

2015-043 _____ BWR Vessel & Internals Project (BWRVIP)

(by e-mail)

April 21, 2015

Document Control Desk
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Attention: Joseph Holonich

Subject: Project No. 704 – BWR Vessel and Internals Inspection Summaries for Spring 2014 Outages


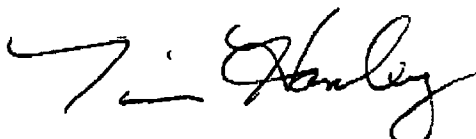
Enclosed are five (5) copies of the document entitled “BWR Vessel and Internals Project, Vessel Internals Inspection Summaries for Spring 2014 Outages, April 2015.”

The information provided in the enclosed document identifies the BWR internal components inspected and generally includes the date or frequency of inspection, the inspection method used and a summary of results including repair or replacement activities. The enclosed document is being provided to the NRC for information only.

The information contained in the enclosed document was developed by the individual utilities and has been compiled into the enclosed document by the BWRVIP. The BWRVIP plans to continue to gather such information and to provide periodic updates such as in the enclosed document.

Representatives of the BWRVIP would be pleased to meet with the NRC staff to discuss any comments or questions related to the enclosed document. If you have any questions on the enclosed document or the general subject of inspection results, please call Drew Odell, BWRVIP Integration Committee Technical Chairman, Exelon, 610.765.5483.

Sincerely,

Andrew McGehee, EPRI, BWRVIP Program Manager
Tim Hanley, Exelon Corp., BWRVIP Chairman

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BWR Vessel and Internals Project
Vessel Internals Inspection Summaries
for Spring 2014 Outages

April 2015

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Reactor Internals Inspection History

Plant: **Browns Ferry Nuclear Plant: Unit 3**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Result, Repairs, Replacements, Reinspections
Core Shroud	1994	UT	Baseline (1994) per GE SIL No. 572 for circumferential seam welds - indications found in several welds (H-1, H-4, H-5).
	1997		Reinspection (1997) per GE SIL No. 572 - indications found in H-7 weld along with previous indications. Full structural margins on flawed welds for at least one additional operating cycle. Vertical welds not inspected.
	1998		Reinspection (1998): UT examination of H-1, H-2, H-3, H-4, H-5 performed. A total of 63 indications were recorded. A structural evaluation of H-3 was performed to support continued operation.
	2004		Reinspection (2004) per BWRVIP-76: UT examination of H-5 performed (51.1 % coverage, 37 indications). Current plant-specific calculation allows continued operation through end of Unit 3 Cycle 12 Fuel Cycle (2006); new plant-specific calculation to be performed to support continued operation beyond that time. UT examination of H-6 (3.4 % coverage, no indications) and H-7 performed (2.2 % coverage, 1 indication); reinspection required in 2006 due to lack of coverage. Baseline (2004) UT inspection per BWRVIP-76 for Vertical Welds V-5 (61.6% coverage, no indications) and V-6 (61.6% coverage, no indications).
Core Shroud (continued)	2006	UT	Reinspection per BWRVIP-76: H-6 and H-7 were at the end of their inspection interval. UT examination of H-6 (24.41% coverage (one-sided), 0.0% flawed per examined weld length) and H-

			<p>7 (19.44% coverage (one-sided), 3.27% flawed per examined weld length) was less than the BWRVIP-76 mandated 50% minimum due to mechanical and physical accessibility problems (e.g., RPV surveillance capsules, sensing lines, etc.) with the UT inspection equipment. Plant-specific evaluations demonstrated adequate structural margin exists for continued operation for one fuel cycle. Both Welds H-6 and H-7 will require reinspection using a two-sided UT technique during the U3C13 Refueling Outage in 2008.</p> <p>Attempts were made to examine Horizontal Welds H1 through H5 and Vertical Welds V6 and V7 one cycle before their inspection interval will expire. UT examinations (one-sided) of H-1 (75.62 % coverage, 5.65% flawed per examined weld length), H-2 (86.1% coverage, 1.28% flawed per examined weld length), and H-4 (15.92% examined, 3.24% flawed per examined weld length) were performed. Inspections of H-3, H-5, V-6, and V-7 were not performed. Plans are to reinspect Welds H1 through H5 using a two-sided UT technique during the U3C13 Refueling Outage in 2008. Welds V6 and V7 will be inspected using a one-sided UT technique during the U3C13 Refueling Outage in 2008.</p>
Core Shroud (continued)	2008	UT	<p>Reinspection: UT examination of H1 (single-sided) and H2, H3, H4, H5, H6, H7, V5, and V6 (two-sided) performed per BWRVIP-76. The length of the weld inspected was at least 50 percent of the weld circumference in all cases. Flaws observed in five (H1, H2, H3, H4, & H7) horizontal welds and one vertical weld (V5) were less than 20 percent of examined length. Flaws observed in the H5 horizontal weld were less than 30 percent of examined length. Barring license renewal impacts, all horizontal welds with the exception of H5 will not be reinspected until 2018. The H5 weld</p>

Shroud Support	1994	EVT-1, UT, VT-1	(and associated vertical welds) will require reinspection in 2014. Manway cover (access hole cover) UT inspected during U3C6 Refueling Outage (1994) per the requirements of GE SIL No. 462. No reportable indications were found.
	1998		Reinspection (1998): Both access hole cover exams (UT) performed with no reportable indications.
	2000		Baseline (2000) EVT-1 inspection per BWRVIP-38 for Shroud Support Welds H-8 and H-9 at 0° and 180° locations. No reportable indications.
	2004		Reinspection (2004) of access hole cover locations at 0° and 180° per GE SIL No. 462 R1 (EVT-1). No reportable indications were found. Reinspection (2004) of Shroud Support welds H-8 (EVT-1) and H-9 (manual UT) per BWRVIP-38, -104. No reportable indications were found.
Shroud Support (continued)	2008	EVT-1	Reinspection of Shroud Support weld H-8 (EVT-1) at 0° and 180° per BWRVIP-38. No reportable indications were found. Reinspection of access hole cover locations at 0° and 180° per GE SIL No. 462 R1 (EVT-1). No reportable indications were found.
	2012	UT	Baseline UT inspection using phased array per BWRVIP-180 of access hole cover locations at 0 and 180 degrees. No relevant indications.
	2014	EVT-1	Reinspection of Shroud Support welds H-8 and H-9 (EVT-1) at 0° and 180° per BWRVIP-38. No relevant indications found.

Core Spray Piping	1994	EVT-1, UT, VT-1	IEB 80-13/GE SIL No. 289 R1S2 of piping and welds in annulus. Indications found during U3C6 Refueling Outage (1994) in T-box to pipe weld - both T-boxes repaired with brackets.
	1997		(1997): Indications found during U3C7 Refueling Outage on welds P4d (two minor indications, total flaw length of 1.4 inches) and P8b (79% of total weld length) in Downcomer "C" piping. No other indications found.
	1998		Reinspection (1998): UT and VT exams performed per VIP guidelines, no reportable indications. Lower section of "C" Downcomer replaced with bolted piping assembly.
	2000		Reinspection (2000) per BWRVIP-18: EVT-1 visual inspections (piping bracket welds; P4d, P8a, P8b welds on "A", "B", "D" downcomers. No reportable indications. EVT-1 visual inspection of T-Box repair brackets, no indications. VT-1 visual inspection of "C" Downcomer lower section replacement, no indications.
Core Spray Piping (continued)	2002	UT, EVT-1	Reinspection per BWRVIP-18: EVT-1 visual inspections (T-Box welds). No reportable indications. UT examination of Downcomer "A" elbow welds and Downcomer "A", "B", "D" sleeve welds, no indications. EVT-1 visual inspection of T-Box repair brackets, no indications.
	2004	EVT-1, VT-1	Reinspection per BWRVIP-18: EVT-1 visual inspections (T-Box welds). No reportable indications. EVT-1 visual inspection of T-box repair brackets, no indications. VT-1 visual inspection of "C" Downcomer lower section replacement, no indications.
	2006	EVT-1, UT, VT-1	Reinspection per BWRVIP-18-A: EVT-1 visual inspections (T-Box welds). No change in reportable indication on left side of T-Box at Azimuth 240°. No other

	2008	EVT-1, VT-1	<p>reportable indications. UT examination of Downcomer "B" elbow welds and Downcomer "A", "B", "D" sleeve welds, no indications. Supplemental EVT-1 for Welds P4d, P8a, and P8b; no reportable indications. EVT-1 visual inspection of T-Box repair brackets, no indications.</p> <p>Reinspection per BWRVIP-18-A: EVT-1 visual inspections (T-Box welds, piping bracket welds), no reportable indications. No change in arc strike at 117°. No change in reportable indication on left side of T-Box at Azimuth 240°. EVT-1 visual inspection of T-box repair brackets at 120° and 240°; no reportable indications. VT-1 visual inspection of "C" Downcomer lower section replacement, no reportable indications.</p>
Core Spray Piping (continued)	2010	UT, EVT-1	<p>Reinspection per BWRVIP-18 R1: EVT-1 visual inspections performed of T-Box welds; no reportable indications. No change in arc strike at 117°. No change in reportable indication on left side of T-Box at Azimuth 240°. EVT-1 visual inspection performed of T-box repair brackets at 120° and 240°; no reportable indications. UT examination performed of Downcomer "C" elbow welds and Downcomer "A", "B", "D" sleeve welds; no reportable indications. Supplemental EVT-1 performed for Welds P4a, P4b, P8a, and P8b; no reportable indications.</p>
	2012	EVT-1, VT-1	<p>Reinspection per BWRVIP-18 R1: EVT-1 visual inspections performed of T-Box welds; no reportable indications. No change in arc strike at 117°. No change in reportable indication on left side of T-Box at Azimuth 240°. EVT-1 visual inspection performed of T-box repair brackets at 120° and 240°; no reportable indications. EVT-1 visual inspections performed of Downcomer "C" elbow welds P4a & P4b and Downcomer "A", "B", "D" P8a & P8b sleeve welds; no reportable indications. VT-1 visual inspection performed of "C" Downcomer</p>

	2014	EVT-1	<p>lower section replacement, no reportable indications.</p> <p>Reinspection per BWRVIP-18 R1: EVT-1 visual inspections performed of T-Box welds; no relevant indications. No change in arc strike at 117°. No change in previous indication on left side of T-Box at Azimuth 240°. EVT-1 visual inspection performed of T-box repair brackets at 120° and 240°; no relevant indications. EVT-1 visual inspections performed of Downcomer "C" elbow welds P4a & P4b and Downcomer "A", "B", "D" elbow welds P4a-d and sleeve welds P5, P6, P7, P8a, & P8b; axial indication noted on BP6 Weld (0.1875") was believed to be a scratch but was evaluated as both an axial and circumferential weld for conservatism and was found to be acceptable for one cycle of operation. No other relevant indications observed.</p>
Core Spray Sparger	1981-1997	EVT-1, VT-1	<p>IEB 80-13/GE SIL No. 289 R1S1R1 of welds on sparger. Minor surface indications found.</p> <p>Reinspection performed in 1997 showed no change in indications.</p>
	1998		Reinspection (1998) performed; no new reportable indications.
	2000		Reinspected (2000) per BWRVIP-18 with no reportable indications.
	2004		Reinspection (2004) per BWRVIP-18: EVT-1 and VT-1 inspections of sparger welds, no reportable indications.
	2008		Reinspection (2008) per BWRVIP-18-A: EVT-1 and VT-1 inspections of sparger welds and sparger bracket welds, no reportable indications.
	2012		Reinspection (2012) per BWRVIP-18 R1: EVT-1 and VT-1 inspections of sparger welds and sparger bracket welds, no reportable indications.

Top Guide (Rim, etc.)	1994	EVT-1, VT-1	VT-1 performed per the recommendations of GE SIL No. 554. No indications found.
	1998		Reinspection (1998) at accessible beams and alignment pins. No reportable indications.
	2000		Baseline EVT-1/VT-1 inspection (2000) per BWRVIP-26 with no reportable indications.
	2004		Reinspection (2004) per BWRVIP-26: Locations 2 and 3 (VT-1) and Location 11 (EVT-1) inspected with no reportable indications.
	2008		Reinspection (2008) per BWRVIP-26-A: Locations 2 and 3 (VT-1) and Location 11 (EVT-1) inspected with no reportable indications.
	2010	EVT-1	Baseline per BWRVIP-183: Location 1 (Grid Beam and Beam-to-Beam Crevice Slot) inspected for five grid beam cells; no reportable indications.
	2012	EVT-1, VT-1	Reinspection per BWRVIP-26-A: Locations 2 and 3 (VT-1) and Location 11 (EVT-1) inspected with no reportable indications.
	2014	EVT-1	Baseline per BWRVIP-183: Location 1 (Grid Beam and Beam-to-Beam Crevice Slot) inspected for five grid beam cells (02-39, 10-27, 14-43, 22-31, 26-19); no reportable indications.
Core Plate (Rim, etc.)	1994	VT-1, VT-3	VT-1 (1994) performed per the recommendations of GE SIL No. 588. No indications found.
	1998		Reinspection (1998) at accessible beams and alignment pins. No reportable indications.
	2000		Reinspection (2000) per BWRVIP-25: Eighteen (18) of thirty-four holddown bolts (Location 10) were VT-3 inspected

	2002		from above with no reportable indications. Reinspection (2002) per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications.
	2004		Reinspection (2004) per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications.
	2006		Reinspection (2006) per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Seventeen (17) plugs were VT-3 inspected with no reportable indications.
	2008	VT-3	Reinspection per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Twenty-two (22) plugs were VT-3 inspected with no reportable indications.
	2010	VT-3	Reinspection per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Fifteen (15) plugs (Location 13) were replaced with newer, more IGSCC-resistant plugs.
Core Plate (Rim, etc.) (continued)	2012	VT-3	Reinspection per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Fifteen replacement plugs installed during U3R14 (2010) were inspected to confirm that the replacement plug was in place and the hardware has not changed from the as-installed condition. Plug at location 47-33 was not seated and required replacement; replacement plug would not seat flush on the core plate due to interference from the adjacent guide tube tab and required machining prior to installation. Plug at 47-33 will be

SLC			inspected during U3R16 (2014) to confirm plug is still in place.
	2014	VT-3	Reinspection per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no relevant indications. Replacement plug at 47-33 that was installed during U3R15 (2012) was inspected (VT-3) to confirm that the replacement plug was in place and the hardware had not changed from the as-installed condition; no relevant indications observed.
	Prior to 2006	VT-2	(Prior to 2006): Nozzle is leak checked every outage and volumetric exams are conducted per code requirement. No indications noted.
	2006	EVT-2	Bare metal examination (EVT-2) performed per BWRVIP-03, -27. No reportable indications found.
	2008	EVT-2	Bare metal examination (EVT-2) performed per BWRVIP-03, -27. No reportable indications found.
	2010	UT, EVT-2	UT performed on SLC Nozzle N10 (stainless steel safe end-to-pipe weld). Bare metal examination (EVT-2) performed during each refueling outage for Nozzle N10 per BWRVIP-03, -27. No reportable indications found.
	2012	EVT-2	Bare metal examination (EVT-2) performed during each refueling outage for Nozzle N10 per BWRVIP-03, -27. No reportable indications found.
	2014	EVT-2	Bare metal examination (EVT-2) performed during each refueling outage for Nozzle N10 per BWRVIP-03, -27. No reportable indications found.

Jet Pump Assembly	1991-1997	EVT-1, VT-1, VT-3	<p>1994: VT-3 inspection of sensing lines per GE SIL No. 420, reinspection in 1997 - no indications in either inspection. All riser braces inspected in 1994 per SIL No. 551 - cracks found between riser and riser brace on Jet Pumps 5 and 6. Repair was conducted with installation of Jet Pump Riser Brace Clamp. 1997 reinspection for Jet Pumps 1-10 - no indications found. Jet pump adjusting screws inspected in 1991 per SIL No. 574 - no indications found. Reinspection in 1997 identified a minor indication on Jet Pump No. 6, shroud side, set screw tack weld. Set screw contact verified to be acceptable per GE RICSIL No. 078. Jet pump riser elbow circumferential welds (upper and lower) inspected in 1997 per GE SIL No. 605 R1 - no indications found. Jet pump beams replaced with beams manufactured from a modified heat treatment material in 1994. No inspection has been performed since the replacement.</p>
	1998		<p>Baseline (1998) per BWRVIP-41: EVT-1 of Medium Priority Locations RB-1a-d, RB-2a-d, RS-6, RS-7, RS-8, RS-9, IN-4, MX-2, DF-1 (Jet Pumps 5 & 6), VT-1 of Medium Priority Location WD-1 (Jet Pumps 5 & 6), EVT-1 of High Priority Locations RS-3, DF-2, AD-1, AD-2, AD-3a, AD-3b (Jet Pumps 5, 6, 14, 15, 16); no reportable indications. VT-3 of Riser Brace Clamp repair (Jet Pumps 5 & 6), no reportable indications.</p>
Jet Pump Assembly (continued)	2000	EVT-1, VT-1, VT-3	<p>Baseline (2000) per BWRVIP-41: VT-3 of holddown beam locations BB-1 and BB-2 to verify proper function of beam (all 20 jet pumps) - no indications. EVT-1 of High Priority Locations RS-1, RS-2, RS-3, DF-2, AD-1, AD-2, AD-3a, AD-3b (all jet pumps not examined in 1998); no reportable indications.</p>
	2002		<p>Baseline (2002) per BWRVIP-41: EVT-1 of Medium Priority Locations RB-1a-d, RB-2a-d, RS-6, RS-7, RS-8, RS-9, IN-4,</p>

			MX-2, DF-1 (Jet Pumps 3, 4, 7, 8, 9, 10, 15, 16); no reportable indications. VT-1 of Medium Priority Location WD-1 (Jet Pumps 3, 4, 7, 8, 9, 10, 15, 16); inlet-mixer wedge off-center on Jet Pump No. 4, no other reportable indications. EVT-1 of Set Screw Locations AS-1 and AS-2 performed for Jet Pump No. 4, indication observed on shroud-side set screw tack weld. Justification for continued operation (JCO) issued for continued operation of Jet Pump No. 4. VT-3 of Riser Brace Clamp repair (Jet Pumps 5 & 6), no reportable indications.
Jet Pump Assembly (continued)	2004	EVT-1, VT-1, VT-3	Baseline per BWRVIP-41: EVT-1 of Medium Priority Locations RB-1a-d, RB-2a-d, RS-6, RS-7, RS-8, RS-9, IN-4, MX-2, DF-1 (remaining 10 jet pumps - 1, 2, 11, 12, 13, 14, 17, 18, 19, 20); no reportable indications. VT-1 of Medium Priority Location WD-1 (remaining 10 jet pumps plus Jet Pump No. 4); inlet-mixer wedge off-center on Jet Pumps 4, 19, and 20, no other reportable indications. VT-1 of Set Screw Locations AS-1 and AS-2 performed for same 11 jet pumps where WD-1 was examined per GE SIL No. 629; indication on shroud-side set screw for Jet Pump No. 4 not observed, 0.009-inch gap observed between vessel-side set screws and inlet-mixer bellyband for Jet Pump No. 20. JCO issued for continued operation of Jet Pumps 4, 19, and 20.
Jet Pump Assembly (continued)	2006	UT, EVT-1, VT-1, VT-3	<p>Baseline per BWRVIP-41 R1, -138: UT of holddown beam locations BB-1, BB-2, and BB-3 (Jet Pumps 1 thru 20) - no reportable indications.</p> <p>Reinspection per BWRVIP-41 R1: EVT-1 of High Priority Locations RS-1, RS-2, RS-3, DF-2, AD-1, AD-2, AD-3a, AD-3b (Jet Pumps 11 thru 20) - no reportable indications.</p> <p>New baseline per BWRVIP-41 R1: EVT-1 of Medium Priority Locations RS-8 and RS-9 (Jet Pumps 1 and 2) - no</p>

			<p>reportable indications. VT-3 of Riser Brace Clamp repair (Jet Pumps 5 & 6), no reportable indications.</p> <p>Reinspection per BWRVIP-41 R1: VT-1 of Medium Priority Location WD-1 (Jet Pumps 1 thru 20) - No wear noted; inlet-mixer wedge off-center but contact observed between wedge and restrainer bracket pad on Jet Pumps 2, 4, 5, 7, 8, 12, 13, 17, 19, and 20. VT-1 of Set Screw Locations AS-1 and AS-2 performed for Jet Pumps 1 thru 20. Backlighting identified six (6) set screw gaps greater ranging from 16 to 33 mils in width. Six (6) auxiliary wedges installed on Jet Pumps 4, 7, 10, 16, 18, and 20.</p>
Jet Pump Assembly (continued)	2008	VT-1	<p>Reinspection per BWRVIP-41 R1: VT-1 of Medium Priority Location WD-1 (Jet Pumps 1 thru 20) - No vibration-induced wear noted. Inlet-mixer wedge noted as slightly off-center but with no signs of wear or movement for Jet Pump 1. Inlet-mixer wedge off-center but unchanged since U3C12 RFO (2006) for Jet Pumps 2, 4, 5, 7, 8, 12, 13, 17, 19, and 20. VT-1 of Set Screw Locations AS-1 and AS-2 performed for Jet Pumps 1 thru 20. Backlighting identified four (4) set screw gaps ranging from 7 to 12 mils in width (below 15-mil screening criteria); no additional auxiliary wedges installed. Six (6) auxiliary wedges installed in 2006 inspected to verify contact; no reportable indications.</p>
Jet Pump Assembly (continued)	2010	EVT-1, VT-1, VT-3	<p>Reinspection per BWRVIP-41, Rev. 2:</p> <p>EVT-1 of Medium Priority Locations RS-8 and RS-9 (Jet Pumps 1 thru 20) performed in accordance with BWRVIP Letter No. 2009-202 ("Interim Guidance for Accelerated Inspections of Jet Pump Riser to Riser Brace Welds and Wedges"); no reportable indications.</p> <p>VT-3 performed of Riser Brace Clamp repair (Jet Pumps 5 & 6) that was installed during Unit 3 recovery; no</p>

