the examination is under the auspices of the BWRVIP program as defined by BWRVIP-94, "BWR Vessel and Internals Project Program Implementation Guide." The JAFNPP reactor vessel internals inspection program has been developed and implemented to satisfy the requirements of BWRVIP-94. It is recognized that the BWRVIP executive committee periodically revises the BWRVIP guidelines to address industry operating experience, include enhancements to inspection techniques, and add or adjust flaw evaluation methodologies. BWRVIP-94, Revision 2 states that where guidance in existing BWRVIP documents has been supplemented or revised by subsequent correspondence approved by the BWRVIP Executive Committee, the vessel and internals program shall be modified to reflect the new requirements and implement the guidance within two refueling outages, unless a different schedule is specified by the BWRVIP.

However, if new guidance approved by the Executive Committee includes changes to NRC approved BWRVIP guidance that are less conservative than those approved by the NRC, the less conservative guidance shall be implemented only after NRC approves the changes, which generally means publication of a "-A" document or equivalent. Where the revised version of a BWRVIP inspection guideline continues to also meet the requirements of the version of the BWRVIP inspection guideline that forms the safety basis for the NRC-authorized proposed alternative to the requirements of 10 CFR50.55a, it may be implemented. Otherwise, the revised guidelines will only be implemented

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 4 of 48)

after NRC approval of the revised BWRVIP guidelines or a plant-specific request for alternative has been approved. Table 1 below only represents the most current comparison.

Any deviations from the referenced BWRVIP Guidelines for the duration of the proposed alternative will be appropriately documented and communicated to the NRC, per the BWRVIP Deviation Disposition Process. JAFNPP currently has no open deviation dispositions.

Note that other regulatory commitments (e.g., NUREG-0619) are still implemented separately from the ASME Section XI Program or this request for alternative.

In the event that conditions are identified that require repair or replacement and the component is within the jurisdiction of ASME Section XI (welded attachments to the RPV or Core Support Structure), the repair or replacement activities will be performed in accordance with ASME Section XI, Article IWA-4000. Subsequent examinations will be in accordance with the applicable BWRVIP Guideline.

Pursuant to 10 CFR 50.55a(z)(1), JAFNPP requests authorization to utilize the alternative requirements of BWRVIP Guidelines in lieu of the requirements of ASME Section XI. The proposed alternative is detailed in Table 1 for Examination Category B-N-1 and B-N-2.

As part of the BWRVIP initiative, the BWR reactor internals and attachments were subjected to a safety assessment to identify those components that provide a safety function and to determine if long-term actions were necessary to ensure continued safe operation. The safety functions considered are those associated with (1) maintaining a coolable geometry, (2) maintaining control rod insertion times, (3) maintaining reactivity control, (4) assuring core cooling and (5) assuring instrumentation availability. The results of the safety assessment are documented in BWRVIP-06, Revision 1-A, "BWR Vessel and Internals Project Safety Assessment of BWR Internals" which has been approved by the NRC. As a result of BWRVIP-06, component specific BWRVIP guidelines were developed providing appropriate examination and evaluation requirements to address the specific component safety function and potential degradation mechanism.

In accordance with BWRVIP requirements, plant specific leakage assessments have been performed for identified or postulated through-wall cracking in the reactor vessel. JAFNPP has assumed leakage for flaws in the Core Spray 190 degree downcomer weld that was structurally replaced with a clamshell, Jet Pump diffuser (DF-3) welds, and Core Shroud welds.

Leakage through the Core Spray 190 degree downcomer crack repair is conservatively calculated to be 40 gallons per minute (gpm). The crack is assumed to be 360 degrees and through-wall thus no crack growth is needed. This leakage is within the limit of 123 gpm for Core Spray. Leakage was calculated for the Jet Pump DF-3 welds to be 98.5 gpm in the most limiting loop assuming 8 years of crack growth. This is within the allowable limit of 200 gpm per loop. For all known and postulated Core Shroud cracking the leakage is calculated to be 205 gpm. All structurally repaired circumferential welds are assumed fully cracked. This shroud leakage is a direct input to the JAFNPP SAFER/GESTR-LOCA analysis. All calculated leakage over at least one 24-month operating cycle is within these limits so there will be no increase to the Peak Cladding Temperature (PCT).

The plant-specific leakage assessments concluded that postulated leakage through the Core Shroud cracks combined with leakage in Jet Pump welds and Core Spray weld would not increase the PCT analyzed in the JAFNPP SAFER/GESTR-LOCA analysis which is below the 10 CFR 50.46(b) regulatory limit of 2200°F.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 5 of 48)

6. Duration of Proposed Alternative:

This request for alternative is requested for the fifth 10-Year ISI interval.

7. Precedents:

1. Letter from U.S. Nuclear Regulatory Commission (USNRC) to B. Hanson (Exelon Generation Company, LLC), "Nine Mile Point Nuclear Station, Units 1 and 2 - Relief Request Alternative RE: Use of Boiling Water Reactor Vessel and Internals Project Guidelines in Lieu of Specific ASME Code Requirements (CAC Nos. MF6116 and MF6117)," dated April 29, 2016.

8. References:

1. Letter from USNRC to BWRVIP, dated February 22, 2016, "Final Safety Evaluation for Electric Power Research Institute Topical Report "BWRVIP-18, Revision 2: Boiling Water Reactor Vessel and Internals Project, Boiling Water Reactor Core Spray Internals Inspection and Flaw Evaluation Guidelines" (TAC NO. MF8809)" (ML16011A190).
2. Letter USNRC to BWRVIP, dated December 19, 1999, "Safety Evaluation of BWR Vessel and Internals Project, BWR Core Plate Inspection and Flaw Evaluation Guidelines (BWRVIP-25)".
3. Letter USNRC to BWRVIP, dated August 29, 2005, "NRC Approval Letter of BWRVIP-26-A, "BWR Vessel and Internals Project Boiling Water Reactor Top Guide Inspection and Flaw Evaluation Guidelines" (ML052490550).
4. Letter USNRC to BWRVIP, dated June 10, 2004, "Proprietary Version of NRC Staff Review of BWRVIP-27-A, "BWR Standby Liquid Control System/Core Plate DP Inspection and Flaw Evaluation Guidelines".
5. Letter USNRC to BWRVIP, dated July 24, 2000, "Final Safety Evaluation of the "BWR Vessel and Internals Project, BWR Shroud Support Inspection and Flaw Evaluation Guidelines (BWRVIP-38)," EPRI Report TR-108823 (TAC NO. M99638)".
6. Letter USNRC to BWRVIP, dated February 4, 2001, "Final Safety Evaluation of the "BWR Vessel and Internals Project, BWR Jet Pump Assembly Inspection and Flaw Evaluation Guidelines (BWRVIP-41)," (TAC NO. M99870)".
7. Letter USNRC to BWRVIP, dated September 9, 2005, "NRC Approval Letter of BWRVIP-47-A, "BWR Vessel and Internals Project Boiling Water Reactor Lower Plenum Inspection and Flaw Evaluation Guidelines"".
8. Letter USNRC to BWRVIP, dated July 25, 2005, "NRC Approval Letter of BWRVIP-48-A, "BWR Vessel and Internals Project Vessel ID Attachment Weld Inspection and Flaw Evaluation Guideline"".
9. Letter USNRC to BWRVIP, dated November 12, 2014, "Final Safety Evaluations of the Boiling Water Reactor Vessel and Internals Project 76, Rev. 1 Topical Report, "Boiling Water Reactor Core Shroud Inspection and Flaw Evaluation Guidelines" (TAC NO. ME8317)".

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 6 of 48)

10. Letter from USNRC to BWRVIP, dated December 31, 2015, "Final Safety Evaluation for Electric Power Research Institute Topical Report BWRVIP-183, "BWR Vessel and Internals Project, Top Guide Grid Beam Inspection and Flaw Evaluation Guidelines" (TAC No. ME2178)".

10CFR50.55a Relief Request I5R-02
Revision 1
(Page 7 of 48)

TABLE 1
Comparison of ASME Examination Category B-N-1 and B-N-2 Requirements with BWRVIP Guidance Requirements¹

ASME Item Number Table IWB-2500-1	Component	ASME Exam Scope	ASME Exam	ASME Frequency	Applicable BWRVIP Document	BWRVIP Exam Scope	BWRVIP Exam	BWRVIP Frequency
B13.10	Reactor Vessel Interior	Accessible Areas	VT-3	Each period	BWRVIP-18-R2-A, 25, 26-A, 38, 41-R3, 47-A, 48-A, 76-R1-A, 138-R1-A	Overview examinations of components during BWRVIP examinations are performed to satisfy ASME Section XI Code VT-3 visual examination requirements.		
B13.20	Interior Attachments Within Beltline Region - Riser Braces	Accessible Welds	VT-1	Each 10-year Interval	BWRVIP-48-A, Table 3-2	Riser Brace Attachment	EVT-1	100% in first 12 years, 25% during each subsequent 6 years.
	Lower Surveillance Specimen Holder Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	VT-1	Each 10-year Interval.
B13.30	Interior Attachments Beyond Beltline - Steam Dryer Hold-down Brackets	Accessible Welds	VT-3	Each 10-year Interval	BWRVIP-48-A, Table 3-2	Bracket Attachment	VT-3	Each 10-year Interval.
	Guide Rod Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	VT-3	Each 10-year Interval.
	Steam Dryer Support Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	EVT-1	Each 10-year Interval.
	Feedwater Sparger Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	EVT-1	Each 10-year Interval.
	Core Spray Piping Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	EVT-1	Every 4 Refueling Cycles.
	Upper Surveillance Specimen Holder Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	VT-3	Each 10-year Interval.
	Shroud Support (Weld H9) and Gussets				BWRVIP-38, 3.3, Figure 3-2 and 3-5	Weld H9 ² and Gussets	EVT-1 or UT	Based on as-found conditions, to a maximum of 6 years for EVT-1, 10 years for UT.