			<p>reportable indications.</p> <p>VT-1 performed of Medium Priority Location WD-1 (Jet Pumps 1 thru 20); no vibration-induced wear noted. VT-1 performed of Set Screw Locations AS-1 and AS-2 for Jet Pumps 1 thru 20. Backlighting identified five (5) set screw gaps ranging from 10 to 12 mils in width (below 15-mil screening criteria); no additional auxiliary wedges installed.</p> <p>VT-3 performed of sensing line clamps installed during U3R13 (2008) on Jet Pumps 1-5 and 11-15 performed to confirm that all of the repair hardware is in place and that the hardware has not shifted or changed from the as-installed condition. No relevant indications were observed.</p>
Jet Pump Assembly (continued)	2012	UT, EVT-1, VT-1	<p>Reinspection per BWRVIP-41 R3, -138 R1: UT of holddown beam locations BB-1 and BB-2, (Jet Pumps 1 thru 20) - no reportable indications.</p> <p>Reinspection per BWRVIP-41 R3: EVT-1 of Medium Priority Locations RB-1a-d, RB-2a-d, RS-6, & RS-7 (Jet Pumps 3 thru 8); IN-4, MX-2, & DF-1; no reportable indications.</p> <p>EVT-1 of High Priority Locations RS-1, RS-2, RS-3, DF-2, AD-1, AD-2, AD-3a, & AD-3b (Jet Pumps 1 thru 10); no reportable indications.</p> <p>VT-1 performed of Medium Priority Location WD-1 (Jet Pumps 1 thru 20); no vibration-induced wear noted. New wear (very minor) from routine service noted on Jet Pump 6. Minor wear on Jet Pumps 10, 15, 17, & 19 was unchanged since last inspection. VT-1 performed of Set Screw Locations AS-1 and AS-2 for Jet Pumps 1 thru 20. Backlighting identified ten (10) set screw gaps (7 existing and 3 new) nine of which ranged from 6 to 15 mils in width (below 15-mil screening</p>

			<p>criteria). One set screw gap (Jet Pump 12 Vessel-Side set screw (VS-SS)) measured at 18 mils, which exceeded the 15-mil screening criteria for installation of an auxiliary spring wedge but did not exceed the 20-mil criteria above which the potential exists for high level jet pump vibration. Engineering evaluation concluded that Jet Pump 12 is acceptable as-is for one fuel cycle; no additional auxiliary wedges installed.</p> <p>Two new set screw tack weld indications (Jet Pumps 5 & 7) observed but redundant tack weld still intact; no repair required.</p>
Jet Pump Assembly (continued)	2014	VT-1, VT-3	<p>Reinspection per BWRVIP-41 R3: VT-1 performed of Medium Priority Location WD-1 (Jet Pumps 1 thru 20); Observable downward movement of the wedge but no wear was noted on Jet Pump 5. Discernable additional wedge wear since U3R15 (2012) was noted on Jet Pump 6. Minor wear on Jet Pumps 10, 15, 17, & 19 was unchanged since last inspection. No other relevant indications observed. VT-1 performed of Set Screw Locations AS-1 and AS-2 for Jet Pumps 5 and 6. Backlighting identified two (2) set screw gaps (new gap on JP 5 VS-SS measured 7 mils, existing gap on JP 6 SS-SS shrunk from 11 mils to 4 mils), both of which were below 15-mil screening criteria; no repair required. Set screw gap of 11 mils observed on JP 5 SS-SS during U3R15 had closed shut. One new set screw tack weld indication (JP 6 VS-SS, inboard) observed but redundant outboard tack weld still intact; no repair required. Existing tack weld indication (JP 5 VS-SS, inboard) was unchanged from U3R15, redundant outboard tack still intact; no repair required. Six (6) auxiliary wedges installed during U3R12 (2006) reinspected (VT-1/VT-3) to verify contact; no change of condition observed. VT-1/VT-3 performed of Riser Brace Clamp repair (Jet Pumps 5 & 6) that was installed during Unit 3</p>

			recovery; no reportable indications.
Jet Pump Diffuser	N/A	N/A	N/A
CRD Guide Tube	1994	EVT-1, VT-3	Guide tubes vacuumed and inspected during U3C6 Refueling Outage - no reportable indications noted.
	2004		Baseline (2004) per BWRVIP-47: 10 control rod guide tubes examined. VT-3 visual examination of Locations CRGT-1 and FS/GT-ARPIN-1, MVT-1 visual examination of Locations CRGT-2 and CRGT-3; no reportable indications.
	2006		New baseline (2006) per BWRVIP-47: 13 control rod guide tubes examined. VT-3 visual examination of Locations CRGT-1 and FS/GT-ARPIN-1, EVT-1 visual examination of Locations CRGT-2 and CRGT-3; no reportable indications.
	2008		Baseline (2008) per BWRVIP-47-A: 3 control rod guide tubes examined. VT-3 visual examination of Locations CRGT-1 and FS/GT-ARPIN-1, EVT-1 visual examination of Locations CRGT-2 and CRGT-3; no reportable indications.
	2010		Baseline (2010) per BWRVIP-47-A: 3 control rod guide tubes examined. VT-3 visual examination of Locations CRGT-1 and FS/GT-ARPIN-1, EVT-1 visual examination of Locations CRGT-2 and CRGT-3; no reportable indications.
CRD Stub Tube	N/A	N/A	N/A
In-Core Housing	N/A	N/A	N/A
SRM/IRM Dry Tubes	1994	VT	Dry tubes replaced with modified design which is resistant to cracking. Inspections will be scheduled after dry tubes have reached the expected 20-year life (2014).
	2014	VT-1	Baseline inspection per GE-H SIL No. 409 R3 of all twelve SRM/IRM Dry Tubes (8 IRMs, 4 SRMs). IRM plunger 32-29 not seated in Top Guide; dry tube

			replaced. IRM plungers at three (3) locations and SRM plungers at four (4) locations were partially-seated; JCO performed by vendor to operate as-is for one fuel cycle (U3C17). Plans are to replace these seven dry tubes during U3R17 in 2016.
Instrument Penetrations	2008	VT-2	Visual leak check is performed during each refueling outage. Bare-metal examination (enhanced VT-2) performed for DM welds (nozzle-to-safe end) associated with nozzles N11A&B, N12A&B, and N16A&B. No reportable indications.
	2010	UT, VT-2	UT performed on RPV Instrument Nozzles N11A&B, N12A&B, and N16A&B (stainless steel safe end-to-pipe weld). Visual leak check (VT-2) performed during each refueling outage for Nozzles N11A&B, N12A&B, and N16A&B. No reportable indications.
	2012	UT, VT-2	UT performed on RPV Instrument Nozzles N11A&B, N12A&B, and N16A&B (stainless steel safe end-to-pipe weld). Visual leak check (VT-2) performed during each refueling outage for Nozzles N11A&B, N12A&B, and N16A&B. No reportable indications.
	2014	UT, VT-2	UT performed on RPV Instrument Nozzles N11A&B, N12A&B, and N16A&B (stainless steel safe end-to-pipe weld). Visual leak check (VT-2) performed during each refueling outage for Nozzles N11A&B, N12A&B, and N16A&B. No reportable indications.
Feedwater Sparger	1998	VT-1	Feedwater sparger nozzles examined (VT-1) per NUREG-0619; no recordable indications.
	2004	VT-3	A retaining pin has dropped into the top plate on Feedwater Sparger End Bracket at Azimuth 185°. Disposition performed to leave as-is. No other reportable indications were noted.

	2006	VT-1, VT-3	Reinspection: VT-3 visual examination performed of Feedwater Sparger End Bracket at Azimuth 185°. Additional wear noted as the retaining pin had worn its way into the feedwater casting and would soon begin to wear into the vessel attachment bracket. A hardware repair for one-cycle was installed to mitigate further wear. This repair is currently being evaluated to determine if a permanent repair will be required during the U3C13 Refueling Outage in 2008. Also, feedwater sparger nozzles examined (VT-1) per NUREG-0619; no recordable indications.
	2008	VT-3	Reinspection: VT-3 visual examination performed of eleven (11) undamaged Feedwater Sparger End Brackets. No wear observed under the retaining pin for the end bracket at all 11 locations. VT-3 visual examination performed for repair installed in 2006 on Feedwater Sparger End Bracket at 185°. Minor wear noted on bracket-to-repair clamp interface. Evaluation prepared by vendor allows operation for one cycle as-is. Reinspection during the U3C14 Refueling Outage in 2010 will be scheduled to determine if any additional wear is observed.
Feedwater Sparger (continued)	2010	VT-3	Reinspection: VT-3 examination performed of eleven (11) undamaged Feedwater Sparger End Brackets. Minor wear observed under the retaining pin for the end bracket at one new location (235°) when compared to U3R13 (2008) inspection results. Qualitative assessment performed to accept-as-is for one cycle. Additional inspections during U3R15 in 2012 will be scheduled to determine the extent of any additional wear. VT-3 examination also performed for repair installed during U3R12 (2006) on Feedwater Sparger End Bracket at 185°. Repair bracket had rotated approximately 10° counter-clockwise

	2012	VT-3	<p>from the as-left condition from U3R13; bracket was rotated to original position. No additional wear was noted on bracket-to-repair clamp interface.</p> <p>Reinspection: VT-3 examination performed of eleven (11) undamaged Feedwater Sparger End Brackets. Minor wear observed under the retaining pin for the end bracket at one new location (65°) when compared to U3R14 (2010) inspection results. No change in wear at existing location (235°). Qualitative assessment performed to accept-as-is for one cycle. Reinspections during U3R16 (2014) will be scheduled to determine the extent of any additional wear. VT-3 examination also performed for repair installed during U3R12 (2006) on Feedwater Sparger End Bracket at 185°. No additional wear noted on bracket-to-repair clamp interface. Also, a bent deformed feedwater nozzle originally noted during U3R12 (2006) on the 150° Feedwater Sparger was observed and accepted as-is.</p>
	2014	VT-1, VT-3	<p>Reinspection: VT-3 examination performed of eleven (11) unrepaired Feedwater Sparger End Brackets. No change in wear at 65° location when compared to U3R15 (2012) inspection results; wear at 235° location was slightly worse when compared to U3R15 inspection results. Qualitative assessment performed to accept-as-is for one cycle. Reinspections during U3R17 (2016) will be scheduled to determine the extent of any additional wear. VT-3 examination also performed for repair installed during U3R12 (2006) on Feedwater Sparger End Bracket at 185° location. Repair was slightly rotated but otherwise there was no change when compared to U3R15 results.</p>

Vessel ID Brackets	1997	VT-3	Jet Pump Riser Brace Welds (20) examined (VT-3): No recordable indications.
	1998	EVT-1, MVT-1	Jet Pump Riser Brace Welds (4) examined (EVT-1). Also, Core Spray Piping Brackets (8) examined (MVT-1): No recordable indications.
	2000	EVT-1	Core Spray Piping Brackets (8) examined (EVT-1): No recordable indications.
	2002	EVT-1	Jet Pump Riser Brace Welds (16) examined (EVT-1): No recordable indications.
	2004	EVT-1, VT-3	Jet Pump Riser Brace Welds (20) examined (EVT-1): No recordable indications. Also, VT-3 visual examinations performed of Steam Dryer Support Brackets (4). Abnormal wear and a lap of smeared metal noted on lead-in to Steam Dryer Bracket at Azimuth 275°. Main bracket also shows some missing material on the right side. JCO issued to support return to service.
	2006	VT-3	Feedwater Sparger Brackets (12) examined (VT-3): No recordable indications.
	2008	EVT-1	Core Spray Piping Brackets (8) examined (EVT-1): No recordable indications.
Vessel ID Brackets (continued)	2012	EVT-1	<p>Jet Pump Riser Brace Welds (12) examined (EVT-1): No recordable indications.</p> <p>Steam Dryer Support Brackets (4) examined (EVT-1): Indications noted during U3R11 (2004) were unchanged; no other recordable indications.</p> <p>Feedwater Sparger Brackets (12) examined (EVT-1): No recordable indications.</p>

	2014	EVT-1	<p>Jet Pump Riser Brace Welds (14) examined (EVT-1): No relevant indications.</p> <p>Core Spray Piping Brackets (8) examined (EVT-1): No relevant indications.</p>
LPCI Coupling	N/A	N/A	Not applicable to this plant.
Steam Dryer	<p>1991</p> <p>1998</p> <p>2002</p>	VT-3	<p>(1991): During Unit 3 Restart, cracking was found in 3 of 8 Unit 3 Steam Dryer Drain Channel to Skirt Attachment Welds. Repair of the cracked welds and reinforcement of all 8 welds for future mitigation performed.</p> <p>(1998): Welds associated with Drain Channel #1 (Azimuth 50°) were visually inspected (VT-3) in accordance with vendor requirements. No reportable indications were noted.</p> <p>(2002): Welds associated with Drain Channel #2 (Azimuth 130°) were visually inspected (VT-3) in accordance with vendor requirements. No reportable indications were noted.</p>
Steam Dryer (continued)	2004	VT-1, VT-3	<p>The following locations were visually inspected (VT-1) in accordance with BWRVIP-139 and GE SIL 644 R1:</p> <ul style="list-style-type: none"> • Horizontal and vertical welds which outline the steam dryer outer bank • Cover plate between the outer hood vertical plate and the support ring • Dryer manway @ 90° <p>No reportable indications were noted.</p> <ul style="list-style-type: none"> • Stabilizer/Tie Bars (original) - Visually inspected (VT-1) for damage; no deformation noted. • Stabilizer/Tie Bar repairs - Repairs made during U3C11 Mid-Cycle Outage in 2003 were visually inspected (VT-1) to verify that replacement tie bars and attachment welds were intact. No reportable indications were noted. <p>The following locations were inspected in accordance with INPO OE:</p> <ul style="list-style-type: none"> • Leveling screw tack welds @ 5° &

Steam Dryer (continued)			<p>185° visually inspected (VT-1) - No reportable indications were noted.</p> <ul style="list-style-type: none"> • Dryer surfaces visually inspected (VT-3) - Light Noble Metal coating observed in many areas, some with flaking of crud deposits (NRI). <p>Welds associated with Drain Channel #3 (Azimuth 230°) visually inspected (VT-1) in accordance with BWRVIP-139. No reportable indications were noted.</p>
	2006	VT-1, VT-3	<p>The following locations were visually inspected (VT-1) in accordance with BWRVIP-139 and GE SIL 644 R1:</p> <ul style="list-style-type: none"> • Weld seams associated with the outer side of the inner banks - No reportable indications. • Stabilizer/Tie Bars (original) - Visually inspected (VT-1) for damage; no deformation noted. • Stabilizer/Tie Bar repairs - Repairs made during U3C11 Mid-Cycle Outage in 2003 were visually inspected (VT-1) to verify that replacement tie bars and attachment welds were intact. No reportable indications were noted.
	2008	VT-1, VT-3	<p>The following locations were visually inspected (VT-1) in accordance with BWRVIP-139 and GE SIL 644 R1:</p> <ul style="list-style-type: none"> • Stabilizer/Tie Bars - No apparent change to deformation noted on tie bars between Banks 2 & 3 and 4 & 5: All 3 locations (0°, center, 180°). Evaluation performed to accept-as-is until Extended Power Uprate (EPU) implementation in 2010. Replacement tie bars between Banks 3 & 4 examined; no reportable indications. • Welds associated with Drain Channel #1, #2, #3, and #4 (Azimuths 50°, 130°, 230°, and 310°) visually inspected (VT-1) in accordance with BWRVIP-139. No reportable indications were noted.

		VT-1	<p>VT-3 visual examination performed of accessible steam dryer surfaces to look for potential damage as indicated by increased moisture carryover. No reportable indications were noted.</p> <p>Pre-EPU inspection of Steam Separator Standpipe Welds performed to look for fatigue cracking. Linear indication identified on the top of the Lower Gusset between Shroud Head Bolts #14 and #15. Engineering Evaluation allows operation for one cycle as-is with no repair required. Reinspection during the U3C14 Refueling Outage in 2010 will be scheduled to determine if the indication has changed.</p>
		VT-1	<p>Pre-EPU inspection of all 48 Shroud Head Bolts performed to look for wear in locking pin window and on mid-span and top support ring gussets. Material deformation noted on the indicator window of Shroud Head Bolt #42. Engineering Evaluation allows operation for one cycle as-is with no repair required. Reinspection during the U3C14 Refueling Outage in 2010 will be scheduled to determine if the indication has changed.</p>
Steam Dryer (continued)	2010	VT-1	<p>The following locations were visually inspected (VT-1) in accordance with BWRVIP-139 and GE SIL 644 R1:</p> <ul style="list-style-type: none"> • Stabilizer/Tie Bars - Four tie bars (TB-2/3-01, -02, TB-4/5-01, -02) exceeded acceptance criteria as regards to horizontal and vertical deflection and were replaced with EPU-qualified replacements. Two additional tie bars (TB-2/3-03 and TB-4/5-03) were also replaced with EPU-qualified replacements to maintain dryer symmetry. • Drain Channel Welds • Vertical Bank Welds • Lower Horizontal Bank Welds • Upper Horizontal Bank Welds • Lifting Rods

Steam Dryer (continued)	2012	VT-1	<ul style="list-style-type: none"> Upper Support Ring <p>With the exception of the tie bars, no reportable indications were noted.</p> <p>The following locations were inspected in accordance with INPO OE:</p> <ul style="list-style-type: none"> Leveling screw tack welds at 5 and 185 degrees were VT-1 inspected; no relevant indications were noted. Dryer hood exterior surfaces above the support ring were VT-1 inspected; light to heavy scale deposits were observed.
		VT-1	<p>Linear indication observed during U3R13 (2008) on the top of the Lower (Mid-Span) Gusset between Shroud Head Bolts #14 and #15 was re-examined; no change was noted when compared to the previous examination. Reinspection during U3R15 in 2012 will be scheduled to determine if the indication has changed.</p>
		VT-1	<p>Material deformation noted on the indicator window of Shroud Head Bolt #42 during U3R13 (2008) was re-examined; a slight increase noted in the distortion of the window. Reinspection during U3R15 in 2012 will be scheduled to determine if the indication has changed.</p>
		VT-1	<p>The following locations were visually inspected (VT-1) in accordance with BWRVIP-139 and GE SIL 644 R1:</p> <ul style="list-style-type: none"> Welds associated with Drain Channel #3 (Azimuth 230°) Tie Bars replaced during U3R14 (2010): TB-2/3-01, -02, -03, TB-4/5-01, -02, -03 Tie Bars replaced during U3C11 Midcycle (2003): TB-3/4-01, -02, -03 Original Tie Bars: TB-1/2-01, -02, TB-5/6-01, -02 <p>No relevant indications noted.</p>

		VT-1	Linear indication observed during U3R13 (2008) on the top of the Lower (Mid-Span) Gusset between Shroud Head Bolts #14 and #15 was re-examined; no change was noted when compared to the previous examination. Reinspection will be scheduled to determine if the indication has changed whenever the steam separator is inspected.
		VT-1	Material deformation noted on the indicator window of Shroud Head Bolt #42 during U3R13 (2008) was re-examined; no change was noticed from the previous inspection. Reinspection will be scheduled to determine if the indication has changed whenever the steam separator is inspected.
Steam Dryer (continued)	2014	VT-1, VT-3	Original tie bars (TB-1/2-01, -02, TB-5/6-01, -02) visually inspected (VT-1/VT-3) in accordance with BWRVIP-139 and GE SIL 644 R1. No distortion observed for all four tie bars. No relevant indications observed for TB-1/2-01, -02; Weld drip crack adjacent to TB-5/6-01 and crater crack adjacent to TB-5/6-02 were unchanged when compared to U3R15 (2012) results. Steam Dryer Banks #1 through #6 End Bank Plates and Steam Dams exterior surfaces on the 0 and 180 degree ends were examined (VT-3) looking for unusual or heavy crud and/or oxide deposits from the tops to the Mid-Support Ring. No unusual or heavy deposits observed.
Steam Separator	2012	VT-3	Steam Separator tie bars (cross bracing) examined for signs of cracking (Reference: INPO OE 30657). No relevant indications were observed on the cross bracing. Also, a damaged (dented) stand pipe (first one on the south (0-degree) side in Row #1) was observed during tie bar inspections; dent was very minor and was acceptable as-is.
DM Welds - BWRVIP-75-A Cat. C	2010	N/A	No Cat. C DM Welds were inspected during Unit 3 Refueling Outage 14 (U3R14).

	2012	N/A	No Cat. C DM Welds were inspected during Unit 3 Refueling Outage 15 (U3R15).
	2014	UT	One Cat. C DM Weld was inspected during Unit 3 Refueling Outage 16 (U3R16) with no recordable indications.
DM Welds - BWRVIP-75-A Cat. D	2010	N/A	No Cat. D DM Welds were inspected during Unit 3 Refueling Outage 14 (U3R14).
	2012	N/A	No Cat. D DM Welds were inspected during Unit 3 Refueling Outage 15 (U3R15).
	2014	N/A	No Cat. D DM Welds were inspected during Unit 3 Refueling Outage 16 (U3R16). BFN Unit 3 has only two (2) Cat. D DM Welds. These are stainless steel (SS) flued head to cast SS valve bodies.

Reactor Internals Inspection History

Plant: **Brunswick Unit 1**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Re-inspections
Core Shroud	1993	EVT-1 and UT	EVT-1 baseline (<i>H1-H7</i>). Indications in several circumferential welds and ring segment welds. No indications on vertical welds. UT selected areas on H1 and H5. Installed clamp repair on H2/H3. Full structural margins on non-repaired welds.
	1995	UT	Re-inspected several areas of H1, H6a, H6b, with no indication growth. H9, 100% , no indications (inspected by Siemens) NRI. H5 inspected by GE in 2 areas, no growth noted. 2 repair brackets inspected with no indications.
	1996	UT	Re-inspected H1 and H5 with no indication growth. UT baseline of H4, H6A, H6B and H7. No indications on H7. Minor indications on H4, H6A and H6B with no impact to structural margins. VT-1 and VT-3 inspected 3 repair brackets with no indications.
	1998	VT-1/VT-3	No inspections of welds was performed. Inspected 7 of 12 total shroud clamps with no indications. This completed the initial inspection of all 12 clamps installed in 1993.
	2000	UT/EVT-1/VT-1/VT-3	Re-inspected H1 and H5 (UT) with no indication growth. Re-inspected (EVT-1) OD side of V1 and V2 with no indications. VT-1 and VT-3 inspected 3 repair brackets with no indications.
	2002	VT-1/VT-3	No shroud weld inspections were performed. Inspected 4 of 12 total shroud repair clamps with no indications noted.

	2004	VT-1/VT-3	Visually examined 2 shroud vertical welds and 4 of 12 total shroud repair brackets with no indications noted.
	2006	VT-1/VT-3	Visually examined 2 shroud vertical welds (V1 & V2) and 4 of 12 total shroud repair brackets with no indications/degradation noted.
		UT	Performed UT of Core shroud horiz. Welds H4, H6a, H6b, & H7 all of which are <10% cracked.
	2008	EVT-1	Core Shroud Vertical Welds V3, V4, V7, and V8 ID & OD. (NRI).
		VT-1/VT-3	Shroud repair clamps, 4 of 12 (NRI).
	2010	VT-1/VT-3 UT	Shroud Repair clamps 4 of 12 (NRI) H1 upper & lower, H5, V1, V2. Flaw found in V1 outside HAZ potentially IASCC ~ 2.9" long. V2 – (NRI). H1 upper 100% coverage, 75.5% flawed. H1 lower 83% coverage, 10.3% flawed. H5 100% coverage, 17.49% flawed. During H1 lower inspection, flaws noted on the ID of the core shroud in the HAZ of the sparger support brackets at 30,60,90,120,150,240,270, & 300 degree Azimuths. (RI) Not all were seen visually due to access restriction.
	2012	VT-1/VT-3 EVT-1	Shroud Repair Clamps 4 of 12 (NRI) Shroud Vertical Welds V5 and V6 from the OD and ID. V5 OD NRI, V5 ID 11 flaws identified. V6 OD 45 flaws, V6.
	2012	EVT-1	ID 11 flaws. Most flaws perpendicular to the vertical welds. New small RI in shroud next to Core Spray to shroud weld P8b-10.
	2014	VT-1/VT-3 EVT-1	Shroud Repair Clamps 4 of 12 Visual of H4 from OD, 17 short (< 2" each) flaws found perpendicular to the weld in the HAZ.

Shroud Support	1993	VT	VT of accessible areas on H8, H9, and access hole covers with no indications.
	1995	UT	UT baseline of H9 and VT reinspection of portions of H8 with no indications noted. VT-1 inspection of shroud support Access Hole Covers with no indications noted.
	1996	EVT-1	EVT-1 examination of Access Hole Covers with no indications noted.
	1998	EVT-1	Inspected Access Hole covers with no indications noted.
	2002	EVT-1	Inspected both Access Hole Cover welds with no indications noted. Visually inspected approximately 18% of top side of H8 with no indications noted.
	2004	UT	UT 50% of H9 with no relevant indications noted.
	2006	EVT-1	Both Access Hole Covers – No indications noted.
	2008	EVT-1	H8 at 0 & 180 degrees (NRI).
	2010	EVT-1	Both access hole covers (NRI).
	2012	N/A	None.
	2014	UT	H9 Weld inspected using manual encoded technique for ~17% of the circumference. NRI.
Core Spray Piping	1980's to Present	MVT-1 and EVT-1	IEB 80-13 of piping and welds in annulus. One indication on the header piping. Full structural margins. Inspected per BWRVIP-18 in Spring 1996 with no new indications.
	1998	EVT-1	Performed re-inspection of Core Spray piping and spargers per BWRVIP-18. No new cracking noted. Previous cracking had no significant length changes.

	2000	EVT-1	Performed re-inspection of Core Spray piping and spargers per BWRVIP-18. No new cracking noted. Previous cracking had no significant length changes.
	2002	EVT-1	Inspected 100% of the Core Spray piping creviced welds and 25% of the elbow welds per BWRVIP-18. No new cracking noted. Re-inspection of a previously identified crack showed some small increase in length.
	2004	EVT-1	Inspected 100% of the Core Spray piping creviced welds and 25% of the elbow welds per BWRVIP-18. No new cracking noted. Re-inspection of a previously identified crack showed no discernible change in length.
	2006	EVT-1 & UT	Inspected 100% of the Core Spray piping creviced welds and 25% of the elbow welds per BWRVIP-18-A. No new cracking noted except for the P3c-270 piping butt weld (unique to BNP-1). Additional cracking on the lower side of the weld prompted emergent UT to interrogate the entire circumference. Cracking extent estimated to be 80% of the Circ. Repair installed IAW BWRVIP-19-A and BWRVIP-84 requirements.
	2008	EVT-1	All P1, P2, P3, P5, P6, P7, P8 & 9 P4's, 1 PB (NRI).
	2010	EVT-1/VT-3 EVT-1	PB @30 deg (NRI). 2-P1& P2's, 4-P3,P4,P5,P6,P7, 8-P8's (NRI) one repair clamp P3c-RC (NRI), except for RI on P5-350, 0.45" long
	2012	EVT-1 VT-3/VT-1	2(P1,P2) 4(P3,P4,P5,P6,P7,P8a,P8b) all NRI except P5-350 exist RI, P8b-10 new RI (in Core Shroud). PB-330 & 150 NRI. Piping Repair Clamp NRI.

Core Spray Sparger	2014	EVT-1	2(P1,P2) 4(P3,P4,P5,P6,P7,P8a,P8b) and repair clamp P3c-270RC all NRI P5-350 & P8b-10 - RI no growth noted. PB-210 – NRI.
	1980's to Present	MVT-1, EVT-1, and VT-3	IEB 80-13 of welds on piping and spargers. One indication on sparger T-Box. Inspected per BWRVIP-18 in Fall, 1996 with no growth in old indication and no new indications.
	1998	MVT-1, EVT-1, and VT-3	Re-inspected per BWRVIP-18 with no new indications. Previously identified crack had no significant length changes.
	2000	MVT-1, EVT-1, and VT-3	Re-inspected per BWRVIP-18 with no new indications. Previously identified crack had no significant length changes.
	2002	EVT-1, VT-1	Inspected sparger tee welds, sparger drain welds, sparger end cap welds and 25% of the sparger nozzle welds and support brackets in accordance with BWRVIP-18. No new indications were reported and no change was noted in a previously reported indication.
	2004	EVT-1, VT-1	Inspected 100% of sparger tee welds, 100% of the sparger end cap welds, 50% of the sparger drain welds, and 25% of the sparger nozzle welds and support brackets in accordance with BWRVIP-18. No new indications were reported and no change was noted in a previously reported indication.
	2006	EVT-1, VT-1	Inspected 100% of sparger tee welds. Existing crack on S2a-350 determined to be same length. Crack in a tack weld on a sparger nozzle was found and 100% sample expansion to all nozzle welds were performed per BWRVIP-18-A. Two additional cracked tack welds were identified.
	2008	VT-1 VT-1/VT-3	2 S1, 4 S2, 4 S4, 2 Noz tack welds 5 SB, Sparger Nozzles SN170-02c-53c, 1 SD (NRI). Newly installed repair clamp replacing

	2010	EVT-1	S2a-350 and S2b-350 welds. 2-S1, 4-S2, 52-S3, 4-S4, 5-SB, 1-SD (NRI) 3 cracked tack welds, 45a, 24c, 30d previously discovered. Flaws noted on the ID of the core shroud in the HAZ of the sparger support brackets at 30,60,90,120,150,240,270, &300 degree Azimuths. (RI) Not all were seen visually due to access restriction.
	2012	VT-1/EVT-1	All Sparger Nozzles examined. Sparger Nozzle Tack weld flaws Sparger A, 1 existing Sparger B, 1 existing Sparger C, 1 existing, 4 new Sparger D, 1 existing, 9 new Sparger Brkts 211,241,270,299,330 NRI Drain SD-190-1 NRI 2 S1, 4 S2, 4 S4 - NRI
	2012	VT-1	Sparger T-Box Repair Clamp – NRI
	2014	EVT-1	Sparger Brackets @ 61, 90, 119, & 150 degrees. Cracking noted in the Shroud adjacent the brackets. RI.
		VT-3/VT-1	Sparger A Loop 52 Nozzles – NRI. 2 S1, 2 S2a, 2 S2b, 2 S4a, 2 S4b, 1 SD-190-2, 1 S2ab-350RC (repair clamp), all NRI.
Top Guide Grid	1993-96	VT-1	VT-1 of 14 cells in 1993; no indications. 1996 re-inspected with no indications. VT-3 of wedges, holddown clamps, eccentric aligners, and general surface areas in 1993. One minor indication on eccentric aligner & dowel pin hole.
	2000	VT-1	VT-1 of 2 Hold Down assemblies with no indications noted.
	2004	VT-1	VT-1 of 2 Hold Down assemblies with no indications noted.
	2006	EVT-1	Inspected three (3) top guide grid beam intersections. No indications noted.

	2008	VT-1 EVT-1	All 4 hold down latches 3 Grid Beam Intersections from 2 cells each (NRI).
	2010	VT-1 EVT-1 VT-1/VT-3	2 hold-down latches (NRI). 3 grid cells (NRI). 3 in-core dry tubes (NRI).
	2012	EVT-1	7 grid cells (NRI). 3 in-core dry tubes (NRI).
	2014	2014	3 grid cells (NRI). 3 in-core dry tubes (NRI).
Core Plate (Rim, etc.)	1993	VT-1	Holddown bolts from topside and partial surface areas. No indications.
	2004	N/A	No inspections performed in 2004.
	2006	UT	Inspected 100% of the core plate bolts using a plant specific methodology that determines bolt existence through the core plate support ring.
	2008	N/A	No inspection in 2008.
	2010	N/A	No inspection in 2010.
	2012	N/A	No inspection in 2012.
	2014	N/A	No inspection in 2014.
SLC	1988	LP	No examinations performed on internal piping. Section XI LP performed on nozzle to safe end welds. No indications.
	2000	LP	Section XI LP performed on nozzle to safe end weld. No indications noted.
	2004	VT-2	Direct VT-2 examination of nozzle to safe end weld during system pressure test. No leakage noted.
	2006	VT-2	Direct VT-2 examination of nozzle to safe end weld during system pressure test. No leakage noted.

	2008	VT-2	Direct VT-2 examination of nozzle to safe end weld during system pressure test. No leakage noted.
	2010	VT-2	Direct VT-2 examination of nozzle to safe end weld during system pressure test. No leakage noted.
	2012	VT-2	Direct VT-2 examination of nozzle to safe end weld during system pressure test. No leakage noted.
	2012	VT-2	Direct VT-2 examination of nozzle to safe end weld during system pressure test. No leakage noted.
Jet Pump Assembly	1993-96	VT-1	Riser brace brackets done once per period. Wedges, set screws, tack welds, sensing lines and sensing line supports VT per various SILs. Jet pump beams replaced in Fall, 1993. No indications noted, as well as in old jet pump beams. Transition areas inspected in 1995 with no indications.
	1998	EVT-1	Inspected all RS-1, RS-2 and RS-3 welds and associated draw beads. Cracks found on 3 risers with lengths ranging from 1-1/8" to 5-3/4". Analysis concluded structural margin acceptable for one cycle of operation. Inspected all 10 TS-3 welds (safe end transition piece to safe end extension) with no indications.
	2000	EVT-1	Inspected previously identified cracking on 3 RS-1 welds with no change in cracking.
	2002	EVT-1	Inspected 100% of hold-down beams, 25% of the IN-4 welds, 20% of the MX-2 welds, 20% of the WD-1 areas, 30% of the riser brace welds and re-examined the previously identified indications on the RS-1 welds of risers "D", "G" and "K". No new indications were noted and no significant changes were noted in the previously identified indications.

	2004	EVT-1	Inspected 25% of the IN-4 welds, 30% of the MX-2 welds, 80% of the WD-1 areas, 15% of the riser brace welds, 50% of the adapters welds AD-1 & AD-2, 35% of the restrainer RS-6 and RS-7 welds, 30% of the riser brace to riser pipe RS-8 & RS-9 welds, 60% of the riser elbow RS-1 welds and re-examined the previously identified indications on the RS-1 welds of risers "D", "G" and "K". No new indications were noted and no significant changes were noted in the previously identified indications.
	2006	UT & EVT-1 & VT-1	UT all Beams for BB-1 region. EVT-1 for all Beams for BB-2 & BB-3 regions for additional cycle due to tooling issues. No growth noted of cracking located in the Riser Elbows RS-1 welds D, G, & K. Also inspected RS-1, RS-1A, RS-2 & RS-3 on 2 Risers. Two RS-6, one RS-7, RS-8, & RS-9, three IN-4, three MX-2, , two riser braces, and VT-1 of all wedges WD-1. No additional indications noted
	2008	EVT-1	4 IN-4, 3 MX-2, 2 RB-2a,b,c,d 4 RS-1a, 2 RS-2, 2 RS-3, 2 RS-6, 3 RS-7,8,9 10 RS-1 New RI's found on A & F risers. No growth found on K riser.
		VT-1	2 WD-1 (NRI).
		UT	ALL Beams BB-1, 2a, 2b, 3a, 3b (NRI).
		VT-1/VT-3	2 newly installed repair clamps on JP Risers D & G (thermal sleeve to elbow welds).
	2010	EVT-1	3-IN4, 4-MX2, 7-RS1&1a, 2RS1 repair clamps, 1-RS2, 1-RS3, 1-RS6, 1-RS7, 7-RS8, 7-RS9, 3-RB1a-d, 1RB2a-d, 18-WD1 (NRI) JPSL1,10,11,20 (NRI)
		VT-1/VT-3	RS-1 on JPA, F, K have previous flaws with no growth noted this outage.
	2012	EVT-1	2IN4, 2MX2, 1RB-2a-d, 8RS-1, 2RS1

	2014	VT-1/VT-3 EVT-1	repair clamps, 3RS-1a, 2RS-2, 2RS-3, 1RS6-9. 2WD1, 1SL NRI except for the known flaws in the RS-1 for A,F,K which show no change from last outage. 2 IN-4, 2 MX-2, 2 RB-1a-d, 2 RB-2a-d, 8 RS-1, 2 RS-1a, 2 RS-1 repair clamps, 2 RS-2, 2 RS-3, 1 RS-6, 1 RS-7, 1RS-8, 1 RS-9, 3 WD-1 w/rods, 3 JP sensing lines. Riser Elbows (RS-1) A, F, & K flaws show no growth. All other NRI.
Jet Pump Diffuser	start-up to present	VT-3	Adapter and diffuser welds inspected once per period. Last inspected in 1995 with no indications.
	1998	MVT-1	Inspected 20 of 40 DF-1 and DF-2 welds with no indications.
	2000	EVT-1	Inspected 10 AD-1 and AD-2 welds with no indications.
	2004	EVT-1	Inspected 50% of the DF-2 diffuser welds. No indications noted.
	2006	EVT-1	Inspected three AD-1 & AD-2, and three DF-1 & DF-2 welds.
	2008	EVT-1	4 AD-1, 4 AD-2, 3 DF-1, 3 DF-2 (NRI).
	2010	EVT-1	4-DF1, 4-DF2, 4-AD1, 4-AD2 (NRI).
	2012	EVT-1	3AD1, 2AD2, 2DF1, 3DF2.
	2014	EVT-1	3 AD-1, 4 AD-2, 2 DF-1, 3 DF-2 – NRI.

CRD Guide Tube	1993	VT-3	Inspected accessible surfaces of approximately 75% of total population with no indications.
	2002	VT-1, VT-3	Inspected the CRGT-1, -2, -3 and FS/GT-ARPIN-1 components on seven guide tubes. No indications noted.
	2004	N/A	No inspections performed in 2004.
	2006	N/A	No inspection performed in 2006.
	2008	EVT-1, VT-1, VT-3	Inspected the CRGT-1, -2, -3 and FS/GT-ARPIN-1 components on seven guide tubes. No indications noted.
	2010	N/A	Baseline was complete last outage. No additional inspection currently required.
	2012	EVT-1	14 Guide Tube CRGT-2 & CRGT-3 inspected 13 NRI, 1 RI in CRGT-2 Replaced the guide tube with new one.
	2014	N/A	Baseline completed in 2012.
CRD Stub Tube	1993	VT-3	Inspected accessible surfaces of approximately 75% of total population with no indications.
	2004	N/A	No inspections performed in 2004.
	2006	N/A	No inspections performed in 2006.
	2008	VT-3	9 stub tube to vessel welds (NRI).
	2010	N/A	No inspections performed in 2010.
	2012	VT-3	Lower Plenum examined in the vicinity of the removed guide tube. Inspected all accessible stub tube/RPV welds, CRD Housing to stub tubes. ..NRI
In-Core Housing	Fall, 1993	VT	No indications noted.
	2004	N/A	No inspections performed in 2004.
	2006	N/A	No inspections performed in 2006.
	2008	VT-3	9 stub tube to CRD housing welds (NRI)

	2010	N/A	No inspections performed in 2010.
	2012	VT-3	3 In-core housing to RPV NRI.
	2014	VT-3	5 In-Core Housing to RPV – NRI.
Dry Tube	Fall, 1993	VT	No indications. Replaced in 1988. Scheduled for inspection in 2008.
	2004	N/A	No inspections performed in 2004.
	2006	VT-1	Inspected three dry tubes per SIL 409 in conjunction with top guide grid beam intersections. No indications noted.
	2008	VT-1	Inspected three dry tubes per SIL 409 in conjunction with top guide grid beam intersections. No indications noted.
	2010	VT-1/VT-3	3 dry tubes inspected per SIL 409 (NRI).
	2012	VT-1/VT-3	3 dry tube exams per SIL 409 (NRI).
	2014	VT-3	3 dry tube exams per SIL 409 (NRI).
Instrument Penetrations	1988 and 1995	LP	Inspections of external piping performed once per interval in accordance with ASME Section XI. No indications.
	2004	VT-2	Instrument nozzles were VT-2 examined as part of the RPV pressure test. No leakage noted. EVT-1/VT-3 exam performed on inner radius of Jet Pump instrumentation nozzles N8A & N8B.
	2006	VT-3	Inspected Inner nozzle radius. No degradation noted.
	2008	EVT-1/VT-3	Inner radius of N11a,b & N16a,b (NRI).
	2010	EVT-1/VT-3	Inner radius of N11a,b & N12a,b (NRI).
	2012	N/A	None.
	2014	EVT-1	Inner radius of N12A (NRI). Inner radius of N9 CRD Return (NRI).

Vessel ID Brackets	1993-1996	VT-1 in beltline area; VT-3 other areas	Section XI inspections of core spray, feedwater sparger, dryer and surveillance capsule holder brackets performed once per interval. Last inspection Fall, 1996. No indications.
	2002	EVT-1/VT-1	Inspected 6 of 20 jet pump brace arm pad to RPV welds and 4 of 8 core spray header bracket to RPV welds. No indications were noted.
	2004	EVT-1/VT-1	Inspected 4 steam dryer hold down lugs, 2 of 8 Core Spray header bracket to RPV welds, 8 Feedwater End Bracket to RPV welds, 8 Jet Pump Riser Brace Arm to RPV welds, and 2 Surveillance Specimen Holder Bracket to RPV welds. No indications were noted.
	2006	EVT-1/VT-1	Inspected both guide rod brackets, two steam dryer support brackets, two surveillance specimen holder brackets, two jet pump riser braces, and one core spray piping support bracket (upper and lower). No indications were noted.
	2008	EVT-1	Core Spray Bracket @ 330 deg JP Riser Braces for H, J, & K risers (NRI)
		VT-1	Lower Surv. Spec. bracket @ 300 deg. (NRI)
		VT-3	Two (2) Steam Dryer Support Brackets Upper Surv. Spec. bracket @ 300 deg. (NRI)
	2010	EVT-1	Core Spray Bracket @ 30 deg JP Riser Braces for B, C, & D (NRI) Lower Specimen brkt @ 30 deg (NRI) Two Dryer Support Brackets (NRI) Two Dryer Hold-down Brackets (NRI) Upper Specimen brkt @ 300 deg. (NRI)
	2012		Core Spray Piping Bracket @ 150 deg JP Riser Braces for E, & H (NRI) Lower Specimen brkt @ 120 deg (NRI) Two Dryer Support Brackets (NRI) Four Dryer Hold-down Brackets (NRI) Upper Specimen brkt @ 120 deg. (NRI)

	2014	VT-1/VT-3/ EVT-1	Core Spray Piping Bracket @ 210 deg. JP Riser Braces for B, & E (NRI). Lower Specimen brkt @ 300 deg (NRI). Two Dryer Support Brackets (NRI). Upper Specimen brkt @ 300 deg. (NRI). Feedwater Sparger End Brackets (NRI). Specimen Brackets @ 120 deg. (NRI). Specimen Brackets @ 30 deg. Found ajar from lower bracket. Removed and Installed to proper fit.
Steam Dryer	3/2002	EVT-1/VT-3	Inspected two known cracks at SW-V4 & SW-V8. Inspected Guide Rod assy dryer bank 1 H4 and all four lifting eye rod supports. Also inspected upper support ring.
	9/2002	VT-3	Inspected overall condition of the steam dryer during B114M1 outage (partial uprate). No significant degradation noted.
Steam Dryer	2004	VT-1	Baseline inspection of 100% exterior weld HAZ's. Repaired/replaced all upper tie bars. Added gusset plates to exterior banks 1 and 5. Reinforced welds of cover plates to upper support ring. Weld repaired most of the existing cracks.
	2005	VT-1	Mid-cycle outage inspected repairs and modifications.
	2006	VT-1	Inspected welds in accordance with BWRVIP-139, repairs, modifications, and outer bank areas.
	2008	VT-1	52 of 143 steam dryer welds. Numerous small cracking found on upper support ring- not significant. One previously repaired fatigue crack is cracked again- not significant at this time. Major crack found in lifting eye at 35 degrees. Installed repair this outage.
	2010	VT-1	30 components on the steam dryer inspected. No growth of existing flaws. 2 new flaws on the modified man hole

	2012	VT-1 (89)	cover (small). One new flaw in the skirt next to the NW drain pipe elbow (NWDP-1) 31 components of the steam dryer were inspected. No change in existing flaws. New flaw identified at the bottom of a drain channel weld to the skirt. Fatigue crack about 2.2" long. (DC348-L). Some new indications on the cover plate to upper support ring. Small flaws along the ring. Nothing significant.
	2014	VT-1 (89)	36 welds were inspected. No change in existing flaws. Five (5) minor flaws with no change and one (1) flaw determined to be non-relevant. Reclassified as NRI.
LPCI Coupling	NA	NA	Not applicable to Brunswick.
Dissimilar Metal (DM) Welds:			
CAT A	2008 -	UT	N9 CRD Nozzle (1)
CAT B	-	N/A	None
CAT C	-	N/A	None
CAT D	-	UT	Feedwater: N4C (3), N4D (3) Recirc: 28-A (3) , 28-B (4) Inst. Nozzle N8B (1)
CAT A	2010 -	UT	4 (N12A, N2B, N2D, N2F Nozzle to safe end weld)
CAT B	-	N/A	None
CAT C	-	UT	1 (N1A Nozzle to safe end weld)
CAT D	-	-	None
CAT A	2012 -	N/A	CAT A - 0
CAT B	-	N/A	CAT B - 0
CAT C	-	N/A	CAT C - 0
CAT D	-	UT	CAT D - 9

CAT A	2014 -	N/A	CAT A - 0
CAT B	-	N/A	CAT B - 0
CAT C	-	N/A	CAT C - 0
CAT D	-	UT	1. (1B11N9-RPV-FW1CRD274) ASME B-F 2. (1G31FF-14-FWRWCUB3B) ASME B-J

Reactor Internals Inspection History

Plant: **Fermi Unit 2**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Shroud (BWRVIP-07/76)	RF04	VT-1 (1mil wire)	Inspected: 100% ID welds H2, H3, and, H4; 100% OD welds H1-H7; accessible areas H8 & H9
		VT-1/VT-3	The only indications identified were two <1" vertical in orientation above the H2 weld at azimuth 125 degrees. These were evaluated against established flaw screening criteria and found acceptable.
	RF05	EVT-1 (1/2mil wire)	Inspected approximately 60-70 degrees arc on the core shroud in area of previous indications. H2-H4 inspected on shroud ID, H1-H7 inspected on shroud OD. No new indications, no change observed in previous indications above H2 weld.
	RF06	UT	Performed focused phased array UT examination of the H3, H4, H5 and H7 welds utilizing GE's universal carousel. No indication of cracking was identified.
		EVT-1	A cursory exam was performed on H-3 weld to confirm UT results for information only. No new indications and no change was observed in the previous indication above H2 weld.
	RF07	EVT-1	Reinspected the indication above the H2 weld on the inside of the shroud. No change in appearance. The control rod blade was withdrawn to perform the examination.
	RF08	N/A	No inspections performed on the Core Shroud. Inspections were performed on the Shroud Support

	RF09	N/A	No inspections performed on the Core Shroud. Inspections were performed on the Shroud Support
	RF10	N/A	No inspections performed on the Core Shroud. Inspections were performed on the Shroud Support
	RF11	N/A	No inspections performed on the Core Shroud. Inspections were performed on the Shroud Support
	RF12	UT	Performed phased array UT examination of the H3, H4, H5 and H7 welds from both sides utilizing AREVA's demonstrated technique. No indication of cracking was identified. Inspection coverage exceeded 60% for all welds with coverage spaced around the entire circumference.
	RF13	N/A	No inspections performed on the Core Shroud. Inspections were performed on the Shroud Support.
	RF14 (10/10)	N/A	No inspections performed on the Core Shroud. Inspections were performed on the Shroud Support.
	RF15 (04/12)	N/A	No inspections performed on the Core Shroud. Inspections were performed on the Shroud Support.
	RF16 (2014)	N/A	No inspections performed on the Core Shroud. Inspections were performed on the Shroud Support
Shroud Support (BWRVIP-38/*104) Access Hole Cover (BWRVIP-180)	RF03	VT-3	Inspected shroud support gusset welds and H8/H9 in conjunction with jet pump inspections. No indications
	RF04	VT-1/VT-3	Inspected areas in conjunction with jet pumps, included were gusset welds H8 and H9. H8 and H9 welds inspected at 0 and 180 degrees with 1 mil wire. No indications.
	RF05	EVT-1 (1/2 mil)	Inspected sample area 60-70 degree arc plus 180 degrees location on H8, H9, and gussets. No indications.