10CFR50.55a Relief Request I5R-02
Revision 1
(Page 8 of 48)

TABLE 1 Comparison of ASME Examination Category B-N-1 and B-N-2 Requirements with BWRVIP Guidance Requirements¹								
ASME Item Number Table IWB-2500-1	Component	ASME Exam Scope	ASME Exam	ASME Frequency	Applicable BWRVIP Document	BWRVIP Exam Scope	BWRVIP Exam	BWRVIP Frequency
B13.40	Integrally Welded Core Support Structure	Accessible Surfaces	VT-3	Each 10-year Interval	BWRVIP-38, 3.3, Figure 3-2 and 3-5	Shroud Support Weld H9 Including Gussets	EVT-1 or UT	Based on as-found conditions, to a maximum of 6 years for EVT-1, 10 years for UT.
					BWRVIP-25	Core Plate Rim Hold-Down Bolts	VT-3	50% of rim hold-down bolts every other refueling outage (License Renewal Commitment)
	Shroud Vertical welds				BWRVIP-76-R1-A, 3.3	Vertical and Ring Segment Welds	EVT-1 or UT	Maximum of 6 years for one-sided EVT-1, 10 years for UT.
	Shroud Repairs				BWRVIP-76-R1-A, Section 3.5	Tie-Rod Repair	EVT-1 or VT-3	Per repair designer recommendations per BWRVIP-76-R1-A.

NOTES:

- 1) This Table provides only an overview of the requirements. For more details, refer to ASME Section XI, Table IWB-2500-1, and the appropriate BWRVIP document.
- 2) In accordance with Appendix A of BWRVIP-38, a site-specific evaluation will determine the minimum required weld length to be examined.

Enclosure 1

Comparison of Code Examination Requirements to BWRVIP Examination Requirements

The following discussion provides a comparison of the examination requirements provided in ASME Code Item Numbers B13.10, B13.20, B13.30, and B13.40 in Table IWB-2500-1, to the examination requirements in the BWRVIP guidelines. Specific BWRVIP guidelines are provided as examples for comparisons. This comparison also includes a discussion of the examination methods.

1. Code Requirement - B13.10 - Reactor Vessel Interior Accessible Areas (B-N-1)

The ASME Section XI Code requires a VT-3 examination of reactor vessel accessible areas, which are defined as the spaces above and below the core made accessible during normal refueling outages. The frequency of these examinations is specified as the first refueling outage, and at intervals of approximately 3 years, during the first inspection interval, and each period during each successive 10-year Inspection Interval. Typically, these examinations are performed every other refueling outage of the Inspection Interval. This examination requirement is a non-specific requirement that is a departure from the traditional Section XI examinations of welds and surfaces. As such, this requirement has been interpreted and satisfied differently across the domestic fleet. The purpose of the examination is to identify relevant conditions such as distortion or displacement of parts, loose, missing, or fractured fasteners; foreign material, corrosion, erosion, or accumulation of corrosion products, wear, and structural degradation.

Portions of the various examinations required by the applicable BWRVIP Guidelines require access to accessible areas of the reactor vessel during each refueling outage. Examination of Core Spray Piping and Spargers (BWRVIP-18 R2-A), Top Guide (BWRVIP-26-A), Jet Pump Welds and Components (BWRVIP-41 R3), Interior Attachments (BWRVIP-48-A), Core Shroud Welds (BWRVIP-76 R1-A), Shroud Support (BWRVIP-38) and Lower Plenum Components (BWRVIP-47-A) provides such access. Locating and examining specific welds and components within the reactor vessel areas above, below (if accessible), and surrounding the core (annulus area) entails access by remote camera systems that essentially performs equivalent VT-3 examination of these areas or spaces as the specific weld or component examinations are performed. This provides an equivalent method of visual examination on a more frequent basis than that required by the ASME Section XI Code. Evidence of wear, structural degradation, loose, missing, or displaced parts, foreign materials, and corrosion product buildup can be, and has been observed during the course of implementing these BWRVIP examination requirements. Therefore, the specified BWRVIP Guideline requirements meet or exceed the subject Code requirements for examination method and frequency of the interior of the reactor vessel. Accordingly, these BWRVIP examination requirements provide an acceptable level of quality and safety as compared to the subject Code requirements.

2. Code Requirement - B13.20 - Interior Attachments Within the Beltline (B-N-2)

The ASME Section XI Code requires a VT-1 examination of accessible reactor interior surface attachment welds within the beltline each 10-year interval. In the boiling water reactor, this includes the jet pump riser brace welds-to-vessel wall and the lower surveillance specimen support bracket welds-to-vessel wall. In comparison, the BWRVIP requires the same examination method and frequency for the lower surveillance specimen support bracket welds, and requires an EVT-1 examination on the remaining attachment welds in the beltline region in the first 12 years, and then 25% during each subsequent 6 years.

The jet pump riser brace examination requirements are provided below to show a comparison between the Code and the BWRVIP examination requirements.

Comparison to BWRVIP Requirements - Jet Pump Riser Braces (BWRVIP-41 R3 and BWRVIP-48-A)

- The ASME Code requires a 100% VT-1 examination of the jet pump riser brace-to-reactor vessel wall pad welds each 10-year interval.
- The BWRVIP requires an EVT-1 examination of the jet pump riser brace-to-reactor vessel wall pad welds the first 12 years and then 25% during each subsequent 6 years.
- BWRVIP-48-A specifically defines the susceptible regions of the attachment that are to be examined.

The Code VT-1 examination is conducted to detect discontinuities and imperfections on the surfaces of components, including such conditions as cracks, wear, corrosion, or erosion. The BWRVIP enhanced VT-1 (EVT-1) is conducted to detect discontinuities and imperfections on the surface of components and is additionally specified to detect potentially very tight cracks characteristic of fatigue and inter-granular stress corrosion cracking (IGSCC), the relevant degradation mechanisms for these components. General wear, corrosion, or erosion although generally not a concern for inherently tough, corrosion resistant stainless steel material, would also be detected during the process of performing a BWRVIP EVT- 1 examination.

The ASME Section XI Code 2007 through 2008 Addenda, VT-1 visual examination method requires that a letter character with a height of 0.044 inches can be read. The BWRVIP EVT-1 visual examination method requires the same 0.044 inch resolution on the examination surface and additionally the performance of a cleaning assessment and cleaning as necessary. While the jet pump riser brace configuration varies depending on the vessel manufacturer, BWRVIP-48-A includes diagrams for each configuration and prescribes examination for each configuration including JAFNPP Unit 1 (CE). The calibration standards used for BWRVIP EVT-1 exams utilize the same Code characters, thus assuring at least equivalent resolution compared to the Code. Although the BWRVIP examination may be less frequent, it is a more comprehensive method. Therefore, the enhanced flaw detection capability of an EVT- 1, with a less frequent examination schedule provides an acceptable level of quality and safety to that provided by the ASME Code.

3. Code Requirement - B13.30 - Interior Attachment Beyond the Beltline Region (B-N-2)

The ASME Section XI Code requires a VT-3 examination of accessible reactor interior surface attachment welds beyond the beltline each 10-year interval. In the boiling water reactor, this includes the core spray piping primary and supplemental support bracket welds-to-vessel wall, the upper surveillance specimen support bracket welds-to-vessel wall, the feedwater sparger support bracket welds-to-reactor vessel wall, the steam dryer support and hold-down bracket welds-to-reactor vessel wall, the guide rod support bracket weld-to-reactor vessel wall, the shroud support plate-to-vessel wall, and shroud support gussets. BWRVIP-48-A requires as a minimum the same VT-3 examination method as the Code for some of the interior attachment welds beyond the beltline region, and in some cases specifies an enhanced visual examination technique EVT-1 for these welds. For those interior attachment welds that have the same VT-3 method of examination, the same scope of examination (accessible welds), the same examination frequency (each 10 year interval) and ASME Section XI flaw evaluation criteria, the level of quality and safety provided by the BWRVIP requirements are equivalent to that provide by the ASME Code.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 11 of 48)

For the Core Spray support bracket attachment welds, the steam dryer support bracket attachment welds, the feedwater sparger support bracket attachment welds, and the shroud support plate-to-vessel welds, as applicable, the BWRVIP Guidelines require an EVT-1 examination at the same frequency as the Code, or at a more frequent rate. Therefore, the BWRVIP requirements provide the same level of quality and safety to that provided by the ASME Code.

The Core Spray piping bracket-to-vessel attachment weld is used as an example for comparison between the Code and BWRVIP examination requirements as discussed below.

Comparison to BWRVIP Requirements - Core Spray piping Bracket Welds (BWRVIP-48-A)

- The Code examination requirement is a VT-3 examination of each weld every 10 years.
- The BWRVIP examination requirement is an EVT-1 for the core spray piping bracket attachment welds with each weld examined every four cycles (8 years for units with a two year fuel cycle). The BWRVIP examination method EVT-1 has superior flaw detection and sizing capability, the examination frequency is greater than the Code requirements, and the same flaw evaluation criteria are used.
- The Code VT-3 examination is conducted to detect component structural integrity by ensuring the components general condition is acceptable. An enhanced EVT-1 is conducted to detect discontinuities and imperfections on the examination surfaces, including such conditions as tight cracks caused by IGSCC or fatigue, the relevant degradation mechanisms for BWR internal attachments.

Therefore, with the EVT-1 examination method, the same examination scope (accessible welds), an increased examination frequency (8 years instead of 10 years) in some cases, the same flaw evaluation criteria (Section XI), the level of quality and safety provided by the BWRVIP criteria is superior than that provided by the Code.

4. Code Requirement - B13.40 - Integrally Welded Core Support Structures (B-N-2)

The ASME Code requires a VT-3 examination of accessible surfaces of the welded core support structure each 10-year interval. In the boiling water reactor, the welded core support structure has primarily been considered the shroud support structure, including the shroud support plate (annulus floor) the shroud support ring, the shroud support welds, the shroud support gussets. In later designs, the shroud itself is considered part of the welded core support structure. Historically, this requirement has been interpreted and satisfied differently across the industry. The proposed alternate examination replaces this ASME requirement with specific BWRVIP guidelines that examine susceptible locations for known relevant degradation mechanisms.

- The Code requires a VT-3 of accessible surfaces each 10-year interval.
- The BWRVIP requires as a minimum the same examination method (VT-3) as the Code for integrally welded Core Support Structures, and for specific areas, requires either an enhanced visual examination technique (EVT-1) or volumetric examination (UT).

BWRVIP recommended examinations of integrally welded core support structures are focused on the known susceptible areas of this structure, including the welds and associated weld heat affected zones. As

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 12 of 48)

a minimum, the same or superior visual examination technique is required for examination at the same frequency as the code examination requirements. In many locations, the BWRVIP guidelines require a volumetric examination of the susceptible welds at a frequency identical to the Code requirement.

For other integrally welded core support structure components, the BWRVIP requires an EVT-1 or UT of core support structures. The core shroud is used as an example for comparison between the Code and BWRVIP examination requirements as shown below.

Comparison to BWRVIP Requirements - BWR Core Shroud Examination and Flaw Evaluation Guideline (BWRVIP-76 R1-A)

- The Code requires a VT-3 examination of accessible surfaces every 10 years.
- The BWRVIP requires an EVT-1 examination from the inside and outside surface where accessible or ultrasonic examination of each core shroud circumferential weld that has not been structurally replaced with a shroud repair at a calculated "end of interval" (EOI) that will vary depending upon the amount of flaws present, but not to exceed ten years.

The BWRVIP recommended examinations specify locations that are known to be vulnerable to BWR relevant degradation mechanisms rather than "all accessible surfaces". The BWRVIP examination methods (EVT-1 or UT) are superior to the Code required VT-3 for flaw detection and characterization. The BWRVIP examination frequency is equivalent to or more frequent than the examination frequency required by the Code. The superior flaw detection and characterization capability, with an equivalent or more frequent examination frequency and the comparable flaw evaluation criteria, results in the BWRVIP criteria providing a level of quality and safety equivalent to or superior to that provided by the Code requirements.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 13 of 48)

Enclosure 2

Reactor Internals Inspection History

(Updated for RO22-01/17)

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 14 of 48)

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Re-inspections
Core Shroud	1994 to present	UT, EVT-1 VT-3 For Shroud Tie Rods	<p>94/95 Outage: Planar flaws on H2, 35" length intermittent (ID/OD) less than 0.75" depth by UT; two small planar flaws on H3, 1.42" length (ID/OD) by UT. A calculated 136" of vertical weld were inspected by EVT-1 or UT with no relevant indications.</p> <p>96 Outage: Crack like indications on H2, 55" length intermittent (OD) by EVT-1. This cracking is being mitigated by the shroud repair from 94/95 outage with 10 tie-rods; vertical crack like indications on SV5A intermittent (OD) totaling 6-3/4" in length out of total 92", and two horizontal 1/2" each (one OD and one ID). Crack like indications were less than 10% of weld length and are within allowable per BWRVIP-07. Shroud inspections included 25% vertical welds with 50% at beltline areas, and 3 tie-rods. A calculated 286" of vertical welds were inspected. No relevant indications on other welds. Tie-rod assemblies were found acceptable.</p>
	1998 (R13)	EVT-1	<p>Baseline completed per BWRVIP-07 Guidelines (by EVT-1) for all vertical welds. 100% of beltline shroud welds inspected in R13. Relevant indications found in 5 welds as follows:</p> <ul style="list-style-type: none"> *SV5A OD-There are 6 indications with a combined length of 9.3 inches. *SV5B OD-There are 18 indications with a combined indication length of 45.8 inches. *SV6A OD-There is 1 indication that is measured to be 1" long. *SV6B ID-There is 1 indication in the weld which is measured to be 0.8 inches long.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 15 of 48)

	2000 (R14)	EVT-1	<p>*SH4 Indication-Indication is 3 inches from SV5A ID and is 6 inches long and goes across the SH4 horizontal weld.</p> <p>No relevant indications noted on other vertical welds.</p> <p>Re-inspected per BWRVIP-76 Guidelines: Vertical Welds SV5A, SV5B, SV6A and SV6B. Relevant indications found in these welds are as follows:</p> <p>*SV5A OD-There are 7 indications total with a combined indication length of 11.7" vertical and 3.3" circ.</p> <p>*SV5B OD-There are 19 indications total with a combined indication length of 50.7" vertical.</p> <p>*SV6A OD-There is one vertical indication that is measured to be 1" long.</p> <p>*SV6B ID-There is one vertical indication in the weld measured to be 1.25" long.</p> <p>*SH4 ID-There is 2 vertical indications across SH4 with total combined length of 6.4". The closest indication is 3" from SV5B. This indication is branching out near the bottom portion.</p>
	2002 (R15)	EVT-1	<p>Re-inspected by BWRVIP-76 Guidelines: Vertical Welds SV2B, SV5B, and SV8A; and Radial Ring Welds SV3A and SV3D. Relevant indications were only noted on the SV5B weld, as follows:</p> <ul style="list-style-type: none">SV5B ID and OD. There appears to be no discernable changes this outage affecting the cracks length from R14; though one additional indication is noted on the ID CCW side of the weld approximately 1/2" long. This indication may be associated with indications on the opposite side (OD) at the same location.

10CFR50.55a Relief Request I5R-02**Revision 1****(Page 16 of 48)**

	2004 (R16)	EVT-1	Inspected Vertical Welds SV2A, SV8C, SV9A, SV9B and SV9C. No relevant indications noted.
	2006 (R17)	UT	Inspected Vertical Welds SV4A, SV4B, SV5A and SV5B. No relevant indications (NRI) noted for welds SV4A and SV4B. For Welds SV5A and SV5B, there is close correlation of flaws from previously seen by EVT-1 in R14, with limited crack growth and no through wall indications. Identified some additional (short intermittent) flaws at Weld SV5A. All indications were satisfactorily disposition.
		EVT-1	Inspected Vertical and/or Radial Welds SV3B, SV3E, SV6A, SV6B and SV8B. Previous indications were observed in Welds SV6A and SV6B with no apparent change since R14.
		EVT-1	Linear indications (<1/2" length) were observed in the upper section of the shroud where the slot was EDM'd for the tie-rod bracket support. The indications are located at 8 out of 10 tie-rod locations. The indications were satisfactorily disposition as having no effect on the structural integrity of the load path between the shroud and the tie-rods for applied vertical or radial loads.
	2008 (R18)	EVT-1	Inspected Vertical/Radial welds SV2B, SC3A, SV3C, SV3F, SV7B, SV7C and SV7E. Inspection included 100% of accessible area of the ID/OD. No relevant indications were noted.
		EVT-1	Re-inspected indications identified in R17 on the shroud ring segment in locations EDM'd for Tie Rod upper supports. No change was noted from R17 results.