	RF06	VT-3*	<p>*Inspection performed in conjunction with jet pump inspections. Approximately 50% of the gussets and H8 and H9 welds were inspected. This was a best effort exam which ranged from MVT-1 to VT-3 depending on camera angle and lighting. No cleaning was performed. No indications identified.</p>
	RF07	EVT-1	<p>*Inspection performed in conjunction with jet pump inspections. Remaining 50% of the gusset welds were inspected. This was a best effort exam which ranged from EVT-1 to VT-3 depending on camera angle and lighting. (Credited as a n EVT-1 exam) No cleaning was performed or needed. No indications identified. The H8 and H9 welds were inspected in detail at 0 and 180 Deg. Azimuth to EVT-1 standards where there were no obstructions.</p>
	RF08	EVT-1	<p>The H8 and H9 welds were reinspected to achieve required coverage. 22% of both welds were inspected and included the areas at 0 and 180 degrees as well as adjacent to Jet Pumps 2 and 3. Accessible areas on Gussets 1, 3, 11, 12, and 22 were inspected. No indications of cracking identified.</p>
	RF09	EVT-1 VT-1	<p>The H8 and H9 welds were inspected adjacent to Jet Pumps 3 and 4(Coverage obtained 1% and 8.3%). Accessible areas on Gussets 2 and 15 inspected (90% coverage on each obtained). Both access hole covers were inspected (VT-1). No indications identified.</p>
	RF10	EVT-1/ VT-1	<p>The H8 and H9 welds were inspected adjacent to Jet Pump 5(Coverage obtained 1% and 8.3%). Accessible areas on Gussets 7 and 8 inspected (70/90% coverage obtained @VT-1 quality, EVT-1 not credited, CARD 05-20378). No indications identified.</p>
	RF11	EVT-1	<p>The H8 and H9 welds were inspected at 0 and 180 degrees as well as several other locations. Coverage obtained was 24%</p>

			for H8 and 30% for H9. Accessible areas on Gussets 5, 6, 7, 8, 9, 10, 18, and 21 were inspected with 50% to 80% coverage obtained @ EVT-1. No indications identified.
		UT	A portion of the H9 weld was examined from the vessel outside diameter using a manual technique as required by BWRVIP-104. Approximately 19.6% of weld was examined with no indications.
	RF12	EVT-1	Accessible areas on Gussets 4 and 13 were inspected with 55% to 80% coverage obtained using EVT-1. No indications identified. Both Access Hole covers were inspected per draft BWRVIP -180 requirements. Cracking identified on 0 degree cover. Reference OE 25794.
	RF13	EVT-1	Accessible areas on Gussets 5 and 6 were inspected with 75% coverage obtained using EVT-1. No indications identified. The 0 Degree Access Hole cover was reinspected and no additional cracking was identified. No repair installed.
	RF14 (10/10)	EVT-1	Accessible areas on Gussets 1, 21, and 22 were inspected with 50% - 60% coverage obtained using EVT-1. No indications identified. All 3 welds on the 0 Degree Access Hole Cover were reinspected and no additional cracking was identified. No repair installed.
	RF15 (04/12)	EVT-1	Accessible areas on Gussets 4, 5, 6, 13, 16, and 17 were inspected with 50% to 70% EVT-1 coverage obtained. No indications identified. The H8 and H9 welds were EVT-1 visually inspected from the annulus side with combined coverage at several locations of 15.9% for the H8 weld and 20.5% for the H9 weld. No indications identified.
	RF16 (2014)	EVT-1	Accessible areas on Gussets 11 and 12, as well as the 180° Access Hole Cover were inspected with 90% coverage and no indications were identified. All 3 welds on the 0° Access Hole Cover were re-inspected. No additional cracking was identified and

			the component was evaluated to be acceptable without repair.
Core Spray Piping (BWRVIP-18/18-A)	each outage RF01 thru RF04	VT-1 (1mil)	During RF-01 two small arc strikes were identified on loop piping. These have been reinspected each outage. No change in condition. Inspections performed per IEB 80-013 and SIL 289. No indication of cracking.
	RF05	EVT-1 (1/2mil) VT-1	All welds brushed prior to inspection using 1/2 mil wire. Remainder of loop piping inspected without brushing. No indication of cracking.
	RF06	EVT-1	Inspected all welds on both loops of core spray to EVT-1 standards as opposed to BWRVIP-18 requirements of MVT-1. Cleaning assessment was performed – cleaning was not necessary. No indication of cracking.
	RF07	EVT-1	Inspected all welds on both loops of core spray to EVT-1 standards. Cleaning assessment was performed – cleaning was not necessary. No indication of cracking.
	RF08	EVT-1	Inspected all welds on both loops of core spray to EVT-1 standards. Cleaning assessment was performed, cleaning was not necessary. No indication of cracking.
	RF09	EVT-1	Inspected all target welds on both loops of core spray and sample welds on Div 2 to EVT-1 standards. Cleaning assessment was performed, cleaning was not necessary. No indications of cracking.
	RF10	EVT-1	Inspected all target welds on both loops of core spray and rotating sample welds on Div 2 to EVT-1. Cleaning assessment was performed, cleaning was necessary for selected locations and welds were brushed. No indications of cracking. Inspection coverage reported separately but generally >80%.
	RF11	EVT-1	Inspected all target welds on both loops of core spray and rotating sample welds on Div 1 to EVT-1. Cleaning assessment was performed, cleaning was necessary for selected locations and welds were

			brushed. No indications of cracking. Inspection coverage reported separately but generally >80%.
	RF12	EVT-1	Inspected all target welds on both loops of core spray and rotating sample welds on Div 1 to EVT-1. Cleaning assessment was performed, cleaning was necessary for selected locations and welds were brushed. No indications of cracking. Inspection coverage reported separately but generally >55%.
	RF13	EVT-1	Inspected all target welds on both loops of core spray and rotating sample welds on Div 2 to EVT-1. Cleaning assessment was performed, cleaning was necessary for selected locations and welds were brushed. No indications of cracking. Inspection coverage reported separately but generally >55%.
	RF14 (10/10)	EVT-1	Inspected all target welds on both loops of core spray and rotating sample welds on Div 2 to EVT-1. Cleaning was performed for all locations and welds were hydrolazed or brushed. No indications of cracking. Inspection coverage reported separately but generally >60%.
	RF15 (4/12)	EVT-1	Inspected all target welds on both loops of core spray and rotating sample welds on Div 1 to EVT-1. Cleaning was performed for all locations and welds were brushed. No indications of cracking. Inspection coverage reported separately but generally >60%.
	RF16 (2014)	EVT-1	Inspected all target welds on both loops of core spray and a rotating sample welds on Div 1 with no indications of cracking observed. Brushing was performed on all locations. Inspection coverage is reported separately in Att. 2, but averaged 58%.
Core Spray Sparger (BWRVIP-18/18-A)	each outage RF01-RF04	VT-1 (1 mil)	During RF01 one arc strike identified on upper CS sparger. Reinspections have not identified any changes. No indication of cracking

	RF05	VT-1/ EVT-1 (1/2mil)	1/2 mil wire used for junction box remainder utilized 1mil wire. No indication of cracking.
	RF06	EVT-1, MVT-1	Inspected per BWRVIP-18 using EVT-1 for sparger T-box and end caps and MVT-1 for remaining locations. No indications of cracking.
	RF07	EVT-1/ VT-1	Inspected per BWRVIP-18 using EVT-1 for sparger T-box welds, end cap welds, drain plug welds, and support brackets and welds, and VT-1 for flow nozzles and tack welds. No indications of cracking identified.
	RF08	EVT-1/ VT-1	Inspected per BWRVIP-18 using EVT-1 for S1, S2 and S4 welds. Selected S3a, S3b welds inspected using VT-1. Selected S3c welds as well as selected SB bracket welds were inspected using EVT-1 technique. A best effort exam was performed on all accessible areas. No indications of cracking identified.
	RF09	EVT-1/ VT-1	Inspected per BWRVIP-18 using EVT-1 for 50% of the S1, S2 and S4 welds and VT-1 for 50% of the S3a, S3b and S3c welds on the same spargers. 9 SB bracket welds were inspected using EVT-1 technique. Coverage for specific welds will be reported separately. No indications of cracking were identified.
	RF10	EVT-1/ VT-1	Inspected per BWRVIP-18 using EVT-1 for 50% of the S1, S2 and S4 welds and VT-1 for 50% of the S3a, S3b and S3c welds on the same spargers. 6 SB bracket welds were inspected using EVT-1 technique. Coverage for specific welds will be reported separately but was > 60% for welds and >85% for brackets. No indications of cracking were identified.
	RF11	EVT-1/ VT-1	Inspected per BWRVIP-18-A using EVT-1 for 50% of the S1, S2 and S4 welds on the same spargers. 6 SB bracket welds were inspected using VT-1 technique. Coverage for specific welds will be

			reported separately but was > 50% for welds and >75% for brackets. No indications of cracking were identified
	RF12	EVT-1/ VT-1	Inspected per BWRVIP-18-A using EVT-1 for 50% of the S1, S2 and S4 welds on the same spargers. 6 SB bracket welds were inspected using EVT-1 technique. Coverage for specific welds will be reported separately but was > 40% for welds and >75% for brackets. No indications of cracking were identified.
	RF13	EVT-1/ VT-1	Inspected per BWRVIP-18-A using EVT-1 for 50% of the S1, S2 and S4 welds on the same spargers. 6 SB bracket welds were inspected using EVT-1 technique. Coverage for specific welds will be reported separately but was > 50% for welds and >70% for brackets. No indications of cracking were identified.
	RF14 (10/10)	EVT-1/ VT-1	Inspected per BWRVIP-18-A using EVT-1 for 50% of the S1, S2 and S4 welds on the C and D spargers. 6 SB bracket welds and S3 nozzle welds were inspected using VT-1 technique. Coverage for specific welds will be reported separately but was > 40% for welds and >60% for brackets. No indications of cracking were identified.
	RF15 (4/12)	EVT-1/ VT-1	Inspected per BWRVIP-18-A using EVT-1 for 50% of the S1, S2 and S4 welds on the A and B spargers. 6 SB bracket welds inspected using VT-1 technique. Coverage for specific welds will be reported separately but was > 40% for welds and >60% for brackets. No indications of cracking were identified.
	RF16 (2014)	EVT-1/ VT-1	Inspected per BWRVIP-18-A using EVT-1 for 50% of the S1, S2 and S4 welds on the A and B spargers. 6 SB bracket welds were inspected using VT-1. Coverage for specific welds is reported separately in Attachment 2 but was > 40% for most welds and > 60% for most brackets. No indication of cracking was identified.

Top Guide (Rim, etc.) Beams (BWRVIP-26) (BWRVIP-183)	Each outage	VT-3	Inspected rim each outage. No indications.
	RF03	VT-1	Inspected 6 locations (RICSIL 059). No indications.
	RF04	VT-1	Inspected 6 locations (SIL 554). No indications.
	RF05	VT-1	Inspected 15 locations (SIL 554). No indications.
	RF06	VT-1	Inspected bottom edge of beams at 11 core locations per SIL 554. No indication of cracking.
	RF07	VT-1	Inspected bottom edge of beams at 8 core locations per SIL 554. No indication of cracking.
	RF08	VT-1	Inspected bottom edge of beams at 5 core locations per SIL 554. No indication of cracking.
	RF09	VT-1	Inspected bottom edge of beams at 6 core locations per SIL 554. No indication of cracking.
	RF10	VT-1	Inspected bottom edge of beams at 2 core locations per SIL 554. No indication of cracking.
	RF11	VT-1	Inspected bottom edge of beams at 2 core locations per SIL 554. No indication of cracking. Inspected 90 degree segment of top guide rim and no indications were identified.
	RF12	VT-1/VT-3	Inspected intersection and bottom edge of beams at 5 core locations per SIL 554. No indication of cracking.
	RF13	EVT-1	Inspected intersection and bottom edge of beams at 5 core locations per BWRVIP-183 utilizing a new visual inspection tool. No indication of cracking.
	RF14 (10/10)	N/A	No inspections performed RF14.

	RF15 (4/12)	EVT-1	Inspected intersection and bottom edge of beams at 5 core locations per BWRVIP-183 utilizing a new visual inspection tool. No indication of cracking. Fabrication related conditions identified on the bottom surface of the plate material at 3 cell locations.
	RF16 (2014)	N/A	No inspections performed in RF16.
Core Plate Rim Bolts, etc. (BWRVIP-25)	RF05	VT-1 (1mil wire)	Inspected 6 core plate bolts located between 100 and 160 degrees and adjacent area. No indications.
	RF06	VT-3	Inspected tops of approximately 20 bolts per SIL 588. No indications identified.
	RF07	VT-3	Inspected tops of approximately 20 bolts per SIL 588. No indications identified.
	RF08	VT-3	Inspected tops of approximately 20 core plate bolts (VT-3) per SIL 588. Did not meet BWRVIP requirements. No indications identified.
	RF09	N/A	No inspections performed. BWRVIP analysis concluded that inspections are not required. (Reference BWRVIP 2003-117 and TJ-2003-01)
	RF10	N/A	No inspections performed. BWRVIP analysis concluded that inspections are not required. (Reference BWRVIP 2003-117 and TJ-2003-01)
	RF11	N/A	No inspections performed. BWRVIP analysis concluded that inspections are not required. (Reference BWRVIP 2006-041 and DD-2006-01)
	RF12	N/A	No inspections performed. BWRVIP analysis concluded that inspections are not required. (Reference BWRVIP 2006-041)
	RF13	N/A	No inspections performed. BWRVIP analysis concluded that inspections are not required. (Reference BWRVIP 2006-041)

	RF14 (10/10)	N/A	No inspections performed. BWRVIP analysis concluded that inspections are not required. (Reference BWRVIP 2006-041) BWRVIP 2010- 243 now requires preparation of a Deviation Disposition by 3/31/2011.
	RF15 (4/12)	N/A	No inspections performed. BWRVIP analysis concluded that inspections are not required. Deviation Disposition DD-2011-01 was submitted to BWRVIP 3/30/2011.
	RF16 (2014)	N/A	No inspections performed in RF16, as justified by Deviation Disposition DD-2011-01.
SLC (BWRVIP-27)	RF04	VT-3	Performed a visual inspection from Reactor penetration to shroud support when access was provided during jet pump beam replacement. No indications.
	RF05 - RF07	N/A	No inspections performed as access was not provided.
	RF08	VT-2*	Performed enhanced inspection on nozzle area from inside skirt area, but did not remove mirror insulation box from safe-end. No leakage observed.
	RF09	VT-2*	Performed enhanced inspection on nozzle area from inside skirt area, and removed cover on the mirror insulation box for the safe-end for direct inspection. No leakage observed.
	RF10	VT-2*	Performed enhanced inspection on nozzle area from inside skirt area, and removed cover on the mirror insulation box for the safe-end for direct inspection. No leakage observed.
	RF11	VT-2*	Performed enhanced inspection on nozzle area from inside skirt area, and removed cover on the mirror insulation box for the safe-end for direct inspection. No leakage observed.
	RF12	VT-2*	Performed enhanced inspection on nozzle area from inside skirt area, and removed cover on the mirror insulation box for the safe-end for direct inspection. No leakage observed.

	RF13	VT-2*/UT	observed. Performed enhanced inspection on nozzle area from inside skirt area, and removed cover on the mirror insulation box for the safe-end for direct inspection. No leakage observed. Performed a manual PDI qualified ultrasonic inspection of the nozzle to safe end weld as well as additional base material of bored material. No indications identified.
	RF-14 (10/10)	VT-2*	Performed enhanced inspection on nozzle area from inside skirt area, and removed cover on the mirror insulation box for the safe-end for direct inspection. No leakage observed.
	RF-15 (4/12)	VT-2*	Performed enhanced inspection on nozzle area from inside skirt area, and removed cover on the mirror insulation box for the safe-end for direct inspection. No leakage observed.
	RF16 (2014)	VT-2*	Performed enhanced inspection on nozzle area from inside skirt area, and removed cover on the mirror insulation box for the safe-end for direct inspection. No leakage observed.
Jet Pump Assembly (BWRVIP-41)	Each outage examine at least 50% thru RF05	VT-1 VT-3	Jet pump assemblies are inspected each outage from top to bottom. During RF-04 all (20) hold down beams were replaced as a preventative measure and to avoid performing UT's on the old style/original beams. Inspections are performed to the recommendations of SIL 551, 574, 465 S-1, and RICSIL 078. During RF05 one of the 80 restrainer screw tack welds was found to be cracked. This was evaluated and was not repaired during RF05.
	RF06	MVT-1, VT-3	Performed inspections to the intent of BWRVIP-41 as well as augmented VT-3 of selected areas on jet pumps 1-10. Inspections included all High, Medium and Low Priority locations. Inspected RS-1 and RS-2 welds on jet pumps 11-20. One indication identified on RS-1 weld, 1.75" long. JCO performed prior to start-up. No other new indications identified.

	RF07	EVT-1	<p>Performed inspections to the intent of BWRVIP-41 including EVT-1's as well as augmented VT-1 and VT-3's of selected areas on jet pumps 11-20. Inspections included all High, Medium and Low Priority locations. Reinspected previously identified indication on RS-1 weld, 1.75" long that was identified in RF06. No change in indication length or appearance. Existing Flaw Evaluation on hand prepared by GE referenced as acceptance limit. No other indications or changes in previous indications identified.</p>
	RF08	EVT-1	<p>Performed reinspections to the intent of BWRVIP-41 including EVT-1's as well as augmented VT-1 and VT-3's of selected areas on jet pumps 1 & 2. Inspections included all High, Medium and Low Priority locations. Reinspected previously identified 1.75" long indication on RS-1 weld for Jet Pumps 7&8 that was identified in RF06. No change in indication length or appearance. Existing Flaw Evaluation on hand prepared by GE referenced as acceptance limit. Inspected all 20 jet pumps per recommendations of SIL 629 and verified no wedge damage (WD-1) as well as full contact with restrainer screws. No damage identified on any location. Reinspected all restrainer screw tack welds with no changes observed.</p>
	RF09	EVT-1	<p>Performed reinspections to BWRVIP-41 including EVT-1's as well as augmented VT-1 and VT-3's of selected areas on Jet Pumps 3 & 4. Inspections included all High, Medium and Low Priority locations. Reinspected previously identified 1.75" long indication on RS-1 weld for Jet Pumps 7&8 that was identified in RF06. No change in indication length or appearance. Existing Flaw Evaluation on hand prepared by GE referenced as acceptance limit. Inspected all 20 Jet Pump Hold Down Beams by UT for BB1, BB2, and the transition area BB3 using the latest available technique from General Electric. No indications identified on the beams. Reinspected all</p>

			<p>restrainer screw tack welds, contact area, and wedges after both tack welds on Jet Pump 15 were found cracked. No other damage or indications identified on any location. Jet Pump 15 permanently repaired by the installation of an auxiliary spring wedge. (Reference CARD 03-16929)</p>
	RF10	EVT-1	<p>Performed reinspections to BWRVIP-41 including EVT-1's as well as augmented VT-1 and VT-3's of selected welds on Jet Pumps 4, 5, 6, 7, & 8. Reinspected previously identified 1.75" long indication on RS-1 weld for Jet Pumps 7 & 8 that was identified in RF06. No change in indication length / appearance. Existing Flaw Evaluation on hand prepared by GE referenced as acceptance limit. Reinspected auxiliary spring wedge on Jet Pump 15. No other damage or indications identified on any location.</p>
	RF11	EVT-1	<p>Performed reinspections to BWRVIP-41 including EVT-1's as well as augmented VT-1 and VT-3's of selected welds on Jet Pumps 7, 8, 9, & 10. Reinspected previously identified 1.75" long indication on RS-1 weld for Jet Pumps 7 & 8 that was identified in RF06. No change in indication length / appearance. Existing Flaw Evaluation on hand prepared by GE referenced as acceptance limit. Inspected all Jet Pump wedges after wear was identified on JP2 restrainer bracket. Performed inspection of other welds on Jet Pump 2 as required by BWRVIP-41. Auxiliary spring wedges installed on Jet Pumps 1 and 2 and a slip joint clamp was installed on Jet Pump 2 to restore integrity. No other damage or indications identified.</p>
	RF12	EVT-1	<p>Performed reinspections to BWRVIP-41 including EVT-1's as well as augmented VT-1 and VT-3's of selected welds on Jet Pumps 7, 8, 9, 10, 11, & 12. Reinspected previously identified 1.75" long indication on RS-1 weld for Jet Pumps 7 & 8 that was identified in RF06. No change in indication length / appearance. Existing</p>

			<p>Flaw Evaluation on hand prepared by GE referenced as acceptance limit. Inspected all 20 Jet Pump Hold Down Beams.</p> <p>Inspected 12 Jet Pump wedges including the wedges and hardware (auxiliary spring wedges and slip joint clamp) installed in RF11. No other damage or indications identified.</p>
	RF13	EVT-1	<p>Performed reinspections to BWRVIP-41 including EVT-1's as well as augmented VT-1 and VT-3's of selected welds on Jet Pumps 7, 8, 9, 10, 13, 14, 15, and 16.</p> <p>Reinspected previously identified indication on RS-1 weld for Jet Pumps 7/8 identified in RF06. No change in indication length or appearance. Existing Flaw Evaluation on hand prepared by GE referenced as acceptance limit. Inspected 9 Jet Pump wedges. No other damage or indications identified.</p>
	RF14 (10/10)	EVT-1	<p>Performed reinspections to BWRVIP-41 including EVT-1's as well as augmented VT-1 and VT-3's of selected welds on most Jet Pumps including RS-8/9 welds on all pumps. Reinspected previously identified indication on RS-1 weld for Jet Pumps 7/8. No change in indication length or appearance. Existing Flaw Evaluation on hand prepared by GE referenced as acceptance limit.</p> <p>Inspected all 20 Jet Pump wedges. Minor movement noted but no other damage or indications identified.</p>
	RF15 (4/12)	EVT-1	<p>Performed reinspections to BWRVIP-41 including EVT-1's as well as augmented VT-1's of selected welds on several Jet Pumps. Reinspected previously identified indication on RS-1 weld for Jet Pumps 7/8. No change in indication length or appearance. Existing Flaw Evaluation on hand prepared by GE referenced as acceptance limit.</p> <p>Inspected all 20 Jet Pump wedges. No movement noted and no damage or indications identified.</p>

	RF16 (2014)	EVT-1/ VT-1	Performed EVT-1 exams of selected welds in accordance with BWRVIP-41 Rev. 3 with no indications identified. VT-1 exams performed on all 20 main wedge assemblies. Wedge wear identified on Jet Pump 06; scope expansion performed with no further relevant indications observed and wedge was evaluated to be acceptable without repair. Growth identified during re-inspection of indication on RS-1 weld for Jet Pumps 07/08. Indication was evaluated to be acceptable for two cycles without repair. Ultrasonic examination of all 20 Jet Pump Hold Down Beams (BB1, BB2 and BB3). No indications identified on the beams.
Jet Pump Diffuser (BWRVIP-41)	Each outage	VT-3	Diffusers will be sample inspected during refueling outages.
	RF06	MVT-1	BWRVIP-41 on Jet Pumps 1-10 except inaccessible areas. No cracking.
	RF07	EVT-1	BWRVIP-41 on Jet Pumps 11-20 except inaccessible areas. No cracking identified. Welds DF-3, AD-1, and AD-2 are inaccessible for inspection.
	RF08	EVT-1	BWRVIP-41 reinspection on Jet Pumps 1 and 2 except inaccessible areas. No cracking identified. Welds DF-3, AD-1, and AD-2 are inaccessible for inspection.
	RF09	EVT-1	BWRVIP-41 reinspection on Jet Pumps 3 and 4 except inaccessible areas. No cracking identified. Welds DF-3, AD-1, and AD-2 are inaccessible for EVT-1 visual inspection, VT-3 performed. (TJ-2003-02 prepared as justification)
	RF10	EVT-1	BWRVIP-41 reinspection of selected DF-1 and DF-2 welds on Jet Pumps 5, 6, 7, & 8. Performed access study for future performance of UT examinations of welds DF-3, AD-1, and AD-2. These welds are inaccessible for visual inspection. VT-3 performed. No indications identified (Reference TJ-2003-02)
	RF11	EVT-1	BWRVIP-41 reinspection of selected DF-2 welds on Jet Pumps 9 & 10.

	RF12	UT	Performed of UT examinations on a portion of a total of 17 DF-3, AD-1, and AD-2 welds using specialized tooling. These welds are inaccessible for visual inspection. No indications identified (Reference DD-2006-02)
		EVT-1	BWRVIP-41 reinspection of selected DF-1 and 2 welds on Jet Pumps 6, 11, & 12.
	RF13	UT	No UT examinations performed during RF12 due to tooling failures. These welds are inaccessible for visual inspection. (Reference DD-2006-02)
		EVT-1	BWRVIP-41 reinspection of selected DF-1 and 2 welds on Jet Pumps 7, 13, & 14.
	RF14 (10/10)	UT	No UT examinations performed during RF13 due to tooling failures. These welds are inaccessible for visual inspection. (Reference DD-2006-02)
		EVT-1	BWRVIP-41 reinspection of selected DF-1 and 2 welds on Jet Pumps 7, 8, 9, and 13-18. No indications identified.
	RF15 (4/12)	UT	Completed baseline UT examinations on all 20 Jet Pumps Diffuser/Adapter DF-3, AD-1 and AD-2 welds, (60 welds) since these welds are inaccessible for visual inspection. Deviation Disposition is no longer needed.
	RF16 (2014)	EVT-1	BWRVIP-41 reinspection of selected DF-1 and 2 welds on Jet Pumps 10, 19, and 20. No indications identified.
CRD Guide Tube (BWRVIP-47)	RF04	VT-3	Inspected lower portion of peripheral guide tubes and stub tubes when access was provided during jet pump hold down beam replacement. No indications identified.
	RF07	EVT-1 and VT-3	Performed best effort exam on CRGT-3 as weld was not visible on inside of tube. CRGT-2 not accessible due to flow and

			ARPIN was not felt to be accessible. No indications identified.
	RF08	EVT-1 and VT-3	Performed best effort exam on CRGT-3 as weld was not visible on inside of tube. CRGT-2 not accessible due to flow and FS/GT-ARPIN was not felt to be accessible. No indications identified.
	RF09	EVT-1 and VT-3	Performed exams on CRGT-1, CRGT-2, CRGT-3, and FS/GT-ARPIN at 10 Control Rod Guide Tubes/locations. No indications identified.
	RF10	N/A	No inspection performed in RF10.
	RF11	N/A	No inspection performed in R11.
	RF12	VT-3	Performed exams on CRGT-1 and FS/GT-ARPIN at 5 Control Rod Guide Tubes/locations. CRGT-2 and CRGT-3 not performed or credited due to high flow conditions. No indications identified.
	RF13	N/A	No inspections performed in RF13.
	RF14 (10/10)	EVT-1 and VT-3	Completed all remaining baseline inspections on the Control Rod Guide Tubes. Inspections performed on (4) CRGT-1, and FS/GT-ARPIN locations and on (9) CRGT-2 and CRGT-3 locations. One manufacturing flaw identified that did not impact the functionality of the component.
	RF15 (4/12)	N/A	No BWRVIP required inspections performed in RF15.
	RF16 (2014)	N/A	No BWRVIP required inspections performed in RF16.
CRD Stub Tube * (BWRVIP-47)	RF04	VT-3	Inspected lower portion of peripheral guide tubes and stub tubes when access was provided during jet pump hold down beam replacement. No indications identified

In-Core Housing * (BWRVIP-47)	RF04	VT-3	Small portion visible during jet pump beam replacement. No indication of degradation.
Dry Tube * (BWRVIP-47)	Each outage	VT-1	9 of 12 tubes found not completely seated. Performed all inspections per SIL 409 and RICSIL 073. No indications of cracking.
	RF06	VT-1	Reinspected 12 dry tubes. No change from previous condition. No cracking.
	RF07	VT-1	Inspected all 12 original design Dry Tubes. No change from previous conditions identified. No cracking identified.
	RF08	VT-1	Inspected all 12 original design Dry Tubes from two sides. No change from previous conditions identified. No cracking identified.
	RF09	N/A-1	No inspections performed in RF09.
	RF10	VT-1	Inspected all 12 original design Dry Tubes from two sides. Linear indications identified on 7 tubes in the collar region above the pressure boundary weld. Evaluated as acceptable for one cycle of operation. Plan to replace in RF11. (Reference CARD 04-25703)
	RF11	VT-1	Replaced all 12 Dry Tubes in RF11. Performed baseline VT-1 and verified proper engagement in Top Guide.
	RF12	N/A	No inspections performed in RF12.
	RF13	N/A	No inspections performed in RF13.
	RF14	N/A	No inspections performed in RF14.
	RF15	N/A	No inspections performed in RF15.
	RF16 (2014)	N/A	No inspections performed in RF16.
Instrument Penet.* (BWRVIP-49 & 41)	Each outage	VT-3	Inspected jet pump sensing lines and brackets each outage.
	RF04	VT-3	SLC and peripheral bottom head penetrations inspected. No indications.

	RF06	VT-3	Inspected JP sensing lines for pumps 1-10. No indications.
	RF07	VT-3	Inspected JP sensing lines for pumps 11 thru 20 only. No indications.
	RF08	VT-3	Inspected JP sensing lines for Pumps 1 & 2 only. No indications.
	RF09	VT-3	Inspected JP sensing lines for Pumps 3 & 4 only. No indications.
	RF10	VT-1	Inspected JP sensing lines for Pumps 5, 6, 7, 16, & 17. No indications
	RF11	VT-1	Inspected JP sensing lines for Pumps 6, 7, 16, & 17. No indications.
	RF12	VT-1	Inspected JP sensing lines for Pumps 6, 7, 11, 12, 16, & 17. No indications.
	RF13	VT-1	Inspected JP sensing lines for Pumps 6, 7, 13, 14, 16, & 17. No indications.
	RF14	VT-1	Inspected JP sensing lines for Pumps 6, 7, 15, 16, 17, & 18. No indications.
	RF15	VT-1	Inspected JP sensing lines for Pumps 6, 7, 16, 17, 19, & 20. No indications.
	RF16 (2014)	VT-1	Inspected JP sensing lines for Pumps 1, 2, 6, 7, 16, & 17. No indications.
Vessel ID Brackets (BWRVIP-48)	Each outage	VT-1/3	Inspect sample population each outage. We have inspected most brackets each outage (core spray, feedwater). Jet pump riser brace, steam dryer support lugs, guide rod brackets and specimen holder brackets are sample inspected. No indications of cracking identified.
	RF06	MVT-1	6 feedwater brackets. All core spray piping brackets. 4 steam dryer brackets 1 guide rod bracket 1 specimen bracket. No indication of cracking.
	RF07	EVT-1	6 feedwater brackets. All core spray piping brackets.

			4 steam dryer brackets 1 guide rod bracket No indication of cracking identified.
	RF08	EVT-1	6 feedwater brackets. All core spray piping brackets. 4 steam dryer brackets 1 guide rod bracket Surveillance holder and Brackets @ 30 az. No indication of cracking identified.
	RF09	EVT-1	6 Feedwater brackets. 4 Core Spray piping brackets. 1 Jet Pump riser brace (Jet Pump 3 and 4) No indication of cracking identified.
	RF10	EVT-1	6 Feedwater brackets. 3 Core Spray piping brackets. 1 Surveillance Holder bracket 4 Steam Dryer Support brackets 4 Steam Dryer Hold Down 1 Guide Rod Bracket 1 Jet Pump riser brace (Jet Pump 5 and 6) No indication of cracking identified.
	RF11	EVT-1/ VT-1	No inspections performed in RF-11.
	RF12	EVT-1/ VT-1	6 Feedwater Sparger bracket sets. 1 Surveillance Holder bracket 4 Steam Dryer Support brackets 1 Guide Rod Bracket 2 Jet Pump riser braces (Jet Pumps 7, 8, 9, & 10) No indication of cracking identified.
	RF13	EVT-1/ VT-1	No inspections performed in RF-13.
	RF14 (10/10)	EVT-1/ VT-1	3 Feedwater Sparger bracket sets. 2 Core Spray Piping Brackets 1 Surveillance Holder bracket 4 Steam Dryer Support brackets 1 Guide Rod Bracket 2 Jet Pump riser braces (Jet Pumps 1/ 2, and 11/12) No indication of cracking identified.
	RF15 (4/12)	EVT-1/ VT-1	Inspections performed on 3 Feedwater Sparger bracket sets and 1 Guide Rod Bracket. No indications identified.

	RF16 (2014)	EVT-1/ VT-1	Inspection performed on 1 Surveillance Sample Holder Bracket. No indications identified.
LPCI Coupling	N/A	N/A	Fermi does not have a LPCI Coupling
Shroud Head Bolts/Shroud Head	RF04	UT/VT	16 had indications, 17 replaced during RF04.
	RF05		Remaining bolts replaced (31) during RF05 as a preventative measure. All 48 are now new style.
	RF06	VT-3	Bolts 1-24 (of 48). No indication of cracking.
	RF07	VT-3	Bolts 25-48 (of 48). No indication of cracking or damage. Springs were left compressed on 20 of the 24 inspected.
	RF08	VT-3	Bolts 1-24 (of 48). No indication of cracking or damage
	RF09	VT-3	Bolts 23 and 25-48 (of 48). No indication of cracking or damage. All retainer springs verified to be functioning properly.
	RF10	VT-3	Bolts 1-24 (of 48). Inspected North 1/3 rd of Shroud Head/Separator and 2 lifting lugs. No indication of cracking or damage
	RF11	VT-3	Inspected Bolts 25-48 (of 48) and inspected Center 1/3 rd of Shroud Head/Separators. No indication of cracking or damage.
	RF12	VT-3	Bolts 1-24 (of 48). Inspected South 1/3 rd of Shroud Head/Separator and 2 lifting lugs. All mid support ring gussets were inspected and small short cracks were identified on 3 of the 24 gussets. No repairs were required. Ref. OE 25795.
	RF13	VT-3	Bolts 25-48 (of 48). Inspected North 1/3 rd of Shroud Head/Separator and 2 lifting lugs. No changes identified in previous indications identified in RF12. No other indications identified.

	RF14 (10/10)	VT-3	Bolts 1-24, 27, 30, & 33 (of 48). Inspected Center 1/3 rd of Shroud Head/Separator. No changes identified in previous indications and no new indications identified.
	RF15 (4/12)	VT-3	Inspected Bolts 25-48 and 2 (of 48). Inspected South 1/3 rd of Shroud Head/Separator. No changes identified in previous gusset indications and no new indications identified.
	RF16 (2014)	VT-3	Inspected Bolts 1-12 (of 48) and the North 1/3 rd of Shroud Head/Separator. No new indications were identified.
Steam Dryer (RF01-RF-08 not previously reported)	RF09	VT-3	Inspected approximately 1/3 of dryer including hood welds and cover plate welds. (Ref. SIL 644) No indications of additional cracking identified.
	RF10	VT-1/VT-3	Inspected approximately 50% of dryer including all inner hood vertical welds as recommended in SIL 644, Supplement 1, and Revision 1). Several new indications were identified near welds due to new locations being inspected and the change in technique. Indications were noted at base of inner hood vertical welds. Reference CARD 04-25416 and also OE #17600. No changes were identified on previously recorded indications.
	RF11	VT-1/VT-3	Inspected approximately 50% of dryer including all inner hood vertical welds as recommended in SIL 644, Revision 1 and BWRVIP-139. Several new indications were identified near welds due to new locations being inspected and the change in technique. Indications previously noted on hood welds in RF10 were reinspected and no changes were noticed.
	RF12	VT-1/VT-3	Inspected approximately 50% of dryer including inner hood vertical welds as recommended in BWRVIP-139. Several new small indications were identified near welds due to new locations being inspected and the change in technique and camera angles used. Indications previously noted on hood welds were reinspected and no changes were noticed.

	RF13	VT-1/VT-3	Inspected approximately 20% of dryer including "F" Bank welds and a sampling of other locations following reinspection guidelines contained in NRC SE to BWRVIP-139. One new indication identified in support ring.
	RF14 (10/10)	VT-1/VT-3	Inspected approximately 20% of dryer including "E" Bank welds and a sampling of other locations following reinspection guidelines contained in BWRVIP-139-A. No new indications identified.
	RF15 (4/12)	VT-1/VT-3	Inspected approximately 20% of dryer including "D" Bank welds and a sampling of other locations following reinspection guidelines contained in BWRVIP-139-A. No new indications identified.
	RF16 (2014)	VT-1/VT-3	Inspected approximately 20% of dryer including "C" Bank welds and a sampling of other locations following reinspection guidelines contained in BWRVIP-139-A. Indication newly identified on interior vane bank weld HE-C-2-1; evaluated to be acceptable without repair.
Dissimilar Metal Welds BWRVIP-75-A (Not previously reported, reference BWRVIP letter 2008-089)	RF-12	UT	Performed ultrasonic examinations on 4 Category B DM welds that contain alloy 82/182 using automated PDI qualified techniques and procedures. Since >90% coverage was not obtained on two welds, 2 additional welds were selected and >90% volume coverage was obtained. No indications of cracking identified.
	RF-13	UT	Performed ultrasonic examinations on 5 Category B DM welds that contain alloy 82/182 using automated and manual PDI qualified techniques and procedures. No indications of cracking identified.
	RF-14 (10/10)	UT	Performed ultrasonic examination of 1 Category B DM weld that contained alloy 82/182 using manual PDI qualified technique and procedure. No indications of cracking identified.
	RF-15 (4/12)	UT	Performed ultrasonic examination of 1 Category B DM weld that contained alloy

	RF16 (2014)	UT	82/182 using manual PDI qualified technique and procedure. No indications of cracking identified. Performed ultrasonic examination of 3 Category A DM welds using manual PDI qualified technique and procedure. No indications of cracking identified.
Bottom Head Drain Line (BWRVIP-205)	RF16 (2014)	RT	Deviation Disposition DD-2014-01 issued to support not completing radiography on the first elbow and piping immediately downstream of the reactor vessel in RF16. RT was performed on straight piping further downstream with no evidence of flow accelerated corrosion observed.

*VT-2 leakage inspections have been and are performed on all RPV Instrumentation Nozzles and Piping Nozzles each refuel outage. An enhanced leakage inspection is performed on all locations to ensure no pressure boundary leakage. Inspections are performed in the annulus area adjacent to the vessel skirt, and are performed under vessel to ensure that any leakage identified is not from welded connections. Flange leakage from CRDM's is recorded, evaluated, and repaired if necessary. Mirror insulation is opened for SLC safe end inspection and for bottom head inspections but is not removed from other locations unless the leakage source can't be determined.

Reactor Internals Inspection History

Plant: **Grand Gulf Nuclear Station Unit I**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Shroud	Spring 2014	UT	17.8% Upper Side and 16.5% Lower Side of H6A 18.8% Upper Side and 21.6% Lower Side of H7 No indications identified.
	Fall 2005	UT	44% of H3 Lower Side, 56.6% H4 Both Sides, 17.3% H6A Both Sides and @ 20% H7 Both Sides. One indication with characteristics associated with IGSCC/IASCC was detected on the lower side of the H4 weld. Indication is 1.11" in length. Due to disassembly of the JP11 mixer, a VT-3 examination was performed on accessible areas of H10, H11 and H12. No indications.
	Spring 2004	UT	15.1% of H3 Lower Side and 34.6% of H4. Due to equipment failures this examination was deferred to next outage.
	Spring 1998	UT	All accessible areas of H3, H4, H6A, H7. No indications.
	Spring 1995	UT	Baseline per BWRVIP-01. All accessible areas of H3, H4, H6A and H7. No indications.
Shroud Support	Spring 2014	EVT-1	SSAHC @ 0°. No indications noted.
	Spring 2012	EVT-1	15% of the top of H8 and 18.5% of the top of H9. No indications were noted
	Fall 2008	VT-1	SSAHC @ 0°. No indications

	Spring 2007	EVT-1	15% of the top of H8 and 18.5% of the top of H9. No indications were noted
	Fall 2005	VT-1	SSAHC @ 0°. No indications
	Fall 2002	VT-1	SSAHC @ 0°. No indications
	Spring 1998	UT	10.7% of total circumference of H8 (shroud support plate to shroud weld) and 15.4% of H9 (shroud support plate to vessel weld). No indications.
	Fall 1996	VT-1	Sect XI. Period 3 of 10yr interval. RF05/6 Attachment welds to vessel and shroud plate to shroud weld. No indications.
	Spring 1995	VT-3	SSHAC @ 180°. No indications.
	Spring 1992	VT-1	Shroud shelf weld. No indications (SIL 572)
Core Spray Piping	Spring 2014	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. Indication discovered on P8A was inspected with no change in indication. No other indications discovered.
	Spring 2012	VT-1 VT-3 EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. Indication discovered on P8A as documented on INR GGNS-IVVI-12-02.
	Spring 2010	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications
	Fall 2008	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications
	Spring 2007	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications

	Fall 2005	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications.
	Spring 2004	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications.
	Fall 2002	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications.
	Spring 2001	EVT-1	All accessible P2, P2a, P3a, P5. 25% of remaining piping locations. No indications.
	Fall 1999	EVT-1	All accessible P2, P2a, P3a, P5. 25% of remaining piping locations. No indications.
	Spring, 1998	EVT-1	All accessible piping locations. No indications.
Core Spray Sparger	Spring 2014	EVT-1/ VT-1	Performed examinations of previous indications at Cap Screw 7A and 15C and tack weld indications on alignment sleeve. No discernible changes noted on the indications.
	Spring 2012	EVT-1/ VT-1	All core spray sparger target welds and all accessible areas of the upper sparger welds. Accessible areas of Core Spray Sparger Brackets (SB) were inspected with no indications. Performed examinations of previous indications at Cap Screw 7A and 15C. No changes noted. Tack weld indications on alignment sleeve documented on INR GGNS-IVVI-12-03 and INR GGNS-IVVI-12-05.
	Spring 2010	VT-1	Performed examinations of previous indications at Cap Screw 7A and 15C. No changes noted.
	Fall 2008	EVT-1/ VT-1	All core spray sparger target welds and all accessible areas of the lower sparger welds. Accessible areas of Core Spray

	Fall 2005	VT-1/ EVT-1	<p>Sparger Brackets (SB). No indications noted.</p> <p>Broken tack welds @ Cap Screw 7A and 15C previously reported.</p> <p>All core spray sparger target welds and all accessible areas of the upper sparger welds. Accessible areas of Core Spray Sparger Brackets (SB). No indications noted.</p> <p>Broken tack welds @ Cap Screw 7A previously reported.</p> <p>Additional broken tack weld identified at Cap Screw 15C.</p>
	Fall 2002	VT-1/ VT-3	<p>All core spray sparger target welds and all accessible areas of the lower sparger welds. No indications noted.</p> <p>All accessible areas of Core Spray Brackets (SB). Broken tack welds @ Cap Screw 7A previously reported.</p>
	Fall 1999	VT-1/ VT-3	Upper Sparger- Accessible areas of spargers, tee boxes, brackets and supports. No indications noted.
	Spring 1998	EVT-1/ CS-VT-1	Accessible areas of spargers, tee boxes, brackets and supports. Broken tack welds @ Cap Screw 7A
	Fall 1996	VT-3	Augmented exam per IE 80-13. No indications noted.
Top Guide (Rim, etc.)	Spring 2012	EVT-1	Accessible surfaces and fasteners. Indication documented under INR GGNS-IVVI-12-06.
	Spring 2007	VT-3	Accessible surfaces and fasteners. No indications noted.
	Spring 2001	VT-3	Accessible surfaces and fasteners. No indications noted.
	Fall 1996	VT-3	Accessible surfaces and fasteners. No indications noted.
Core Plate (Rim, etc.)	Spring 2007	VT-3	Accessible surfaces of the shroud support structure. No indications were noted.