10CFR50.55a Relief Request I5R-02**Revision 1****(Page 17 of 48)**

		EVT-1	Inspected previously recorded flaw on the shroud ID @ SH4 near SV5B. The inspection revealed no changes in size and configuration from the previous inspection in 2002. This inspection was performed per an INPO recommendation from the 2008 BWRVIP review visit to assist the industry in understanding the flaw mechanism-potentially irradiation – assisted corrosion cracking (IASCC).
	2010 (R19)	EVT-1	Inspected Vertical/Radial welds SV2A, SV7A, SV7D, SV8A, SV8C, SV-9A, SV-9B and SV-9C. Inspection included 100% of accessible area of the ID/OD. No relevant indications were noted.
	2012 (R20)	EVT-1	Inspected Vertical/Radial welds SV-3B, SV-3E, SV-6A, SV-6B, and SV-8B. Inspection included 100% of the accessible area of the ID/OD with no relevant indications noted.
		EVT-1	Inspected previously flawed SV-5B @ SH4. The inspection revealed no changes in size of the flaws discovered in 2002.
	2014 (R21)	EVT-1	Inspected accessible areas of Radial Welds SV-3A, 3C, 3D, 3F, 7B, 7C, 7E from ID/OD. Inspected accessible area of Vertical Weld SV-2B from ID/OD. No relevant indications noted.
	2017 (R22)	EVT-1	Inspected accessible areas of Vertical/Radial Welds SV-2A, SV-7A, SV-7D, SV-8A, SV-8C from OD side. No relevant indications noted.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 18 of 48)

		Off-Axis EVT-1	Inspected SV-2A, SV-2B per EPRI Letter 2016-030. No relevant indications noted.
		Off-Axis UT	Inspected SV-5B/H4 interface per EPRI Letter 2016-030. The UT examination identified two indications across the H4 weld, in a semi-linear configuration and parallel to each other and to vertical weld SV-5B. The longest indication is 6.15" long with two short offsets. The second indication is 5.54" long. Inspected upper 20" of SV-5B with NRI.
		UT	Inspected vertical welds SV-4A, SV-4B, SV-5A, SV-5B, SV-6A with relevant indications in SV-4B, SV-5A, SV-5B. Only nominal crack growth was recorded at SV-5A and SV-5B. A short indication was recorded at SV-4B.
Shroud Support	1992 to present	UT or EVT-1	92 Outage: Inspected 0 and 180 deg access covers by UT. One planar indication detected at 180 deg, which is believed to be inherent to the fabrication process and is not ID connected. 94/95 Outage: Inspected 40" of H9 weld and accessible areas of 10 gusset plates used for tie-rod repair. 96 Outage: Inspected access hole cover at 0 deg, and inspected 36" of H9 weld and gusset plate welds at 3 tie-rod locations. No relevant indications noted.
	1998 (R13)	EVT-1 VT-3	Baseline completed per BWRVIP-07 and BWRVIP-38 guidelines for all shroud repaired tie rods and load transfer gusset plate welds. *7 out of 10 tie rod assemblies inspected (by EVT-1/VT-3) in Fall 1998. No relevant indications noted.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 19 of 48)

			*All load transfer gusset plate welds and 12 inches of H9 weld each side of the gussets were examined by EVT-1. 7 out of 10 gussets inspected in R13. No relevant indications noted.
		EVT-1	Examined by EVT-1 the access hole cover at 180 degrees. No relevant indications noted.
	2000/2002	N/A	No inspections during R14 and R15.
	2004 (R16)	EVT-1	Inspected two shroud support gusset plate welds and 12 inches of H9 top weld each side of the gussets. No relevant indications noted.
	2006 (R17)	EVT-1	Inspected all ten shroud repair tie-rod systems and corresponding shroud support gusset welds at same locations. No relevant indications were noted.
		EVT-1	Inspected top portion of horizontal weld H9 at each side of tie-rod locations and between gussets at 180°. No relevant indications were noted.
		VT-1	Inspected the access hole cover at 180°, with no relevant indications noted.
	2008 (R18)	N/A	No inspection performed in R18.
	2010 (R19)	VT-3 EVT-1	Inspected (6) non-tie rod gussets locations plate welds and H9 weld on each side of the gusset at the same location. No relevant indications were noted.
		VT-1/3	Inspected the access hole cover at 0 and 180°, with no relevant indications noted.
	2012 (R20)	EVT-1	Inspected 4 tie rod gusset locations (75, 135, 225, and 345 degrees) at the plate to RPV and support welds and also the H9

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 20 of 48)

			welds on both sides of the gusset. No relevant indications were noted.
		EVT-1/ VT-3	Inspected 3 shroud repair tie rods (15, 135, and 255 degrees). No relevant indications were noted.
	2014 (R21)	EVT-1	Inspected the 0 degree Access Hole Cover. No relevant indications were noted.
		EVT-1	Inspected 4 gussets (30, 150, 240, and 330 degrees) at locations without tie-rods. Inspected gusset to plate, gusset to RPV, and H9 on both sides at each location. No relevant indications noted.
		EVT-1	Inspected 180 degree Access Hole Cover and accessible areas of H9 weld. No relevant indications noted.
		EVT-1/ VT-3	Inspected 3 shroud repair tie-rods (45, 225, and 315 degrees). No relevant indications noted.
		EVT-1	Re-inspected hook to gusset interface at 135 degrees. Verified proper seating and no evident signs of hook movement/chattering. No relevant indication noted.
	2017 (R22)	EVT-1	Inspected 6 gussets (15, 45, 165, 195, 255, and 315 degrees), gusset to plate, gusset to RPV, and H9 on both sides at each location, coinciding with tie-rod locations. No relevant indications noted.
		EVT-1/ VT-3	Inspected 4 shroud repair tie rods (75, 165, 195, and 345). Indications previously identified on the shroud ring segment in locations EDM'd for Tie Rod upper supports on 75°, 165°, 195°, and 345° locations. No significant change was noted from previous results; except, it was determined by vendor and owner

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 21 of 48)

		EVT-1	<p>LVIII examiners that previous recorded indication on the 75° Tie Rod bracket to shroud interface was not characteristic of an actual flaw and is non-relevant.</p> <p>Re-inspected 135° Tie-Rod lower hook interface with gusset plate. No recordable indications noted.</p>
Core Spray Piping	1987 to present	VT-3, MVT-1 or EVT-1	IEB 80-13 of piping and welds in annulus. One clamp repair in 1988 at cracked weld in "B" loop at 190 deg below upper elbow piping. Welds were brushed and inspected by EVT-1 per BWRVIP-18 in Fall, 1996. No relevant indications found.
	1998 (R13)	EVT-1, MVT-1	<p>Re-inspected 100% of loop "A" and "B" welds per BWRVIP-18 Guidelines (by EVT-1). No relevant indications noted, except for a rub-mark near CSA-10 weld.</p> <p>Support brackets were examined by MVT-1. No relevant indications noted.</p>
	2000 (R14)	EVT-1	Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds, including repair clamp welds per BWRVIP-18 Guidelines (by EVT-1). A relevant indication was noted on weld CSB-12. No other relevant indications were noted.
	2002 (R15)	<p>EVT-1</p> <p>EVT-1</p>	<p>Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds; repair clamp at Loop "B" downcomer pipe; and rotating sample of pipe elbow upper/lower welds in Loop "A" at 10 degrees. No relevant indications noted.</p> <p>Re-inspected the indication noted in R14 on weld CSB-12. Level IIIs assessment is that the indication is now believed to be a scratch.</p>

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 22 of 48)

	2004 (R16)	EVT-1	Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds; repair clamp welds at Loop "B" downcomer pipe; and rotating sample of pipe elbow upper/lower welds in Loop "A" at 170 degrees. No relevant indications noted.
	2006 (R17)	EVT-1	Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds; repair clamp welds at Loop "B" downcomer pipe , and rotating sample of pipe elbow upper/lower welds in Loop "B" at 190 degrees. Also, inspected all bracket support welds, including RPV side for Loop "A" and "B". No relevant indications noted.
	2008 (R18)	EVT-1	Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds; repair clamp welds at Loop "B" downcomer pipe; and rotating sample of pipe elbow upper/lower welds in Loop "B" at 350 degrees. No relevant indications noted.
	2010 (R19)	EVT-1	Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds; repair clamp welds at Loop "B" downcomer pipe; and rotating sample of pipe elbow upper/lower welds in Loop "B" at 010 degrees. No relevant indications noted.
	2012 (R20)	EVT-1	Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds; repair clamp welds at Loop "B" downcomer pipe; and rotating sample of pipe elbow upper/lower welds in Loop "A" at 170 degrees. No relevant indications noted.
	2014 (R21)	EVT-1	Re-inspected all Loop "A" and "B" creviced welds, T-box-to-pipe welds, and repair clamp welds at Loop "B" downcomer. Inspected pipe elbow upper/lower welds on Loop "B", "C" downcomer at 190 degrees. No relevant indications noted.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 23 of 48)

	2017 (R22)	EVT-1/ VT-3	Inspected all Core Spray Piping Bracket attachment welds to RPV and overall bracket condition. No relevant indications noted.
		EVT-1	Implemented the optimized scope. Re-inspected Loop "A" and "B" P1 hidden welds with limited access, Loop "B" 190 degree repair clamp welds and elbow welds on "D" downcomer at 350 degrees. No relevant indications noted.
Core Spray Sparger	1987 to present	VT-3, MVT-1 or EVT-1	IEB 80-13 of sparger and welds. MVT-1 and EVT-1 inspections per BWRVIP-18 in the Fall, 1996. An indication characterized as weld profile deficiency was recorded on spray nozzle D-28. Historical IVVI data was reviewed and the indication was previously noted and disposition as acceptable.
	1998 (R13)	EVT-1, MVT-1	Re-inspected 100% of sparger piping "A" and "B" welds per BWRVIP-18 Guidelines (EVT-1/MVT-1) including tee boxes, end caps, drain welds, and support brackets. No relevant indications noted.
	2000 (R14)	N/A	No inspections performed.
	2002 (R15)	EVT-1	Re-inspected all T-box and end caps to sparger pipe welds at Loops "A", "B", "C", and "D". No relevant indications noted.
		VT-1	Re-inspected Sparger "C" and "D" nozzle welds, and supporting brackets at "A" and "B". No relevant indications noted.
	2004 (R16)	VT-1	Re-inspected all sparger bracket support welds at "C" and "D". No relevant indications noted.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 24 of 48)

	2006 (R17)	EVT-1, and VT-1	Re-inspected by EVT-1 all T-box and end caps to pipe welds, and by VT-1 all bracket welds at spargers "A", "B", "C" & "D". Re-inspected by VT-1 all nozzle and drain to sparger welds at spargers "A" & "B". No relevant indications noted.
	2008 (R18)	N/A	No inspections performed in R18.
	2010 (R19)	EVT-1	Re-inspected by EVT-1 on all S1,S2 and S4, T-box and end caps to pipe welds, and by VT-1 all (SB) bracket welds at spargers "A", "B", "C" & "D". Re-inspected by VT-1 all nozzle and drain to sparger welds at spargers "C" & "D". No relevant indications noted.
	2012 (R20)	N/A	No sparger inspections performed in R20.
	2014 (R21)	EVT-1/ VT-1	Inspected by EVT-1 all S1,S2 and S4, T-box and end caps to pipe welds, and by VT-1 all (SB) bracket welds at spargers "A", "B", "C" & "D". Re-inspected by VT-1 all nozzle and drain to sparger welds at spargers "A" & "B". No relevant indications noted.
	2017 (R22)	N/A	No sparger inspections performed in R22.
Top Guide (Rim, etc.)	1988, 92 and 94/95	VT-3, and EVT-1	2 cells inspected in 1988 and in 1992; 4 cells in 1994. Additional inspections included, alignment wedges, hold down bolts, and rim welds at several locations (EVT-1 at rim welds in 94/95). No relevant indications noted.
	1998 (R13)	N/A	No inspections performed.
	2000 (R14)	VT-1, and VT-3	A total of 4 hold down assemblies were examined by VT-1 and 3 alignment pin assemblies by VT-3 per BWRVIP-26 Guidelines. No relevant indications were noted.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 25 of 48)

	2002 and 2004	N/A	No inspections in R15 and R16.
	2006 (R17)	VT-1 and VT-3	Inspected by VT-1 hold-down assemblies at 0 and 180 degrees (top only as below top guide is inaccessible). Inspected sampling of top guide surfaces by VT-1/VT-3. Also, inspected aligner pins at 0 and 180 degrees by VT-1. No relevant indications noted.
	2008 (R18)	VT-1	Inspected by VT-1 hold-down assemblies at 90 and 270 degrees (top only as below top guide is inaccessible). Also, inspected aligner pins at 90 and 270 degrees by VT-1. No relevant indications noted.
	2010 (R19)	EVT-1	Inspected by EVT-1 (8) grid beam cell locations, including plates and intersection locations as specified per BWRVIP-183. No relevant indications.
	2012 (R20)	VT-1	Inspected 0 and 180 degree aligner assemblies from the top of the guide only. No relevant indications noted.
	2014 (R21)	N/A	No inspections performed.
	2017 (R22)	EVT-1	Inspected Top Guide Grid Beams at core locations 10-07, 10-39, 14-31, 18-19, 34-11, 34-19, 38-39, and 50-27. No relevant indications noted.
		VT-1	Inspected Top Guide Hold Down Assemblies at 90 and 270 degrees. No relevant indications noted.
Core Plate (Rim, etc.)	1992 and 94	VT-3	Inspection at one core plate in 1992. Inspected approximately 25% of hold down bolting in 1994/95. No relevant indications noted.

10CFR50.55a Relief Request ISR-02

Revision 1

(Page 26 of 48)

	1998 (R13)	VT-3	Inspected 100% of hold down bolting. No relevant indications noted.
	2000 (R14)	VT-3	Inspected core plate plugs at 5 core locations. No relevant indications noted.
	2002 (R15)	N/A	No inspections performed.
	2004 (R16)	VT-3	Inspected a total of 6 core plate plugs (at two locations). No relevant indications noted.
	2006 (R17)	VT-3	Inspected core plate plugs and the surrounding core plate surface at four LPRM locations. No relevant indications noted.
	2008 (R18)	VT-1	Inspected 33 core plate hold down bolt assemblies from 0-180 degrees with no indications noted.
		VT-3	Inspected 10 core plate plugs @ cell location 12-37, 28-29 and 36-37 to meet 10% sampling requirements. No indication noted, all plugs inspected were properly seated, with no evidence of movement.
	2010 (R19)	VT-3	Inspected a total of 8 core plate plugs @ cell locations 28-21 and 28-37. No relevant indications noted.
	2012 (R20)	VT-1	Inspected a total of 10 hold down bolts with no relevant indications noted.
		VT-3	Inspected a total of 8 core plate plugs at locations 12-21, 20-21, and 36-13. No relevant indications noted.
	2014 (R21)	VT-3	Replaced all 77 core plate plugs. Performed as-left VT-3 with no relevant findings.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 27 of 48)

	2017 (R22)	VT-3	Inspected 50% (36) core plate rim hold-down bolting, 19% (15) core plate plugs and Core Plate location 38-39. No relevant indications noted except a maintenance issue with alignment pin, that was acceptably resolved.
SLC	2000 (R14)	EVT-2	Performed Enhanced VT-2 on SLC nozzle-to-safe end weld during RPV System Leakage Test per BWRVIP-27 Guidelines. Test was "Accepted".
	2002/2004	EVT-2	Performed Enhanced VT-2 on SLC nozzle-to-safe end weld during RPV System Leakage Test per BWRVIP-27 Guidelines. Test was "Accepted".
	2006 (R17)	PT	Performed liquid penetrant examination on Standby Liquid Control (SLC) nozzle-to-safe end weld per BWRVIP-27 Guidelines with no recordable indications noted.
	2008 (R18)	N/A	No Examination required based on 2006 inspection.
	2010 (R19)	PT	Performed liquid penetrant examination on SLC nozzle-to-safe end weld per BWRVIP-27 Guidelines with no recordable indications noted.
	2012 (R20)	UT	Performed UT exam of SLC nozzle. No relevant indications were found.
	2014 (R21)	N/A	No inspections performed.
	2017 (R22)	N/A	No inspections performed.
Jet Pump Assembly	1987 to 1994	VT-1, VT-3 and UT	Inspected all riser brace attachment welds by VT-1. No relevant indications but found debris at some weld locations. Have replaced all jet pump beams in 1992 because one exhibited indications of cracking by UT exam. Also inspected pump assembly, sensing lines, supports

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 28 of 48)

			<p>and diffuser to shelf welds, all by visual. No relevant indications but found debris at some weld locations.</p> <p>Cracking at a Japanese BWR of a Jet Pump riser weld prompted FitzPatrick to review IVVI tapes from previous refueling outages, including 1996 outage. Viewed accessible areas at two welds by VT-1, and at three welds by VT-3 examination. No cracking was found in the reviewed welds.</p>
	1998 (R13)	MVT-1, and VT-3	<p>Inspected by MVT-1 50% of all Jet Pumps (#7 to #16) for component safety priority H (high) and M (medium), per BWRVIP-41 Guidelines. No relevant indications noted. Interferences in the annulus region restricted inspection of AD-1 and AD-3b welds.</p> <p>Inspected by VT-3 sensing lines/brackets at same jet pumps (#7 to #16). No relevant indications noted.</p>
	2000 (R14)	N/A	No inspections during R14.
	2002 (R15)	EVT-1, VT-1, and VT-3	<p>Completed inspection of Jet Pumps 5 and 6, and portions of Jet Pumps 19 and 20, with no relevant indications noted. Used inspections guidelines of BWRVIP-41 and 48. There are no MX-1 welds on the inlet-mixer, but there are IN-4 and MX-2 welds. Interferences in the annulus region (gussets) prevented inspection of the AD-3b welds.</p>
		VT-1	<p>Inspected Jet Pump Beams at #5, 6, 19 and 20, at locations recommended by BWRVIP-41, and by latest Operating Experience. No relevant indications noted.</p>