	Fall 1996	VT-3	Sect. XI, under core plate. Where access was provided in RF08, camera work was performed. No indications noted.
SLC	N/A	N/A	N/A
Jet Pump Assembly	Spring 2014	EVT-1/ VT-1/ VT-3	EVT-1/VT-1 performed on 39 locations Jet Pump Riser and Diffuser Welds with no indications. VT-3 performed on eight (8) sensing lines with no indications. VT-1 was performed on all 24 jet pump wedges with 2 indications found on the Stellite Cladding of Jet Pumps #5 and #16. Indications documented under INR GGNS-IVVI-14-01 R1.
	Spring 2012	UT	UT performed on 21 of 24 Jet Pump beams. Three beams have been replaced with new beams and do not require UT at this time. No indications noted.
	Spring 2010	EVT-1	Completed baseline examinations (148 locations). Performed additional inspections of Jet Pump Wedges (12) and Riser Braces (12) due to Laguna Verde OE. No indications were noted.
	Fall 2008	EVT-1	Performed examinations on Jet Pump wedges 1 thru 12. No wear was identified; however slight wear was noted on wedge rods JP 01, JP 02, JP 05, JP 06, JP 07 and JP 09. No additional exams were performed.
	Spring 2007	EVT-1/ UT	Wedge examination performed on 4 wedges due to disassembly of Jet Pumps in previous outages. EVT-1 was performed on the Riser Brace to vessel weld (5 locations). UT performed on 21 of 24 Jet Pump beams. Three beams have been replaced with new beams and do not require UT at this time.
	Fall 2005	EVT-1	Wedge examinations were completed on 12 jet pumps. Wedge exams have been completed on all jet pumps with no

	Spring 2004	EVT-1/ VT-1	indications. Examined one IN-1 and IN-2 location with no indications noted. Completed remaining examinations on JP 0304 and 0910. Completed baseline on 50% of low and medium priority locations and 100% of high priority (RS-3) locations. Identified and inspected an additional RS-1 weld at JP 0910 and inspected additional weld at the DF-3 location. The additional weld at the DF-3 location was identified in the Fall 2002 outage (DF-3a). No indications noted.
Jet Pump Assembly (continued)	Fall 2002	EVT-1	All required locations for JP 0304 and JP 0910. Examination exceptions are RB-1b, RB-1d, RB2a-d for JP0304; welds DF-1 for JP03 and JP04; DF-3 for JP03 and JP10; IN-1 and IN-2 for JP04; IN-2 for JP10. No indications noted.
	Spring 2001	EVT-1	Accessible areas of RS-1 and RS-2 welds on JP01/02. No indications noted.
	Fall 1999	EVT-1	Accessible areas of RS-3 weld at JP07/08, JP09/10 and JP11/12. No indications noted.
	Spring 1998	MVT-1/ VT-3	Accessible areas of RS-3 weld on JP 0102, JP 0304 and JP 0506. VT-3 on flow restriction on JP 09, 10, 11 and 24. No indications noted.
	Fall 1996	UT	UT performed on JP beams. Two beams cracked in RF06 and all were replaced with Unit 2 spares. No UT exams were done in RF07. RF08 changed out all beams with the new GE design.
CRD Guide Tube	Spring 2008	EVT-1	Completed baseline exams on 10 CRD Guide Tubes. No indications were noted.
	Fall 2002	EVT-1	CRGT-2 & 3 (10 places). FS/GT-ARPIN-1 (2 places). No indications noted.

	Spring 2001	VT-3	12 guide tubes. 12 FS/GT-ARPIN-1 and CRGT-1. Accessible portions of CRGT-2 (2 places). No indications noted.
	Spring 1998	VT-3	34 CRGT-1 exams completed with no indications noted.
	Fall 1996	VT-3	8 guide tubes. When accessibility permits. No indications noted.
Dry Tubes	Spring 2014	VT-1	Performed exams on 10 SRM/IRM dry tubes and identified two dry tubes with indications. SRM F was replaced during this outage and was one of the dry tubes with an indication. Indications documented under INR GGNS-IVVI-14-03.
	Spring 2012	VT-1	Performed inspections on 5 LPRM dry tubes. Four dry tubes had indications. Replaced the four dry tubes that had indications in Spring 2010. No indications noted.
	Spring 2010	VT-1	Performed exams on 14 SRM/IRM dry tubes. Four dry tubes had indications.
	Fall 2008	VT-1	Performed inspections on 24 LPRM dry tubes. No indications noted.
	Spring 2007	VT-1	Accessible areas of 14 SRM/IRM and 7 LPRMS. No indications noted.
	Fall 2002	VT-1	Accessible areas of 6 LPRM dry tubes. No indications noted.
	Spring 1998	VT-3	11 guide tubes. No indications noted.
Instrument Penetrations	Fall 1996	VT-3	No indications.
Vessel ID Brackets	Spring 2014	EVT-1/ VT-3	Inspections were performed four (4) Steam Dryer Support Bracket due to indications on the Steam Dryer Seismic Blocks. No discernible changes.
	Spring 2007	VT-1/3	Section XI Jet Pump attachment welds at 5 locations. VT-3 of accessible areas

	Fall 2005	VT-1/3	of H9. No indications noted. Section XI CS Piping Brackets, FW Sparger End Brackets, Guide Rod Brackets (upper), Steam Dryer Brackets, Surveillance Sample Brackets and attachment welds at JP1112. Due to disassembly of the JP11 mixer an examination was performed at one Shroud Support Stub weld. No indications.
	Spring 2004	VT-1	Section XI Jet Pump attachment welds at two locations was inspected. No indications.
	Fall 1996	VT-1/3	Section XI every 10 years on Attachment welds. Other parts of brackets on general VT-3 exam. No indications.
LPCI Coupling	Spring 2010	EVT-1	Exams were performed on LPCI @ 219°. No indications were noted.
	Fall 2008	EVT-1	EVT-1 performed on the extra welds (6-4a) that were noted during RF15 at each LPCI strut. No indications were noted.
	Spring 2007	EVT-1	VT-1 on all accessible areas of LPCI @ 141°. Extra weld was located on the strut assembly at all LPCI locations. No indications noted.
	Fall 2005	VT-1	VT-1 on LPCI @ Az. 141° due to a previous loose parts impact concern. No indications.
	Fall 2002	EVT-1	All accessible areas @ Az 39°. No indications. VT-1 on LPCI @ Az. 141° due to a previous loose parts impact concern. No indications.
	Spring 2001	VT-1	VT-1 on LPCI @ Az. 141° due to a previous loose parts impact concern. No indications.
	Fall 1999	VT-1	All accessible areas @ 219°. VT-1 on LPCI @ Az. 141° due to a previous loose parts impact concern.

	Spring 1998	EVT-1	No indications. All chosen welds on LPCI couplings @ Az 39° and 141°. No indications.
	Spring 1996	VT-1	VT-1 on LPCI @ Az. 141° due to a previous loose parts impact concern. No indications.
Steam Dryer	Spring 2014	VT-1	Performed inspections on all accessible welds on the interior and exterior of the dryer. Indications were identified on Seismic Blocks, Tie Rod Bolting and Lower Guide Bracket. Indications documented under INR GGNS-IVVI-14-02 R2, INR GGNS-IVVI-14-06 and INR GGNS-IVVI-14-07.
	Spring 2010	VT-1	Examined previous indications (cracked tack welds at lifting lugs and IGSCC cracking on the upper support ring). No changes were noted.
	Fall 2008	VT-1	Examined areas identified during RF15. Additional crack was noted on a lifting lug and addition linear indication (1" lg.) was identified on the Upper Support Ring.
	Spring 2007	VT-1	Completed BWRVIP-139 examination. Cracked tack welds were noted on all (4) lifting lugs. No movement was noted. Eleven indications (IGSCC) were identified on the dryer upper support ring. No indications were longer than 3 ½".
Dissimilar Metal Welds on Reactor Nozzles	Spring 2012	UT	N01B-KB Nozzle to Safe End Weld N02F-KB Nozzle to Safe End Weld N02G-KB Nozzle to Safe End Weld N02H-KB Nozzle to Safe End Weld N02J-KB Nozzle to Safe End Weld N04C-KB Nozzle to Safe End Weld N04D-KB Nozzle to Safe End Weld N05A-KB Nozzle to Safe End Weld N05A-KC Safe End to Extension N06B-KB Nozzle to Safe End Weld N06B-KC Safe End to Extension

	Spring 2010	UT	<p>N06C-KB Nozzle to Safe End Weld N06C-KC Safe End to Extension N09A-KB Nozzle to Safe End Weld Crack was discovered in N06B-KB weld and weld overlay was completed satisfactorily. Ref. CR-GGN-2012-06386.</p>
	Fall 2008	UT	<p>N02B-KB Nozzle to Safe End Weld N02C-KB Nozzle to Safe End Weld N02D-KB Nozzle to Safe End Weld N02E-KB Nozzle to Safe End Weld N06A-KB Nozzle to Safe End Weld N06A-KC Safe End to Extension N09B-KB Nozzle to Safe End Weld No recordable indications</p>
	Spring 2007	UT	<p>N5B-KB Nozzle to Safe End Weld N5B-KC Safe End to Safe End Ext. N4A-KB Nozzle to Safe End Weld N4F-KB Nozzle to Safe End Weld N4B-KB Nozzle to Safe End Weld No recordable indications</p>
Reactor Bottom Drain Line	Spring 2012	UT	<p>N1A-KB Nozzle to Safe End Weld N2A-KB Nozzle to Safe End Weld N2K-KB Nozzle to Safe End Weld K2M-KB Nozzle to Safe End Weld K2N-KB Nozzle to Safe End Weld K9A-KB Nozzle to Safe End Weld N9A-KC Safe End to Safe End Ext No recordable indications noted</p> <p>Two 2" drain lines were inspected per the Flow Accelerated Corrosion Program. Degradation documented in Calculation MC-Q1111-12004. Next scheduled inspections are RF23 and RF 29, respectively.</p>

Reactor Internals Inspection History

Plant: **Hatch Unit 1**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Re-inspections
Core Shroud Horizontal Welds	Fall 1994 / 1R15	N/A	4-Tie Rods repair installed Fall 1994/1R15. No examination of horizontal welds H-1 through H-8 required.
	Spring 2006/1R22	UT	Examined H-1 through H-7 to prove structural integrity due to cracked shroud tie rod upper supports and 1 loose shroud tie rod. Significant cracking identified, but acceptable for one cycle. Future inspections unlikely pending future shroud repair corrective actions anticipated for 1R23.
	Spring 2008/1R23	UT	Examined H-5, H6a, H6b, and H-7 to prove structural integrity due to the inability to replace cracked shroud tie rod upper support at 225. Significant cracking identified, but acceptable for another cycle. Little growth in flaws from 2006 inspection.
Core Shroud Tie Rods (BWRVIP-07,1996)	Fall 1994 / 1R15	Tightness, EVT-1/VT-3	Installed 4-Tie Rods. Satisfactory.
	Spring 1996 / 1R16	Tightness, EVT-1/VT-3	Increased torque to all 4 Tie Rods. 1 at 315° found to be less than desirable load and was corrected. All others acceptable.
	Fall 1997 / 1R17	Tightness, EVT-1/VT-3	Tightness checks to all 4 Tie Rods. 1 at 315° was again found to be less than desirable load and was corrected. All others acceptable.
	Spring 1999 / 1R18	Tightness, EVT-1/VT-3	Tightness check of 315° was found to be less than desirable, but acceptable. Tie Rod Nut Retainer slots bending from torque but acceptable, tightness

	Spring 2006/1R22	Tightness, EVT-1/VT-3	procedure to be revised. Tightness checks to all 4 Tie Rods. 1 at 315° was again found to be less than desirable load and was corrected. 2 cracked upper supports at 135° & 225°, one at 135° was replaced. Additional repairs and/or modifications to be performed next outage.
	Spring 2008/1R23	Tightness, EVT-1/VT-3	Replaced two tie rod upper supports at 135° and 315°. Unsuccessful in detensioning the Tie Rod nuts at 45° and 225°. 45° and 225° tie rod assemblies were restored to a condition acceptable for another cycle. Tie rod at 225° contains a flaw which grew at a rate less than predicted for the previous fuel cycle.
	Spring 2010/1R24	Tightness, EVT-1/ VT-3	Successfully replaced the remaining two tie rod assemblies 45° and 225°. Tightness checks performed at all 4 tie rods.
	Spring 2012/1R25	VT-3	1-cycle post-installation re-inspection of all 4 tie rod assemblies, including post-torque verifications and upper spring torsion arms/bolts. No reportable indications.
		VT-1/ EVT-1	1-cycle post installation re-inspection of all 4 tie rod upper support corners. No reportable indications.
Core Shroud Vertical Welds (BWRVIP-07, 1996) (BWRVIP-63, 2000) (BWRVIP-76)	Fall 1994 / 1R15	EVT-1	EVT-1, 6" ID & OD at Horizontal Weld Intersection of H-4 & H-5. V-3, V-4, V-5, & V-6. Acceptable indications found on ID of V-4, and OD of V-5.
	Spring 1996 / 1R16	EVT-1	Baseline per BWRVIP-07 in 1996. EVT-1 Outside Surface of V-1 thru V-11, & Inside Surface of V-5 & V-6. Acceptable Indications in V-5, V-6.
	Fall 1997 / 1R17	UT	UT of 6 verticals in 1997, indications in V-5 & V-6, acceptable.

	Spring 1999 / 1R18	EVT-1	EVT-1, V-1 & V-2 from OD due to access. And V-3 through V-8 from ID & OD. Indications reported on V-4, V-5, V-6, & V-8. Acceptable. Future scheduling to be determined.
	Spring 2002 / 1R20	EVT-1	EVT-1, V-1, V-2, V-9, V-10, & V-11 from OD. No Reportables. Schedule not to exceed 6 years.
	Spring 2004 / 1R21	UT/EVT-1	UT, V-5 & V-6 previous indications. No significant changes. Schedule not to exceed 10 years. EVT-1 of V-9, V-12, V-13, & V-14 from OD. No Reportables. Schedule not to exceed 6 years.
	Spring 2008/1R23	EVT-1	Examined V1, V2, V3, V4, V7, V8 V9, V10, and V11. Short indications recorded on the ID at the intersections of H4 with V4 and at the intersections of H5 with V7 and V8.
	Spring 2010/1R24	EVT-1	Examined 12" on either side of high fluence intersections from the ID, including V7/H5, V8/H5, V4/H4, V5/H5, V5/H4 V6/H4, and V6/H5 intersections. One new indication reported at V5/H5, one less indication at V4/H4 compared to 2008 outage results. Also examined V12, V13, and V14 from the shroud OD with no indications reported.
	Spring 2014/1R26	UT	<p>Examined V3, V4, V5, V6, V7, V8, V9, and V10, via UT. Indications noted at V4, V5, V6, V7 and V8. Re-examination of V6 revealed a portion of the longest V6 crack was through-wall. Another small indication near V5 above H4 not associated with a weld was sized via UT. All evaluated structurally and for leakage and found acceptable.</p> <p>Examined intersections of H4/V4, H5/V8, and H5/V7 via traditional or specialized UT to characterize previously reported off-axis indications. Four indications axial to H4 near the V4</p>

		EVT-1	<p>intersection were found to be through wall. All evaluated structurally and for leakage and found acceptable.</p> <p>Intersections at H4/V4 and H5/V8 were also inspected via EVT-1 from the ID. Additional small indications noted at both intersections evaluated as acceptable. Additional coverage CCW of V4 at H4 revealed an additional axial indication (one of the 4 H4/V4 through-wall indications identified via UT). Examined V1, V2, and V11 via EVT-1 from the OD with no recordable indications. All evaluated as acceptable.</p>
Core Shroud Ring Segment Welds (BWRVIP-07, 1996) (BWRVIP-63, 2000) (BWRVIP-76)	Spring 1996 / 1R16	EVT-1	EVT-1 from outside surface of 2 Ring welds. Satisfactory.
	Fall 1997 / 1R17	EVT-1	EVT-1 from outside surface of 4 Ring welds. 1- acceptable indication.
	Spring 1999 / 1R18	EVT-1	EVT-1 from outside surface of 5 Ring welds. No indications. Previous indication determined to be non-relevant. Future scheduling to be determined.
	Spring 2002	EVT-1	EVT-1 from OD of Top Guide RSW at 60 degrees. No Reportables. 1 of 4 Top Guide RSW every 2 cycles, or 4 years.
	Spring 2004	EVT-1	EVT-1 from OD of Top Guide RSW at 60 degrees, re-exam. No Reportables. 1 of 4 Top Guide RSW every 2 cycles, or 4 years.
	Spring 2006	EVT-1	EVT-1 from OD of Top Guide RSW at 120°. No Reportables. 1 of 4 Top Guide RSW every 2 cycles, or 4 years.
	Spring 2010/1R24	EVT-1	EVT-1 from OD to Top Guide RSW at 240°. No reportables. 1 of 4 Top Guide RSW every 2 cycles, or 4 years.
	Spring 2014/1R26	EVT-1	EVT-1 from OD of Top Guide RSW (R-12) at 300°. No reportable indications. 1 of 4 Top Guide RSW every 2 cycles, or 4 years.

Core Shroud Support Ledge (H-9) (BWRVIP-38, 2000)	Fall 1994 / 1R15	VT-3	0-360° where accessible, from top once/interval. Examined 100%. No indications. Future BWRVIP-38 scheduling to be determined. Very limited for EVT-1.
	Fall 1994/ 1R15	EVT-1/VT-1	Examined support plate gusset welds @45, 135, 225, 315.
	Fall 1997/ 1R17	EVT-1	VT-1 per NRC SE on shroud repair. EVT-1 performed of gusset plates & attachment welds at tie rod azimuths (45, 135, 225, 315). No indications.
	Spring 2004/ 1R21	EVT-1	4 Shroud Support Plate Gusset Welds at 12, 105, 195, & 285 degrees. No Reportables. Future scheduling to be determined.
	Spring 2006/ 1R22	EVT-1	EVT-1 of >15% of H-8 in order to establish redundancy to the degraded shroud repair (2 cracked upper supports at 135° & 225°). No reportables.
	Spring 2006/ 1R22	VT-3	ASME VT-3 of all shroud support plate gussets and attachment welds.
	Spring 2006/ 1R22	UT	UT of approximately 20% of H-9 per BWRVIP-104. No reportables
	Spring 2010/ 1R24	EVT-1	EVT-1 of Shroud Support Plate Gusset Welds at 30°, 45°, 90°, 135°, 210°, 225°, 300°, 315°, 345° per BWRVIP-38 requirements.
	Spring 2010/1R24	VT-3	VT-3 of 30°, 90°, 210°, 300°, 345° for ASME requirements.
Core Shroud Support Ledge Access Hole Covers (2) 0° & 180°. (Augmented)	Fall 1991/ 1R13	UT	UT Indications. Acceptable for one cycle.
	Spring 1993 / 1R14	VT-1/3	Replaced with mechanical design in 1993. Typical for 2 at 0° & 180°. Examine one every outage / or 2 each period, VT-1 bolting tack welds/VT-3 remaining. No reportable indications.

	Fall 1997 / 1R17	VT-1/3	Examine each period. Examined 0°. No reportable indications.
	Spring 1999 / 1R18	VT-1/3	Examine each period. Examined 180°. No reportable indications.
	Fall 2000 / 1R19	VT-1/3	Examine each period. Examined 0° where evidence of leakage on the shroud side was observed. Examined 180° and found similar evidence of leakage. Determined that leakage is expected.
	Spring 2002 / 1R20	VT-1/3	Examine each period. Examined 180° evidence of expected leakage.
	Spring 2004 / 1R21	VT-1/3	Examine each period. Examined 180°. No reportable indications. Leakage not reported.
	Spring 2006/1R22	VT-1/3	Examine each period. Examined 180° evidence of expected leakage.
	Spring 2014/1R26	VT-1/3	Examine once per 8 years per BWRVIP-180. Examined AHCs at 0° and 180°. Evidence of expected leakage. No changes noted.
Core Spray Internal Piping (BWRVIP-18, 1997)	1980's to Spring 1996 / 1R16	VT-1 / .001mil resolution	IEB 80-13/NUREG CR-4523. Examine each outage.
	Fall 1997 / 1R17	EVT-1	BWRVIP-18 implemented 1997. No indications.
	Spring 1999 / 1R18	EVT-1	No indications.
	Fall 2000 / 1R19	EVT-1	No indications.
	Spring 2002 / 1R20	EVT-1	No indications.
	Spring 2004 / 1R21	EVT-1	No indications.
	Spring 2006/1R22	EVT-1	No indications

	Spring 2008/1R23	EVT-1	No indications
	Spring 2010/1R24	EVT-1	No indications
	Spring 2012/1R25	EVT-1	No indications
	Spring 2014/1R26	EVT-1	No indications.
Core Spray Sparger (BWRVIP-18, 1997)	1980's to Spring 1996 / 1R16	VT-1 / .001mil resolution	IEB 80-13/NUREG CR-4523. Examine each outage. Mechanical Repair Clamp on T-Box Cover Plate in 1984.
	Fall 1997 / 1R17	CSV-T-1	BWRVIP-18 implemented 1997. No reportable indications.
	Spring 1999 / 1R18	EVT-1/VT-3	Began Sparger inspections as Geometry Critical. No reportable indications.
	Fall 2000 / 1R19	EVT-1/VT-3	No reportable indications.
	Spring 2002 / 1R20	EVT-1/VT-3	No reportable indications.
	Spring 2004/1R21	EVT-1/VT-3	No reportable indications.
	Spring 2006/1R22	EVT-1/VT-3	No reportable indications.
	Spring 2008/1R23	EVT-1	No reportable indications.
	Spring 2010/1R24	EVT-1/VT-1(89)/VT-3	No reportable indications.
	Spring 2012/1R25	EVT-1/ VT-1(89)	No reportable indications.
	Spring 2014/1R26	EVT-1/ VT-1(89)	No reportable indications.
Top Guide (BWRVIP-26, 1997)	Fall 1994 / 1R15	VT-1	VT-1 (.001) of Beams at 10 Cell Locations. & 4 - hold down bolts. EVT-1.

	Spring 1996 / 1R16	VT-1	4 Aligner Pins & Brackets, 4 Hold-down Brackets. No Indications.
	Fall 1997 / 1R17	VT-1	BWRVIP-26, 2 adjacent aligner pins. No indications. Accessible Rim Weld, VT-1. (EVT-1 required, no credit taken due to the in-ability to brush). No indications.
	Spring 1999 / 1R18	VT-1	2 adjacent aligner pins. No indications. Hold-downs no longer required due to GE evaluation.
	Fall 2000 / 1R19	VT-3	7 – grid areas (VT-3 ASME) during (CRB) Control Rod Blade replacement.
	Spring 2002 / 1R20	VT-1	VT-1, 2 of 4 Top Guide Hold-downs, 180 degrees apart, every other outage beginning 1R20.
	Spring 2004 / 1R21	VT-3	35 cell locations during CRB shuffle/exchange. No Reportables. Examinations scheduled when CRB's are shuffled/exchanged.
	Spring 2006/1R22	VT-1	VT-1, 2 of 4 Top Guide Hold-downs, 180 degrees apart every other outage. No indications. Also performed VT-1 of 2 cells from the underside. No indications.
	Spring 2008/1R23	EVT-1	Grid beams in 14 cells per BWRVIP-183. No indications.
	Spring 2010/1R24	EVT-1/ VT-1	EVT-1 of grid beams in 21 cells per BWRVIP-183. No indications. VT-1 on 2 of 4 top guide hold-downs, 180 degrees apart, every other outage. No indications.
	Spring 2014/1R26	VT-1	VT-1, 2 of 4 Top Guide Hold-downs, 180 degrees apart every other outage. Minor wear noted on 176° assembly at pin area. Evaluated as acceptable
Core Plate (BWRVIP-25)	Fall 1990 / 1R12	VT-1/3	VT-1 of Alignment Assembly (4). VT-1 Accessible Bolts from top surface. No reportable indications.

	Fall 1994 / 1R15	VT-1	VT-1 of Alignment Assembly (4). VT-1 Accessible Bolts from top surface. No reportable indications.
	None	N/R	BWRVIP-25 examinations not required per Hatch configuration since installation of wedges during shroud repair in 1994. No future scheduling.
	Fall 2000 / 1R19	VT-3	7 – top surface areas during (CRB) Control Rod Blade replacement. Also, 8 – Core Plate By-Pass Flow Hole Plug. No reportable indications.
	Spring 2002 / 1R20	VT-3	14 – core plate top surface areas during Guide Tube Inspections. Also, 14 – Core Plate by-pass Flow Hole Plugs. No reportable indications.
	Spring 2004 / 1R21	VT-3	35 cell locations during CRB shuffle/exchange. Also 32 Core Plate By-pass Flow Hole Plugs. No Reportables. Examinations scheduled when CRB's are shuffled/exchanged.
	Spring 2006/1R22	VT-3	2 cell locations during CRB exchange. Also 4 Core Plate By-pass Flow Hole Plugs. No Reportables. Examinations scheduled when CRB's are exchanged.
	Spring 2008/1R23	VT-3	Examined 3 Core Plate Bypass Plugs
	Spring 2010/1R24	VT-3	Examined 21 Core Plate Bypass Plugs. No indications reported.
	Spring 2014/1R26	VT-3	Examined 34 Core Plate Bypass Plugs. No indications or leakby reported.
Standby Liquid Control (BWRVIP-27)	Fall 2000 / 1R19	Direct VT-2 or UT	Performed direct VT-2 during leakage test. No indications.
	Fall 2004 / 1R21	Direct VT-2 or UT	Performed direct VT-2 during leakage test. Access not suitable for UT. No indications.
	Spring 2006/1R22	Direct VT-2 or UT	Performed direct VT-2 during leakage test. Access not suitable for UT. No

	Spring 2008/1R23	Direct VT-2 or UT	indications. Performed direct VT-2 during leakage test. Access not suitable for UT. No indications.
	Spring 2010/1R24	UT	Performed UT using newly developed tooling allowing access. No indications.
Jet Pump Assembly (BWRVIP-41, 1999)	Through 1996 / 1R16	VT-1/3	ASME Riser Brace Arm Attachments. No Indications. Augmented SIL's/RICSIL's for Restrainer Adjusting Screw Tack Welds & Gap's. Riser Brace Arm to Riser Welds. Hold-Down Beams, Inlet mixers, Sensing Lines. Hold down beams replaced in 1990 due to UT indications.
	Fall 1997 / 1R17	VT-1/3 & EVT-1	All Thermal Sleeve to Risers welds, and some transition piece, diffuser, adapter examined 1997. Two indications that where reported in 1997 on the thermal sleeve to elbow welds HAZ's. Acceptable.
	Spring 1999 / 1R18	VT-1/3 & EVT-1	BWRVIP-41, intended to perform visual examination of all high priority welds, but could not perform EVT-1 examination of lower diffuser welds due to mainly gusset interference's. May perform UT on those welds next outage. UT examination of all Jet Pump Beam Bolts, no indications. Examined adjusting screw tack welds & gaps, 1 broken tack weld, and 4 set-screw gaps, worst one was .019" (no corrective action required). Additionally examined the restrainer wedge assemblies with the associated set-screw gaps (no reportable indications). Two indications that where reported in 1997 on the thermal sleeve to elbow welds had no significant change (took better measurements).
	Fall 2000 / 1R19	VT-1 & EVT-1	BWRVIP-41, made another attempt to perform EVT-1 examination of lower diffuser welds due to mainly gusset interference's. Re-examined adjusting

			<p>screw tack welds & gaps, 1 broken tack weld, and 4 set-screw gaps reported during 1R18. No significant changes. One gap went away.</p> <p>Indications on the two thermal sleeve to elbow welds (EVT-1) that were first reported in 1997 and re-examined in 1999 had no significant changes.</p> <p>Nine of ten Riser brace arm to pad, and pad to vessel welds (EVT-1). No reportable indications.</p>
	Spring 2002	EVT-1, VT-1	50% of the population of the medium priority items. Augmented 50% of the sensing line support brackets. No Reportables.
	Spring 2004 / 1R21	UT	UT was performed on 100% (20) AD-1, AD-2, & DF-2 welds due to inaccessibility for suitable visual inspection due to support plate gussets. No reportables.
		EVT-1	Indications on the two thermal sleeve to elbow welds (EVT-1) that were first reported in 1997 and re-examined in 1999 and 2000 had no significant changes.
		UT	UT was performed on 20 Jet Pump Hold-down Beams - No indications.
	Spring 2006/1R22	EVT-1	EVT-1 was performed on 50% of the RS-1, RS-2, RS-3 welds. Indications on the two thermal sleeve to elbow welds (RS-1's) that were first reported in 1997 and re-examined in 1999, 2000 and 2004 had no significant changes since 1997.
		VT-1	Re-baseline all 20 restrainer wedge bearing surfaces (WD-1) - No indications.
		EVT-1/VT-1	Re-examined all wedges. Completed baseline of medium priority locations. Re-examined 50% of RB-1 locations.

	Spring 2008/1R23	VT-1	No reportable indications Examined sensing lines on JPs 7 and 17. No indications.
		EVT-1	Re-examined RS-1 indications on JP 3/4 and 7/8 with no change in length.
		UT	UT was performed on 50% (10 Jet Pumps) of AD-1, AD-2, & DF-2 in accordance with BWRVIP-41 Rev. 2. No reportables.
	Spring 2010/1R24	EVT-1	Re-examined RS-1 indications on JP 3/4 and 7/8 with no change in length. Examined RS-8 and RS-9 welds for Jet Pumps 1-10. No reportable indications.
		EVT-1/VT-1	Examined RB-1, riser braced to vessel welds, for Jet Pumps 5/6 and Jet Pumps 9 through 18. No reportable indications.
	Spring 2012/1R25	EVT-1	Examined RS-1, RS-2, RS-3 riser welds for JP 11-20, Re-examined RS-1 indications on JP 3/4 and 7/8 with no change in length.
		VT-1	Examined all 20 JP restrainer bracket wedges. Examined sensing lines on JP 7 and 17. No indications.
	Spring 2014/1R26	EVT-1	Re-examined RS-1 indications on JP 3/4 and 7/8 with no change in length. Re-examined 25% (5 Jet Pumps) of MX-2, IN-4, RS-6 and RS-7, and DF-1 welds according to BWRVIP-41 Rev 3, with no indications noted. Also examined Riser brace to yoke (RB-2) welds for 4 jet pumps with no indications noted.
CRD Guide Tubes (BWRVIP-47)	Fall 2000 / 1R19	EVT-1 /VT-3	Tenative plans for inspections during 1R20 /Spring 2002. A FSC/GT Anti-Rotation Pin at 18-03 was reported as being loose in 1996. Was examined from the top side during 1R19, Fall 2000. Is welded from bottom.

	Spring 2002 / 1R20	EVT-1 / VT-3	EVT-1, 10% of the population (14) Guide Tubes CRGT-1, CRGT-2, & CRGT-3 welds, and VT-3 of FSC/GT Anti-Rotation Pins. Also examined applicable fuel support castings.
CRD Stub Tubes	None Required	VT-2	None scheduled (VT-2 during class 1 pressure test).
In-Core Housing	None Required		None scheduled
Dry Tubes	1987/1R10	N/A	Replaced with non-creviced design.
	Spring 2006/1R22	N/A	Replaced 6 (50%) dry tubes
	Spring 2008/1R23	N/A	Replaced remaining 6 (50%) dry tubes
Instrument Penetrations (BWRVIP-49)	1976-1992	VT-2	VT-2 during Class 1 leakage test of all penetrations.
	Spring 1993 / 1R14	N/A	Pin hole leak in 1993 was repaired.
	Fall 1994 / 1R15	VT-2	Direct visuals performed. No reportable indications.
	Fall 1997 / 1R17	UT/VT-2	N11A/B, N12A/B UT in 1997. Examined during leakage test. No reportable indications.
	Spring 1999 / 1R18	VT-2	Future PT/UT may be exempt due to size/safety function/ and make-up capacity.
	Every Outage 2000 Forward	VT-2	VT-2 during Class 1 leakage test of all penetrations, only indications noted hereafter. All penetrations exempt from ASME surface exam except 1N16A/B; required once per interval.
*RPV Interior Attachments (BWRVIP-48)	Spring 1996 / 1R16	VT-1/3	Surveillance Specimen Brackets (3) No reportable indications.
*Other Attachments examined by other BWRVIP	Fall 1997 / 1R17	VT-1/3	Guide Rod Brackets (2). No reportable indications.

documents.	Spring 1999 / 1R18	VT-1/3	Steam Dryer Support Brackets (4). No reportable indications.
	Fall 1997 / 1R17	VT-1	Steam Dryer Support Hold Down Brackets (4). No reportable indications.
	Spring 1993 / 1R14 Fall 1997 / 1R17	VT-1/3	FW Sparger Brackets (4) every fourth outage per NUREG-0619 commitments. No reportable indications. Future scheduling to be determined.
	Fall 1994 / 1R15	VT-1, VT-3, EVT-1	VT-3, 2 - Guide Rod Brackets. VT-1, 1 - Upper Surveillance Specimen Bracket. VT-3, 1 - Lower Surveillance Specimen Bracket. EVT-1, 4 - Steam Dryer Support Brackets. EVT-1, 4 - Feedwater Brackets. No reportable indications.
	Spring 1999 / 1R18	VT-1	VT-1, 4 Steam Dryer Hold-down Brackets. No reportable indications. Each Interval.
	Spring 2002 / 1R20	EVT-1	EVT-1, 4 Feedwater Brackets to RPV. No reportable indications.
	Spring 2004 / 1R21	VT-3	1 Upper guide rod bracket to RPV, 3 upper surveillance specimen brackets to RPV.
	Spring 2006/1R22	EVT-1	3 lower surveillance specimen brackets to RPV.
	Spring 2008/1R23	EVT-1/ VT-3	4 FW Sparger Bracket Welds to RPV
	Spring 2010/1R24	EVT-1/ VT-3	1 Core Spray Bracket to RPV weld at 330 degrees.
	Spring 2012/1R25	VT-3	1 Upper guide rod bracket to RPV at 180 degrees, and 2 Guide Rod & Lower guide rod attachment welds to Shroud at 0 and 180 degrees. No reportable indications.
	Spring 2012/1R25	EVT-1/ VT-3	Steam Dryer Support Bracket & Attachment welds (4). No indications reported. Core Spray Piping Bracket at

	Spring 2014/1R26	VT-3 EVT-1/ VT-3	210 degrees also inspected. No indications. Steam Dryer Hold Down Brackets (4). No reportable indications. Core Spray Bracket & Attachment welds at 30°. No reportable indications.
LPCI Coupling (BWRVIP-42)	Not Applicable to Hatch	N/A	N/A
Feedwater Spargers (NUREG-0619)	Fall 1994 / 1R15 Spring 1996 / 1R16 Fall 1997 / 1R17 Spring 1999 / 1R18 Spring 2004/1R20 Spring 2006/1R22 Spring 2008/1R23 Spring 2010/1R24	VT-1/3 VT-1/3 VT-3 VT-3 VT-3	1994 through 1999 inspections: Sparger Arms, Flow Holes, Brackets, Tees, Welds, Nozzle Blend Area. No reportable indications. Schedule 2 of 4 every outage per NUREG-0619 commitments. Future scheduling to be determined. Sparger Arms, Flow Holes, Brackets, Tees, Welds. Unusual wear on end brackets to pins. Probable repair next outage. Schedule 2 of 4 every other outage beginning 1R20. FW Sparger end pins repair completed at four locations(185°, 265°, 275°, & 355°). Repaired due to wear. FW Sparger end pins/brackets at 5°, 85°, 95°, 175° inspected. Minor wear discovered on locations at 95° and 175°. Scope expanded to examine repaired locations at 185°, 265°, 275°, 355°. No further wear noted from additional exams. Re-examine locations at 5°, 85°, 95°, and 175° next outage with contingency planning in place. Sparger Arms, Flow Holes, Brackets, Tees, Welds, Nozzle Blend Area. No reportable indications

	Spring 2012/1R25	VT-1/ VT-3	FW Sparger end pins/brackets at 5°, 85°, 95°, 175° re-inspected. No further wear noted from reinspection. Re-examine or repair next outage.
	Spring 2014/1R26	VT-3/ EVT-1 VT-3/ VT-1	Previously repaired FW sparger end pin brackets at 265°, 185°, 355°, 275° also inspected with no indications noted. FW Sparger end pins/brackets at 5°, 85°, 95°, 175° re-inspected. No further wear on noted from reinspection. Re-examine or repair next outage.
Steam Dryer	Spring 2006 / 1R22	VT-1/3	Upper support ring @ 0°-360° top and vertical surfaces VT-3. Lower & Upper Guide at 180° (10) Tie Bars TB1 – TB10, Vertical welds - Various Hood (8) Drain Channels DC1 – DC8 (5) Lower horizontal welds (2) Upper horizontal welds. One tie bar was cracked on one side on the middle span and was repaired (re-welded). Minor indications on DC-1 & Upper Support Ring. BWRVIP examinations are performed every other cycle until the BWRVIP determines an examination frequency. Other owner designated examinations are performed every 6 years.
	Spring 2008/1R23	VT-1 (89)	Upper support ring top and vertical surfaces 0-360°. Monitoring previously identified small indications. Flaws exhibited little discernable change. Lower support ring and guide 24" on either side of lower guide at 0°. Drain channel #1. Monitoring previously identified small indications. Flaws exhibited little discernable change. Tie Bar #6. Reinspection weld repaired tie bar during 2006.

	Spring 2010/1R24	VT-1 (89)	Upper support ring top and vertical surfaces 0-360°. Previously identified indications were determined to be non-relevant during 1R24. Flaws exhibited little discernable change.
	Spring 2012/1R25	VT-1 (89)	Examined steam dryer tie bars 3-7, various horizontal welds (4), vertical partition welds (4), Vertical hood welds (9), and drain channels (4). No indications reported.
	Spring 2014/1R26	VT-1(89)	<p>Lower support ring 24" on either side of lower guide at 0°. Upper guide and lower guide at 0°. Seismic Brackets (4). Lifting Eye, Rod and Attachment welds at 215° and 325°. No indications reported.</p> <p>Vertical partition weld (1) – no change to historical/legacy indications.</p>
DM Welds	Spring 2008/1R23	UT	<p>Performed manual UT of N9 nozzle cap weld and the "N8A" jet pump instrument nozzle-to-safe end weld. Both examinations met Appendix VIII criteria. The N8A nozzle-to-safe end weld examination detected no indications.</p> <p>Manual UT plots in the N9 cap weld indicated a potential flaw that appeared to extend upward from the root area along the interface of the replacement weld and the original nickel alloy butter fusion line. Phased array UT (Appendix VIII qualified) was then used to fully interrogate the weld and characterize the indication. The indication was evaluated to be a circumferentially oriented defect that was 2.3 inches long on the inside diameter and 60% through wall in a pipe thickness of 0.74 inches. A SWOL was successfully applied.</p> <p>Scope was expanded to the "N8B" jet pump instrument nozzle-to-safe end weld with no indications detected. All DM weld inspections for 2008 were Category C welds according to BWRVIP-75-A criteria.</p>

	Spring 2010/1R24	UT	Performed manual UT of Recirc nozzle N2D, N2F, N2G, N2H, and N2K nozzle-to-safe end welds. All examinations met Appendix VIII criteria. The N2D and N2H examinations required some weld conditioning prior to UT. The examinations resulted in no reportable indications.
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Reactor Internals Inspection History

Plant: **LaSalle Unit 1**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Spray Piping	L1R15 (2014)	EVT-1	Visual examination of 33 core spray piping welds (implemented the sampling of P4 welds). No indications
	L1R14 (2012)	EVT-1	Visual examination of 46 core spray welds, including two LaSalle 1-unique welds, and the BP4a weld that was examined by UT. No indications.
		UT	Re-sized existing flaw on BP4a; no significant change in length. Re-exam scheduled in 2 cycles.
	L1R13 (2010)	EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated. No indications. Visual examination of four piping brackets. No indications.
	L1R12 (2008)	UT	Ultrasonic examination of 38 welds for which the UT technique is now demonstrated. Re-sized flaws on BP4a, DP5, and DP6 and due to new Demonstration, the flaws on DP5 and DP6 have been re-characterized as geometry-related; no flaws exist. Flaw evaluation performed on BP4a and weld scheduled for examination again in L1R14.
		EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated or where access is limited. No indications. Visual examination of five piping brackets. No indications.
	L1R11 (2006)	UT	Re-sized flaws on BP4a, DP5, and

	L1R10 (2004)	EVT-1	DP6. Flaw evaluation performed and welds scheduled for examination in L1R12. Visual examination of those core spray piping welds for which UT technique is not demonstrated. No indications.
		UT	Ultrasonic examination of 34 welds for which the UT technique is demonstrated. Re-sized flaws on BP4a, DP5, and DP6. Flaw evaluation performed and welds scheduled for examination in L1R11.
	L1R09 (2002)	EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated. No indications.
		EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated. No indications.
	L1R08 (1999)	UT	Ultrasonic examination of the welds for which the UT technique is demonstrated. Re-sized flaws on BP4a, DP5, and DP6. Flaw evaluation performed and welds scheduled for examination in L1R10.
		EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated. No indications. Visual examination of 50% of the core spray sparger welds. No indications.
Core Spray Sparger	L1R15 (2014)	EVT-1/VT-1	Visual examination of 25% of the core spray sparger welds. No indications. Visual examination of six sparger brackets. New indications noted on sparger bracket at 225°. The indications were evaluated as acceptable.

	L1R14 (2012)	VT-1	Visual examination of 25% of the core spray sparger welds. No indications. Visual examination of six sparger brackets. No new indications.
	L1R13 (2010)	EVT-1/VT-1	Visual examination of 50% of the core spray sparger welds. No indications. Visual examination of eight sparger brackets. No indications.
	L1R12 (2008)	EVT-1	Visual examination of 25% of the core spray sparger welds. No indications. Visual examination of four sparger brackets. No indications.
	L1R11 (2006)	EVT-1	Visual examination of 50% of the core spray sparger welds. No indications.
	L1R10 (2004)	EVT-1	Visual examination of 50% of the core spray sparger welds. No indications.
	L1R09 (2002)	EVT-1	Visual examination of 50% of the core spray sparger welds. No indications.
	L1R08 (1999)	EVT-1	Visual examination of 50% of the core spray sparger welds. No indications.
Attachment Welds	L1R15 (2014)	VT-3	Visual examination of one steam dryer support lug. Wear on top and gouge on side are unchanged. Weld was not examined.
	L1R14 (2012)	EVT-1	Visual examination of one steam dryer support lug. Wear on top and gouge on side are unchanged. No indications on weld.
	L1R13 (2010)	EVT-1	(See core spray sections for those attachment welds.) Visual examination of one steam dryer support lug attachment weld (185°). No change in the wear.

	L1R12 (2008)	VT-1/VT-3	Visual examination of the upper and lower surveillance capsule attachment welds. No indications.
		EVT-1	Visual examination of 12 feedwater sparger attachment welds, both the upper and lower surveillance capsule welds at three locations. No indications.
		EVT-1	Visual examination of four steam dryer support lug attachment welds. No change in the wear on the steam dryer support lugs at 5° and 185° where previous wear was observed.
	L1R11 (2006)	EVT-1/VT-1/VT-3	(See jet pump and core spray sections for those attachment welds.) Visual examination of 2 guide rod attachment welds, 12 feedwater sparger attachment welds, and both the upper and lower surveillance capsule welds at three locations. No indications.
		EVT-1	Visual examination of the steam dryer support lug at 185° where wear was observed last outage. No change in the wear.
	L1R10 (2004)	EVT-1/VT-1/VT-3	(See jet pump and core spray sections for those attachment welds.) Visual examination of 4-steam dryer support lug welds, 2 feed water sparger attachment welds, and both the upper and lower surveillance capsule welds at three locations. The steam dryer support lug at 185° showed signs of wear and was accepted for one cycle.
	L1R08 (1999)	EVT-1/VT-1	(See jet pump and core spray sections for those attachment welds.) Visual examination of 4 steam dryer support lug welds. No indications.
Core Shroud	L1R15 (2014)	UT	All accessible areas of core shroud weld H4 were ultrasonically examined. On the upper side of the

	L1R14 (2012)	UT	<p>weld, 89.8% of the weld length was examined, and 3.6% of the examined weld length was flawed. On the lower side of the weld, 100% of the weld length was examined, and 2.6% of the examined weld length was flawed. Due to the high fluence on H4, a site specific evaluation was performed, and re-inspection of weld H4 is required in 10 years.</p> <p>UT of welds H2 (lower only), H3, H5, H6, and H8 (LaSalle-specific numbering). Welds H2 and H5 were not due for examination but were partially examined due to tooling availability. 100% of the accessible areas of H3, H6 and H8 were examined, and indications were less than 10% of each weld. Due to the high stresses on H8, a site specific evaluation was performed for this weld. Re-inspection of welds H3, H6, and H8 is required in 10 years.</p>
	L1R11 (2006)	UT	<p>UT of welds H3, H4, H6, and H8 (LaSalle-specific numbering). Coverage on H6 and H8 was less than 50%, and a site-specific flaw evaluation was performed and re-inspection is in 6 years. Note that 100% of the accessible areas were not examined, and a Deviation Disposition was submitted. Indications were less than 10% on each weld.</p>
	L1R07 (1996)	UT	<p>UT of welds H3, H4, H5, H6, and H8 (LaSalle-specific numbering). No indications noted except on H4, where indications were 3.0%. Next inspection in 2006.</p>
<u>Shroud Support</u>	L1R14 (2012)	UT	<p>Ultrasonic examination of 100% of the H9 weld from the vessel outside diameter. No indications.</p>
		EVT-1	<p>Visual examination of both access hole covers. No indications.</p>

		EVT-1	Visual examination of 2 shroud support plate gusset welds. No indications.
	L1R13 (2010)	EVT-1	Visual examination of 7 shroud support plate gusset welds. No indications.
		EVT-1	Visual examination of approximately 12.5% of H8a. No indications.
	L1R12 (2008)	EVT-1	Visual examination of both access hole covers. No indications.
		EVT-1	Visual examination of 7 shroud support plate gusset welds. No indications.
	L1R11 (2006)	EVT-1	Visual examination of 8 shroud support plate gusset welds. No indications.
		VT-3	Visual exam of 100% of the accessible portion of the top of H9 and both access hole covers. No indications.
		VT-3	Visual examination of the accessible portions of the bottom of H9 beneath jet pumps 5, 6, 9, and 10 due to the removal of the inlet mixers. NRI.
	L1R10 (2004)	EVT-1	Visual examination of 11 shroud support plate gusset welds. No indications.
		EVT-1	Visual examination of approximately 20% of H8a (BWRVIP weld H8). No indications.
		VT-3	Visual examination of the accessible portions of the bottom of H9 beneath all jet pumps due to the replacement of the inlet mixers. NRI.
	L1R09 (2002)	UT	Ultrasonic examination of 100% of the H9 weld from the vessel outside diameter. No indications.