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 29 of 48)

	2004 (R16)	EVT-1	Performed "High – priority" riser weld inspections at Jet Pumps #1, 2, 3, 4, 17 and 18. No relevant indications noted.
			Performed diffuser/adaptor assembly weld inspections (Also "High"- priority) at Jet Pumps #17 and 18. No relevant indications noted.
		VT-1	Performed wedge bearing surface (WD-1) inspections at Jet Pumps #17 and 18. No relevant indications noted.
	2006 (R17)	UT	Inspected all twenty jet pump beams with no relevant indications recorded.
		UT	Inspected "High"- priority welds AD-1, AD-2, AD-3a, AD-3b, DF-2 and DF-3 at all 20 jet pumps (JP) with recordable indications at welds DF-2 (JP #1 & 3) and AD-3b/DF-3 (JP #12 & 17). All indications were satisfactorily disposition.
		EVT-1	Inspected "High"- priority welds DF-2 at JP #1 & 3 and DF-3 at JP #17 based on UT results. No recordable indication noted.
		EVT-1	Inspected riser welds RS-1, RS-2 and RS-3 at JP #19/20 & RS-3 at JP #3/4. Also inspected RS-6, RS-7, RS-8, RS-9 and RB welds at JP #1/2, 3/4, 17/18 & 19/20 with no recordable indications noted.
		EVT-1	Inspected weld DF-1 at JP #1/2, ¾, 17/18 & 19/20 with no recordable indications noted.
		VT-1	Inspected wedge bearing surfaces (WD-1) at JP #1, 2, 3, 4, 19 & 20 with no relevant indications noted.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 30 of 48)

	2008 (R18)	EVT-1	Inspected "Medium – priority welds IN-4 and MX-2 at JP #1-4 & 17-20 with no relevant indications noted.
		EVT-1	Inspected wedge bearing surfaces (WD-1) at JP #7-12 & 20 with no relevant indications noted.
		VT-1/3	Inspected JP sensing line @ #1-4, 7-12 and 17-20, including bracket and attachment welds to diffuser with no relevant indications noted.
		EVT-1	Inspected the ID of JP #12 & 17 DF-3 welds to aid in evaluating previous indications identified by UT in RO17. No indications were noted visually from the ID and surface geometry appears normal with no undercut or root concavity noted.
	2010 (R19)	EVT-1	Inspected RS-6, RS-7, RB welds at JP #7 thru 16 with no recordable indications noted.
		EVT-1	Inspected RB-1 and 2, RB leaf to pad and Pad to vessel welds @ JP #7 thru 16 with no relevant indications noted.
		EVT-1	Inspected "Medium – priority welds IN-4, MX-2 and DF-1 at JP #7-16 with no relevant indications noted.
		EVT-1	Inspected RS-8 and 9 welds on all Jet Pump as required per VIP mandate. No relevant indications were noted.
		VT-1	Inspected WD-1 on Jet Pumps #1-6, 13-20 as required by VIP mandate with no relevant indications noted.
		EVT-1	Inspected RS1, 2, and 3 welds @ JP locations #7-16 with no relevant indications noted.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 31 of 48)

	2012 (R20)	UT	Re-Inspected “High”- priority welds AD-1, AD-2, AD-3a, AD-3b, DF-2 and DF-3 at all 20 jet pumps (JP) with Westinghouse JAMIS tool. Previous recordable indications at welds AD-3b/DF-3 (JP #12 & 17) were inspected and found to have no change in size from R17. Previous indications at DF-2 (JP #1 & 3) were determined to be non-relevant. A new relevant indication was identified on JP #8. All indications were satisfactorily disposition and bounded by previous evaluations.
		EVT-1	Inspected “Medium” priority DF-1, IN-4, and MX-2 welds of jet pumps #1-4 and 17-20. No relevant indications found.
		EVT-1	Inspected RB-1 and 2 (leaf to pad and yoke) welds on jet pumps #1-6 and 17-20 with no relevant indications noted.
	2014 R21)	EVT-1	Inspected RS-6 and 7 welds on jet pumps #1-4 and 17-20 with no relevant indications noted.
		UT	Inspected BB-1, BB-2, and BB-3 regions on all 20 Jet Pump Beams. No relevant indications noted. All re-inspections are complete for this interval.
	2017 (R22)	EVT-1	Inspected RS-1, RS-2, RS-3, RS-6, RS-7, RS-8 and RS-9 welds on JP #5/6, 7/8 and 9/10. No relevant indications noted.
		EVT-1	Inspected DF-1 on JP #5, 6, 7, 8, 9, and 10 welds. No relevant indications noted.
		EVT-1	Inspected AD-1, AD-2, AD3a/b, DF-2 and DF-3 welds on JP #8, 9, 10, 12, and 17. No relevant indications noted.
		VT-3	Inspected Sensing Lines on JP #7, 8, 9, 10. No relevant indications noted.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 32 of 48)

		VT-1	Inspected JP Wedge bearing Surface, and Wedge Rods WD-1 on all JP's. No relevant indications noted.
CRD Guide Tube	1992	VT-3	Inspected stub tube to vessel and stub tube to housing welds for 9 tubes. No relevant indications.
	1998 (R13)	N/A	No inspections performed.
	2000 (R14)	EVT-1 and, VT-3	Inspected accessible surfaces at 3 Guide Tubes per BWRVIP-47 Guidelines. Inspected accessible surfaces at 8 Guide Tubes (VT-3). No relevant indications noted.
	2002 (R15)	EVT-1 and VT-3	Inspected accessible surfaces at 4 Guide Tubes per BWRVIP-47 Guidelines. No relevant indications noted.
	2004 (R16)	N/A	No inspections performed.
	2006 (R17)	EVT-1 and VT-3	Inspected accessible surfaces at three Guide Tubes. No relevant indications noted.
	2008 (R18)	N/A	No Inspections performed.
	2010 (R19)	EVT-1 and VT-3	Inspected CRGT-1, 2 and 3 accessible surfaces at 4 Guide Tubes per BWRVIP-47A Guidelines. No indications noted.
	2012 (R20)	N/A	No inspections performed in R20.
	2014 (R21)	N/A	No inspections performed.
	2017 (R22)	VT-3	Inspected Fuel Support Casting (FSC) (Cell location 38-39), alignment pin (ARPIN-10), accessible areas of the guide tube (including CRGT-1) and a general condition of the cell.
CRD Stub Tube	1992	VT-3	See above.
	1998	N/A	No inspections during R13.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 33 of 48)

	2000/2002/ 2004/2006/ 2008/2010/ 2012/2014/ 2017	N/A	No inspection requirements per BWRVIP-47 Guidelines.
In-Core Housing	1992	VT-1	No relevant indications.
	1998	N/A	No inspections during R13.
	2000 thru 2017	N/A	No inspection requirements per BWRVIP-47 Guidelines.
Dry Tube	1994	VT-1	No indications. Replaced all dry tubes in 1987/88.
	1998 (R13)	N/A	No inspections performed.
	2000 (R14)	VT-1	Inspected 4 IRM/SRM In Core Dry Tubes per GE SIL-409 and GE RICSIL-073 Guidelines. No relevant indications noted.
	2002 (R15)	VT-1	Re-inspected SRM Core Dry Tube 20-17 per GE SIL 409 and GE RICSIL-073 Guidelines. No relevant indications noted
	2004 (R16)	N/A	No inspections performed.
	2006 (R17)	VT-1	Inspected dry tubes at three locations with no relevant indications noted.
	2008 (R18)	VT-1	Inspected dry tubes at SRM locations 20-17, 28-41 and IRM location 20-25 per GE-SIL-409 Rev.2 with no relevant indications noted.
	2010 (R19)	VT-1	Inspected dry tubes at SRM locations 36-25 and IRM location 12-33, 28-33, 36-09 and 12-09 per GE-SIL-409 Rev.2 with no relevant indications noted
	2012 (R20)	VT-3	Inspected 4 dry tubes at IRM locations 12-41, 20-33, 28-25, and 36-41 per GE-SIL-409 Rev. 2. No relevant indications.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 34 of 48)

	2014 (R21)	VT-3	Replaced all 12 SRM/IRM dry tubes. Performed as-left VT-3 with no relevant findings.
	2017 (R22)	VT-3	Inspected 4 dry tubes at IRM locations 12-09, 36-09, 36-41 and SRM location 12-33. No recordable indications noted.
Instrument Penetrations	1992	VT-1	Two inspected in 1992. No relevant indications noted.
	1998 (R13)	N/A	No inspections performed.
	2000 (R14)	VT-2	Performed VT-2 ISI System Leakage Exam Test at 6 instrument nozzles (during RPV System Test) per BWRVIP-49 Guidelines. Test was conducted to the extent possible with insulation installed and shield doors closed. Test was "Accepted".
	2002/2004/2006/ 2008 / (R15-R18)	VT-2	Performed a VT-2 leakage test at 6 instrument nozzles (same as in R14-Fall 2000). Test was "Accepted" with no leakage noted.
	2010 (R19)	PT	Inspected 2 instrument nozzles. Inspection was "Accepted" with no leakage noted.
	2012 (R20)	PT	Inspected 2 instrument nozzles. Inspection was "Accepted" with no leakage noted.
	2014 (R21)	PT	Inspected 2 instrument nozzles. Inspection was "Accepted" with no leakage noted.
	2017 (R22)	N/A	No inspections performed.
Vessel ID Brackets	1987 to present	VT-1, VT-3, EVT-1 for core spray	Section XI inspections of jet pump riser brace, dryer, feedwater sparger, core spray, and surveillance capsule holder brackets, performed once per interval. Last inspection was Fall, 96 VT-3, or

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 35 of 48)

			VT-1 if in beltline region. EVT-1 for core spray. No relevant indications noted.
	1998 (R13)	MVT-1	Inspected Core Spray Brackets and Jet Pump Riser Brace Attachments per BWRVIP-48 requirements. No relevant indications noted.
	2000 (R14)	N/A	No inspections in R14.
	2002 (R15)	EVT-1	Inspected Jet Pump Riser Brace (at JP #5/6 and #19/20); and Feedwater Sparger Bracket Attachments (at all 8-locations), per BWRVIP-48 requirements. No relevant indications noted.
	2004 (R16)	EVT-1	Inspected shroud support gusset plate welds to RPV wall at two locations, with no relevant indications.
		EVT-1, VT-3	Inspected all four steam dryer support brackets and attachment welds to RPV wall, with no relevant indications.
		VT-3	Inspected all four steam dryer hold-down brackets and attachment welds to RPV top head, with no relevant indications noted.
		EVT-1	Inspected guide rod and bracket to RPV weld at 180°, with no relevant indications noted.
	2006 (R17)	EVT-1	Inspected all core spray piping support bracket welds to RPV wall, with no recordable indications noted.
		EVT-1	Inspected shroud support gusset plate welds to RPV wall at ten locations, with no relevant indications noted.
		EVT-1	Inspected riser brace leaf welds to RPV wall at JP #01/02, 03/04, 17/18 & 19/20, with no recordable indications noted.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 36 of 48)

	2008 (R18)	VT-1	Inspected surveillance sample holder brackets upper and lower) at 030° and 120° to RPV wall, with no relevant indications noted.
		VT-3	Inspected guide rod and bracket to RPV weld at 000°, with no recordable indications noted.
		N/A	No inspections performed.
	2010 (R19)	EVT-1	Inspected shroud support gusset plate welds to RPV wall at six locations, with no relevant indications noted.
		EVT-1	Inspected riser brace leaf welds to RPV wall at JP #7-16, with no recordable indications noted.
		EVT-1	Inspected all feedwater support brackets and attachment welds to RPV wall, with no relevant indications.
	2012 (R20)	EVT-1	Inspected shroud support gusset plate welds to RPV wall at 4 locations, no relevant indications noted.
		EVT-1	Inspected riser brace leaf welds to RPV wall at Jet Pumps # 1-6 and 17-20.
		EVT-1	Inspected 4 shroud support gusset plate welds to RPV and H9 on both sides at 4 locations. No relevant indications noted.
	2014 (R21)	EVT-1/ VT-3	Inspected core spray piping bracket to RPV welds and overall bracket condition. No relevant indications noted.
		VT-1/VT-3	Inspected upper and lower surveillance specimen holder brackets at 300 degrees. No relevant indications noted.

10CFR50.55a Relief Request I5R-02**Revision 1****(Page 37 of 48)**

	2017 (R22)	VT-3	Inspected 180 degree guide rod and RPV bracket attachment. No relevant indications noted.
		EVT-1	Inspected all Steam Dryer Support Brackets. No relevant indications noted.
		VT-3	Inspected all Steam Dryer Hold Down Brackets. No relevant indications noted.
		EVT-1	Inspected shroud support gusset plate welds (H9) to RPV wall at 6 locations. No relevant indications noted.
		VT-1/VT-3	Inspected upper and lower Surveillance Sample Holder Brackets at 30° and 120°. No recordable indications noted.
		VT-3	Inspected upper Guide Rod Bracket Attachment at 0°. No relevant indications noted.
LPCI Coupling	N/A	N/A	Not applicable to this plant.

10CFR50.55a Relief Request I5R-02**Revision 1****(Page 38 of 48)**

Fuel Support Castings	1998 (R13)	VT-3	Inspected accessible areas at fuel support castings during in-process control rod blade change-out. No relevant indications noted.
	2000 (R14)	VT-3	Inspected accessible areas at fuel support castings during in-process control rod blade change-out. No relevant indications noted.
	2002 (R15)	VT-3	Inspected accessible areas at four fuel support castings during in-process control rod blade change-out. No relevant indications noted.
	2004 (R16)	N/A	No inspections performed.
	2006 (R17)	VT-3	Inspected accessible areas at fuel support castings at four locations. No relevant indications noted.
	2008 (R18)	N/A	No Inspections performed.
	2010 (R19)	N/A	No Inspections performed.
	2012 (R20)	N/A	No inspections performed.
	2014 (R21)	N/A	No inspections performed.
	2017 (R22)	VT-3	Inspected accessible areas at fuel support casting (FSC) Cell 38-39 in support of condition evaluation and maintenance activities.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 39 of 48)

CRD Nozzle NIR	1998 (R13)	VT-1	The Control Rod Drive Nozzle Inner Radius was examined. No relevant indications noted.
	2000 (R14)	EVT-1	Examined the CRD Nozzle Inner Radius, including adjacent vessel wall area. No relevant indications noted.
	2002-2008	N/A	No inspections in R15 – R18.
	2010 (R19)	EVT-1	Examined the CRD Nozzle Inner Radius, including adjacent vessel wall area. No relevant indications noted.
	2012 (R20) 2014 (R21) 2017 (R22)	N/A N/A N/A	No inspections performed. No inspections performed. No inspections performed.
Steam Dryer Moisture Separator	1998 (R13)	VT-3	Inspected 25% of shroud head bolts at storage pit. No relevant indications noted.
	2000 (R14)	VT-3 and EVT-1	Re-inspected by VT-3 all areas of the steam dryer support ring and by EVT-1 previously found cracks (1992/1994). A total of 10 indications were noted in 2000 (R14), with no discernable changes from previous inspection.
	2002 (R15)	N/A	No inspections performed.
	2004 (R16)	VT-1 and VT-3	Inspected steam dryer integrity per SIL 644 Supplement 1 (steam dryer integrity) and INPO OE 18796 (steam dryer hood crack and tie bar recordable visual indications) guidelines. Two relevant indications areas were noted. These indications resulted in expanded scope with additional brushing and evaluations. These indications are in the HAZ of vibration block welds and at a drain channel. All indications were satisfactorily dispositioned by calculations. Plans to re-inspect in R17.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 40 of 48)

	2006 (R17)	EVT-1/ VT-3	Inspected steam dryer hold-downs and support brackets and attachment welds with no relevant indications noted.
		VT-3	Inspected steam separator lifting rod eye assemblies and 25% of shroud head bolts with no relevant indications noted.
		VT-1	Inspected selected welds on steam dryer (per requirements of BWRVIP-139 over those recommended by SIL 644). A relevant indication was noted at the intersection of H-2 and V-7 welds (SW quadrant) and the weld was ground out and repaired in R17.
		VT-1	Inspected previous relevant indications noted in R16 (i.e., at eight vibration block welds and at the weld adjacent to drain channel #8) with no observed change noted since R16. The linear indication at one vibration block was re-configured from previous R16 reporting.
	2008 (R18)	VT-1	Inspected previous relevant indications (i.e., eight vibration blocks and weld adjacent to drain channel #8) with no change to indication size noted.
		VT-1	Inspected R17 weld repair @ weld H2 & V7 intersection in SW quadrant with no relevant indication noted.
		VT-1	Inspected upper support ring including previous indication noted in R14. 9 of the 10 previous indications have been determined to be scratches and are considered non-relevant. No other indications noted.
		VT-3	Inspected shroud head bolts #10 through 19 based on OE31414 with no relevant indications noted.

10CFR50.55a Relief Request I5R-02**Revision 1****(Page 41 of 48)**

	2010 (R19)	VT-1	<p>Inspected 25% of upper and middle support ring gussets on moisture separator based on OE25795. A linear indication was noted on the #5 upper gusset. Scope was expanded to include all upper and mid support ring gussets and linear indications were also identified on upper and mid gusset #6. The indications were evaluated and found acceptable.</p> <p>Additionally during the gusset examinations a broken tie strap was noted on the separator at 0 degrees. The broken strap was removed per EC10523 and evaluated for acceptance. Note: OE27679 was issued to inform industry of the condition.</p>
		VT-1	<p>Inspected previous relevant indications (i.e., at eight vibration block welds and at weld adjacent to drain channel #8) with no change noted.</p>
		VT-1	<p>Inspected R17 weld repair @ weld H2 and V7 intersection in SW quadrant with no relevant indications noted.</p>
		VT-1	<p>Re-examined previously identified upper and mid support gussets @ locations 5 and 6 with no change noted.</p>
		VT-1	<p>Re-examined previously identified broken tie strap remnant @ 0 degrees with no change noted.</p>
		VT-3	<p>Inspected shroud head bolts #29 through 36 based on OE31414 with no relevant indications noted.</p>
	2012 (R20)	VT-1	<p>Inspected previous relevant indications (i.e., eight vibration block welds and weld adjacent to drain channel #8) with no change noted.</p>

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 42 of 48)

	2014 (R21)	VT-1	Inspected R17 weld repair @ weld H2 and V7 intersection in SW quadrant with no relevant indications noted.
		VT-1	Re-examined previously identified upper and mid support gussets @ locations 5 and 6 with no change noted.
		VT-1	Re-examined previously identified broken tie strap remnant @ 0 degrees with no change noted.
		VT-1	Inspected previous relevant indications on eight vibration block welds and weld adjacent to drain channel #8 with no changed noted.
		VT-1	Inspected R17 weld repair @ weld H2 and V7 intersection in SW quadrant with no relevant indications noted.
		VT-1/VT-3	Completed dryer external overview per BWRVIP-139 and SIL 644 Rev. 2 guidance. Inspected all outer hood bank, outer end bank plate, cover plate, manway cover, ring segment, and tie-bar welds. Inspected all inner hood bank plate welds, drain channel welds, and lifting rod assemblies (including jacking bolts, earthquake blocks, and seal plates) in the SW and NE quadrants. Performed dryer VT-3 overview. No relevant indications identified.
		VT-1	Re-examined previously identified upper and mid support gussets @ locations 5 and 6 with no change noted.
		VT-1	Re-examined previously identified broken tie strap remnant @ 0 degrees with no change noted.
		VT-1	During examination of previous indication at mid support gusset #5, a new indication was identified in the

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 43 of 48)

			<p>vicinity of the existing one. The new indication is approximately 0.5'' and is in the upper HAZ of the gusset-to-support-ring weld. Review of previous inspections lead to the belief that this indication has existed since at least 2010 but was not called as it was not easily discernable from the amount of crud covering it. There appears to be no change. This newer indication is bounded by the evaluation performed in 2008 for the indications identified then.</p>
	2017 (R22)	VT-1	<p>Re-inspected indications on Upper Support Ring Gussets #5 and #6 and Middle Support Ring Gusset #6. No significant change in these indications.</p>
		VT-3	<p>Re-inspected the cut Tie Bar Strap at 0°, with no significant change in the condition.</p>

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 44 of 48)

Surveillance Capsule Specimen Holder	2000 (R14)	VT-1/VT-3	Inspected upper and lower mounting bracket at the 300 degree location. Also inspected condition of the holder (VT-3). No relevant indications noted.
	2002(R15)/ 2004(R16)	N/A	No inspections performed.
	2006 (R17)	VT-1/VT-3	Inspected upper and lower mounting bracket welds at 30 and 120 degrees. No relevant indications noted.
	2008 (R18)/ 2010 (R19)/ 2012 (R20)	N/A	No inspections performed.
	2014 (R21)	VT-1/VT-3	Inspected upper and lower mounting brackets at 300 degree location and attachment welds. Also inspected condition of the holder (VT-3). No relevant indications noted.
	2017 (R22)	VT-1/VT-3	Inspected upper and lower mounting brackets at 30° and 120° location and attachment welds. Also, inspected condition of the holder (VT-3). No relevant indications noted.
Lower Plenum	2000 (R14)	VT-1/VT-3	Inspected by VT-3 the accessible areas of lower plenum per BWRVIP-47 guidelines. No relevant indications noted. Inspected by VT-1 the accessible areas of the bottom head drain. After removal of debris, the area was re-examined and found acceptable.
	2002-2017	N/A	No inspections performed due to lack of access.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 45 of 48)

Feedwater Sparger	2002 (R15)	VT-3	Inspected Sparger pipe assemblies at 45, 135, 225, and 315 degrees including sparger welds and end brackets. No relevant indications noted.
		VT-1	Inspected junction t-box welds and nozzle inner radius (NIR) at 45, 135, 225, and 315 degrees. No relevant indications noted.
		UT	Inspected the NIR at all 4 locations. No relevant indications noted.
	2004 & 2006	N/A	No inspections performed.
	2008 (R18)	VT-1/3	Inspected sparger brackets at 45, 135, 225, and 315 degrees based on OE24382 for wear identified. Brackets at 45 and 135 degrees were noted to have bracket wear around the pin. The condition was evaluated and found acceptable.
	2010 (R19)	VT-3	Inspected sparger pipe assemblies at 45, 135, 225, and 315 degrees including sparger welds and end brackets. No relevant indications noted.
		VT-1/ EVT-1	Inspected junction t-box welds and NIR at 45, 135, 225, and 315 degrees. No relevant indications noted.
		VT-1	Re-examined sparger brackets at 45 and 135 degrees for wear noted in R18. No change was identified.
	2012 (R20)	VT-1	Re-examined sparger brackets at 45 and 135 degrees for wear noted in R18. No change was identified.
	2014 (R21)	VT-1	Re-examined sparger brackets at 45 and 135 degrees for wear noted in R18. No change was identified.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 46 of 48)

	2017 (R22)	VT-1	Re-examined sparger brackets at 85°, 95°, and 175°, with no significant changes in indication conditions.
Dissimilar Metal Welds	2004 (R16)	UT	Performed UT on DM welds 24-10-131 and 24-10-132 and nozzle N-9-C1 overlay with no relevant indications noted.
	2006 (R17)	UT	Performed UT of nozzle to safe end on the following welds with no relevant indications noted: N-1B-SE N-2H-SE N-2K-SE
	2008 (R18)	UT	Performed UT of nozzle to safe end on the following welds with no relevant indications noted: N-1A-SE N-2A-SE N-2B-SE N-2D-SE N-2E-SE N-2F-SE N-2G-SE N-2J-SE N-5A-SE N-8A-SE N-8B-SE
		UT	Performed UT on nozzle to safe end N-2C-SE and an identified one axial location approximately ½" depth and ¾" wide. The indication was located on the butter to butter and was ID connected. Assume the flaw to be IGSCC. The weld was overlay and found acceptable.
	2010 (R19)	UT	Performed UT on CRD return cut and cap overlay with no relevant indications noted.

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 47 of 48)

		UT	Re-examined N-2C-SE overlay from R18 with no relevant indications noted.
		UT	Performed UT on DM welds 24-10-130, 24-10-131, 24-10-132, 24-10-142, 24-10-143, and 24-10-144 with no relevant indications noted.
	2012 (R20)	UT	Performed UT on N1B Recirc Outlet nozzle to safe end weld, and N2H and N2K recirc inlet nozzle to safe end welds with no relevant indications noted.
	2014 (R21)	UT	Performed UT on N-5A Core Spray and N-8A, 8B Jet Pump Instrumentation nozzle to safe end welds with no relevant indications noted.
	2017 (R22)	UT	<p>Performed UT on DM welds 24-10-131, 24-10-132, 24-10-142, 24-10-143, and 24-10-144 with no relevant indications.</p> <p>Performed UT on DM weld 24-10-130. An axial indication was identified. It was located within the weld and butter. The postulated length was 0.95", which encompasses the full width of the butt-weld and 0.20" of the stainless steel heat-affected zone (HAZ). The flaw is assumed to be caused by IGSCC. The weld was overlaid.</p> <p>Performed UT of nozzle to safe end on the following nozzles with no relevant indications:</p> <p>N2B N2D N2E N2F N2G N2J</p>

10CFR50.55a Relief Request I5R-02

Revision 1

(Page 48 of 48)

			Note: These welds were examined as a result of the expanded scope for the indication found on weld 24-10-130.
FOSAR	2008 – 2012	VT-3	Scheduled 12 hour windows for cleaning and (Foreign Object Search and Retrieval) FOSAR in annulus.
	2014 (R21)	VT-3	No scheduled FOSAR windows. FOSAR completed at areas in the annulus where inspections were being performed.
	2017 (R22)	VT-3	Completed a 360° FOSAR examination in areas of annulus.