	L1R08 (1999)	EVT-1	Visual examination of 6 shroud support plate gusset welds. No indications.
		EVT-1	Visual examination of approximately 2% of H8a, 23% of the top of H9, and both access hole covers. No indications.
	L1R07 (1996)	VT-1	Visual examination of both access hole covers. No indications.
SLC	L1R15 (2014)	VT-2	Visual examination during the system leak test. No indications.
	L1R14 (2012)	VT-2	Visual examination during the system leak test. No indications.
	L1R13 (2010)	VT-2	Visual examination during the system leak test. No indications.
	L1R12 (2008)	VT-2	Visual examination during the system leak test. No indications.
		PT	Surface examination. No indications.
	L1R11 (2006)	VT-2	Visual examination during the system leak test. No indications.
	L1R10 (2004)	VT-2	Visual examination during the system leak test. No indications.
		PT	Surface examination. No indications.
	L1R09 (2002)	VT-2	Visual examination during the system leak test. No indications.
Jet Pump Assembly	L1R08 (1999)	VT-2	Visual examination during the system leak test. No indications.
	L1R15 (2014)	UT	Ultrasonic examination of thirteen Group 2 beams. No indications.
		EVT-1	Visual examination of RS-2 at 3 locations. No indications. Visual examination of IN-2 at 5 locations. No indications. Visual examination of RB-2a,b,c,d on 5 pumps. No indications.

		VT-3	<p>Visual examination of RS-6 on 2 pumps. No indications.</p> <p>Visual examination of RS-7 on 2 pumps. No indications.</p> <p>Visual examination of RS-9 on 10 pumps. No change in existing indications on riser 1/2, 3/4, 5/6, 9/10, 11/12, and no indications on other 5 risers.</p> <p>Visual examination of all 20 slip joint clamps. Existing wear at contact point with middle vane unchanged on jet pumps 7, 13, and 14. New wear identified at contact point with middle vane on jet pump 12. No contact observed at middle vane on jet pump 10, and a review of video files indicates that the clamp was not in contact after original installation and has not changed since original installation.</p>
		VT-1	<p>Visual examination of all 20 main wedges. No change in the wear on 14 pumps, and the other 6 pumps had no indications. All 20 main wedge rods were examined in response to BWRVIP Letter 2014-019. Existing wear was unchanged on 14 of the rods, and new wear was identified on one rod. The other 5 rods had no wear.</p> <p>Visual examination of 5 auxiliary wedges. Existing wear on 3 auxiliary wedges showed no change, and the other 2 auxiliary wedges had no wear.</p>
	L1R14 (2012)	UT	<p>Ultrasonic examination of diffuser welds DF-1 (bottom only), DF-2, and DF-3 (top only) on all twenty pumps. No indications. (Note that bottom of DF-3 is not accessible due to presence of curved adaptor)</p>
		EVT-1	<p>Visual examination of RB-1 welds at 18 locations. No indications.</p> <p>Visual examination of RS-1 at 3</p>

			<p>locations. No indications.</p> <p>Visual examination of RS-8 at 3 locations. No indications.</p> <p>Visual examination of RS-6 at 1 location. No indications.</p> <p>Visual examination of RS-7 at 1 location. No indications.</p> <p>Visual examination of RS-9 at 10 locations. Existing flaws at two locations unchanged; indications noted on the edges at four locations.</p>
		VT-1/VT-3	<p>Visual examination of twenty slip joint clamps. Recordable indications on three clamps, and the other 17 had no indications.</p>
		VT-1	<p>Visual examination of WD-1 on all twenty pumps. No recordable indications on 5 wedges, unchanged wear on 14 wedges, and new wear on one wedge.</p> <p>Visual examination of WD-2a and WD-2b on two pumps; no indications.</p> <p>Visual examination of set screw to inlet mixer contact on four pumps. No indications.</p> <p>Visual examination of 10 auxiliary wedges; recordable indications on three, and no recordable indications on 7 locations.</p>
		VT-3	<p>Visual external examination of the jet pump 9 assembly, including the nozzles and sensing line. No indications.</p> <p>Visual external examination of the jet pump 10 assembly, no indications.</p>
	L1R13 (2010)	N/A	<p>Performed an access study on 4 pumps to assist in tooling development for UT examination of unique welds AD-1, AD-2, and DF-3.</p>
		EVT-1	<p>Visual examination of RS-1 on 4 pumps. No indications.</p>
		EVT-1	<p>Visual examination of RS-3 on 5</p>

			pumps. No indications.
		EVT-1	Visual examination of RS-8 on 10 pumps. No indications. (Due to Laguna Verde)
		EVT-1	Visual examination of RS-9 on 10 pumps. No new indications, no apparent change in three existing indications. (Due to Laguna Verde)
		EVT-1	Visual examination of IN-1 on 5 pumps. No indications.
		VT-1	Visual examination of WD-1 on 20 pumps. No new indications, no apparent change in wear on 14 wedges. (Due to Laguna Verde)
		VT-1	Visual examination of vessel side auxiliary wedges on 9 pumps. No new indications, no apparent change in wear on 1 wedge. (Due to Laguna Verde)
		VT-1	Visual examination of shroud side auxiliary wedges on 8 pumps. No new indications. (Due to Laguna Verde)
		EVT-1	Visual examination of strain relief welds RS-RW on the 9 risers that contain the welds. No indications. (Due to Laguna Verde)
		VT-3	Visual examination of 20 jet pump sensing lines due to SIL 420 Revision 1. No indications.
	L1R12 (2008)	UT	UT of 14 hold down beams at BB-1, BB-2 and BB-3. Indication found at BB-3 on Jet Pump 18 and beam replaced.
		VT-1	Visual examination of 9 auxiliary wedges. One indication on Jet Pump 16; accepted as is. No other indications.

		VT-1	Visual examination of WD-1 on 10 pumps. New indications noted on jet pumps 8 (an auxiliary wedge was installed) and on jet pump 11 (accepted as-is).
		EVT-1	Visual examination of 8 DF-2 welds. No indications.
		VT-3	Visual examination of 5 slip joint clamps. No indications.
		VT-1/VT-3	Visual examination of 2 riser brace clamps installed in L1R11. No indications.
		VT-3	Visual examination of the inside of the diffuser on jet pumps 19 and 20. No indications.
	L1R11 (2006)	N/A	The hold-down beams on jet pumps 5, 6, 9 and 10 were proactively replaced with low stress beams.
		EVT-1	Visual examination of RB-2 welds on 6 pumps. NRI. Installation of riser brace clamps on the risers for jet pumps 5/6 and 9/10 to repair the RS-9 flaws identified in L1R10. The slip joint clamps on jet pumps 5, 6, 9 and 10 were upgraded to a new style.
		VT-3	Visual examination of the 16 old style slip joint clamps installed in the previous outage. No indications.
		EVT-1	Visual examination of RB-1 on 12 jet pumps and RB-2 on 6 jet pumps. No indications.
		VT-1	Visual examination of WD-1 on 20 jet pumps. No change in the wear identified in L1R10.

L1R10 (2004)	EVT-1	Visual examination of RS-3 on 5 pumps. No indications.
	UT	BB-1, BB-2, and BB-3 areas of all 20 hold-down beams. Indications at BB-1 on Jet Pump 15 resulted in replacement of this beam with a low stress beam. When the inlet mixer for Jet Pump 19 was replaced, the beam was proactively replaced.
	EVT-1	Visual examination of RS-3 on 5 risers. No indications.
	VT-3	Best effort examination of the inaccessible welds AD-1, AD-2, and DF-3 on all 20 jet pumps. No indications.
	EVT-1	Visual examination of DC-3 on 8 pumps. No indications.
	EVT-1	Visual examination of DF-1 on 11 Jet Pumps. No indications.
	EVT-1	Visual examinations of DF-2 on 2 Jet Pumps. No indications.
	EVT-1	Visual examination of RS-1 welds on all 10 risers. No indications.
	EVT-1	Visual examination of RS-2 welds on 5 risers. No indications.
	EVT-1	Visual examination of RS-3 on 5 risers. No indications.
	EVT-1	Visual examination of RS-6 and RS-7 on 10 jet pumps. No indications.
	EVT-1	Visual examination of RS-8 on all 20 jet pumps. No indications.
	EVT-1	Visual examination of RS-9 on all 20 jet pumps. Indications found on 3 jet pumps (5, 6 and 9). Flaw evaluation performed and required the installation of a repair in L1R11.

	L1R09 (2002)	EVT-1	Visual examination of IN-1 on 11 jet pumps. No indications.
		EVT-1	Visual examination of IN-2 on 11 jet pumps. No indications.
		EVT-1	Visual examination of MX-2 on 11 jet pumps. No indications.
		EVT-1	Visual examination of RB-1 on 19 of the jet pumps. No indications.
		EVT-1	Visual examination of RB-2 on 18 jet pumps. No indications.
		VT-1	Visual examination of WD-1 on 20 jet pumps. Wear identified on 10 jet pumps. Wear accepted as-is on 9 jet pumps; inlet mixer for jet pump 19 replaced with a different inlet mixer.
		VT-1	Visual examinations of 10 auxiliary wedges installed in previous outages. No indications. Installed auxiliary wedges at the following vessel side locations: jet pumps 4, 12, 13, 14, 15, 16, and 19. Installed auxiliary wedges at the following shroud side locations: jet pumps 1, 3, 4, 12, 14, and 16.
		EVT-1	Visual examination of the strain relief welds on the 10 risers. No indications. Slip joint clamps were installed on all 20 jet pump inlet mixers.
		VT-3	Visual examination of WD-1 on 4 jet pumps. No indications. Installed auxiliary wedges at the following vessel side location: jet pump 6. Installed auxiliary wedges at the following shroud side location: 11.

L1R08 (1999)	VT-1	Visual examination of 2 auxiliary wedges installed in previous outages. No indications.
	UT	UT of 10 jet pump beams at the BB-1 and BB-2 locations. No indications.
	EVT-1	Visual examination of DF-1 on 10 Jet Pumps. No indications.
	EVT-1	Visual examinations of DF-2 on 10 Jet Pumps. No indications.
	EVT-1	Visual examination of RS-1 welds on 5 risers. No indications.
	EVT-1	Visual examination of RS-2 welds on 5 risers. No indications.
	EVT-1	Visual examination of RS-3 on 5 risers. No indications.
	EVT-1	Visual examination of RS-6 and RS-7 on 10 jet pumps. No indications.
	EVT-1	Visual examination of RS-8 on 10 jet pumps. No indications.
	EVT-1	Visual examination of RS-9 on 10 jet pumps. No indications.
	EVT-1	Visual examination of IN-1 on 10 jet pumps. No indications.
	EVT-1	Visual examination of IN-2 on 10 jet pumps. No indications.
	EVT-1	Visual examination of MX-2 on 10 jet pumps. No indications.
	EVT-1	Visual examination of RB-1 on 10 of the jet pumps. No indications.
	EVT-1	Visual examination of RB-2 on 10 of the jet pumps. No indications.
	VT-3	Visual examination of WD-1 on 20 jet pumps. Due to wear observed in L1R07, the inlet mixer on jet pump 9

			<p>was replaced and the wedge was oversized, and the restrainer bracket was machined to accommodate the larger wedge. To prevent flow imbalance, the inlet mixer on jet pump 10 was proactively replaced.</p> <p>Auxiliary wedges installed at the following vessel side locations: jet pumps 1, 5, 7, 8, and 10. Auxiliary wedges installed at the following shroud side location; jet pumps 6.</p>
		VT-1	<p>Gaps at the vessel side set screw were identified on 1 pump and accepted without installation of an auxiliary wedge for one cycle. Gaps at the shroud side set screw were identified on 1 pump and accepted without installation of an auxiliary wedge for one cycle.</p> <p>The temporary auxiliary wedges installed on the vessel and shroud side of jet pump 9 were replaced with permanent auxiliary wedges. The wear on WD-1 was accepted for another cycle.</p>
	L1R07 (1996)	VT-3	<p>Visual examination of WD-1 on 2 jet pumps with wear observed on jet pump 9. Flaw evaluation determined acceptable for one cycle.</p>
		UT	<p>UT of all 20 jet pump holddown beams at BB-1; one indication on #9 beam; beam replaced.</p>
		VT-1	<p>A gap was identified on the vessel side set screw of jet pump 9, and temporary wedges were installed at both setscrews on jet pump 9.</p>

LPCI Couplings	L1R14 (2012)	EVT-1/VT-3/ VT-1	Visual examination of four locations on one coupling (45°). No indications.
	L1R13 (2010)	EVT-1	Visual examination of one location (45-12) on one coupling (135°). No indications.
	L1R12 (2008)	EVT-1/VT-3/ VT-1	Visual examination of four locations on one coupling (135°). No indications.
	L1R10 (2004)	EVT-1/VT-3/ VT-1	Visual examination of four locations on all three couplings. No indications.
	L1R08 (1999)	EVT-1/VT-3/ VT-1	Visual examination of four locations on all three couplings. No indications.
Lower Plenum	L1R14 (2012)	VT-3	Areas below the core plate made accessible due to inspection of the bottom head drain line. No indications. ICH RPV-1 at four locations. ICHGT ICH-1 at four locations. ICHs ICGT-1 at four locations. ICHs-1 at four locations. CRDH ST at eight locations. CRDH-1 at eight locations. ST RPV-1 at eight locations.
	L1R11 (2006)	VT-3	Areas below the core plate made accessible due to the removal of the inlet mixers for jet pumps 5, 6, 9 and 10. Areas include CRD/ST-1, bottom of H9, and ICH/RPV-1. No indications.
	L1R10 (2004)	VT-3	Areas below the core plate made accessible due to the removal of the inlet mixer for jet pump 19. Areas include CRD/ST-1, bottom of H9, and ICH/RPV-1. No indications.
	L1R09 (2002)	VT-3/EVT-1	Visual examination of the fuel support guide tube pins (FS/GT-ARPIN-1) at 20 locations, CRGT-1 at 20 locations, CRGT-2 at 21

	L1R08 (1999)	VT-3	<p>locations, and CRGT-3 at 21 locations. No indications.</p> <p>Visual examination of the fuel support guide tube pins (FS/GT-ARPIN-1) at 19 locations, the CRGT-1 at 19 locations. No indications.</p>
Steam Dryer	L1R15 (2014)	VT-1	<p>Visual examination of lifting lug brackets at two locations, and the one flawed bracket was unchanged from last outage.</p> <p>Visual examination of one tie rod with no change in the degradation.</p> <p>Visual inspection of two vertical welds, and no change in the indications.</p> <p>Visual inspection of portions of the Upper Support Ring with no change in the indications.</p>
	L1R14 (2012)	VT-1	<p>Visual examination of Upper guide bracket with no indications</p> <p>Visual examination of existing flaws;</p> <p>Vertical welds in three locations with no changes noted;</p> <p>Tie Rods at two locations with no changes noted;</p> <p>Lifting lug welds at four locations with no changes noted;</p> <p>Upper support ring for 360 degrees with three new indications noted. All were evaluated and accepted without repair.</p>
	L1R13 (2010)	VT-1	<p>Examination of the dryer included 21 tie bars, 23 vertical welds, 5 horizontal welds, and 5 tie rods. The upper support ring was examined for 360°. The lug and four brackets on two lifting assemblies (225° and 315°) were examined. Indications identified previously were examined and there were no changes in any indications. New indications were noted on the lifting lug #2, #3 and #4 brackets at 315°, tie rod 17-90°, V01-270°, and the USR from 180-360°.</p>

	L1R12 (2008)	VT-1	<p>All indications were evaluated and accepted without repair.</p> <p>All welds on the half of the dryer between 0° and 180°, including drain channels, tie bars, vertical welds, horizontal welds, and tie rods on both sides of the dryer. New indications were identified on TB-03, TB-08, TR-05-270, TR-05-90, TR-06-270, TR-06-90, TR-09-270, TR-09-90, TR-10-270, TR-10-90, TR-13-270, TR-13-90, TR-14-270, TR-14-90, TR-16-90, TR-17-270, TR-17-90, TR-18-270, TR-18-90, V04a-90, V04c-90, V05-90, V06-90, V09-90, V10-90, V13-90, V14-90, V15-90, V17-90, and upper support ring between 90-180. All were evaluated and accepted without repair.</p>
		VT-3	General inspection of the half of the dryer between 180° and 360° above the waterline. No indications.
	L1R11 (2006)	EVT-1	Re-inspection of lower guide bracket at 180° and hood A plate 5 where previous indications existed and were stop drilled. No new indications.
		VT-1	All welds on the half of the dryer between 180° and 360°: access hole cover, drain channels, vertical welds and horizontal welds. No new indications. Indications at V13-270 and V14-170 were re-examined and there was no growth.
	L1R10 (2004)	VT-3	Visual exams on the end panels and welds; one indication on bank B, bank 2 which was stop drilled, and one previous indication on bank D bank 4 and there was no growth. All four lifting lugs and their brackets (previous indications at five locations with no growth), 100% of tie rods (10 previous indications unchanged), 100% of tie bars

		VT-1	Visual examination of upper and lower guide brackets with an indication on the lower guide at 180° which was stop drilled, all horizontal welds, all horizontal plates (hood A plate 5 indication was stop drilled), hood F plate 1 (previous indication did not grow), 100% of the tie bars
Top Guide	L1R14 (2012)	EVT-1	Visual examination of ten grid cells; two metal slivers identified.
		VT-3	Visual examination of one c-clamp; no indications.
	L1R13 (2010)	EVT-1	Visual examination of two grid cells; no indications.
	L1R13 (2010)	VT-3	Visual examination of one c-clamp; no indications.
	L1R12 (2008)	VT-3	Visual examination of two c-clamps; no indications.
	L1R10 (2004)	VT-3	Visual examination of two c-clamps; no indications.
	L1R08 (1999)	VT-3	Visual examination of four c-clamps; no indications.
Vessel	L1R12 (2008)	VT-3	Inspection of the general condition of the RPV interior surface from the RPV closure flange elevation to the Steam Dam, 360° around the RPV interior. NRI.
			Inspection of the general condition of the RPV interior surface at the shroud support plate elevation above the gussets, 360° around the RPV interior. NRI.
	L1R10 (2004)	VT-3	Inspection of the general condition of the RPV interior surface from the RPV closure flange elevation to the Steam Dam, 360° around the RPV interior. NRI.
			Inspection of the general condition of the cladding at the Steam Dam

	L1R09 (2002)	VT-3	<p>elevation, 360° around the RPV interior. NRI.</p> <p>Inspection of the general condition of the RPV interior surface from below the core plate to the shroud support plate. NRI.</p> <p>Inspection of the general condition of the RPV interior surface from the RPV closure flange elevation to the Steam Dam, 360° around the RPV interior. NRI.</p> <p>Inspection of the general condition of the cladding at the Steam Dam elevation, 360° around the RPV interior. NRI.</p>
DM Welds-BWRVIP-75-A	L1R13 (2010)	UT	<p>Inspection of 16 Category C DM welds; 10 automated and 6 manual. No indications.</p> <p>Two Category D DM welds were identified on a flow venturi in the drywell in 2009, and the flow venturi was removed and replaced with a venturi that does not contain any welds. Details will be provided to the BWRVIP and NRC under a separate letter.</p>
	L1R12 (2008)	UT	<p>There were no dissimilar metal welds examined this outage.</p>
Integrated Surveillance Program	L1R13 (2010)		<p>Removed the surveillance capsule at 120° to support analysis of the contents under the ISP.</p>

Reactor Internals Inspection History

Plant: **Limerick Generating Station, Unit 1**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Shroud	1994 (1R05)	VT-3	VT-3 examination of OD of welds H-1, H-2, H-3, H-4, H-5, H-6, and H-7. No indications identified.
	1996 (1R06)	UT	Baseline Category "B" UT examinations of welds H-3, H-4, H-5 and H-7 per BWRVIP-01, Rev. 1. Minor indications identified on H-3. No indications identified on H-4, H-5 and H-7.
	2006 (1R11)	UT & EVT-1	Category "B" welds were re-examined by UT. Due to the identification of cracking, the scope was expanded and the shroud reclassified as a Category "C". All horizontal welds except H1 were UT examined from two sides using Phased-Array on most ring (H2 LKUP, H3 LKDN and H6 LKDN) locations. Recently demonstrated H1 emersion technique looking down was not successful. Vertical welds V-15, 16, 17 and 18 in the beltline screened-in and were UT examined from ID. Vertical welds V-7 and 8 at the top guide and V-25 and 26 below the core plate also screened-in and were visually (EVT-1) examined from the shroud OD.
	2012 (1R14)	UT	A two-sided UT exam was performed on the H1, H4, V7, V8, V15, V16, V17, V18, V25, and V26. Indications were identified on H1, H4, V17, and V18. No indications were identified on V7, V8, V15, V16, V25, and V26. All welds were evaluated to be acceptable for at least one cycle.
Shroud Support	1987 (1R01), 1990 (1R03), &1994(1R05)	VT-3	VT-3 examination of H-8 and H-9 welds from annulus. No indications identified.

	1998 (1R07)	VT-3	50% of shroud legs @ 10°, 30°, 60° Azimuths and 50% of annulus floor. No indications identified.
	2000 (1R08)	EVT-1	Visual examination of H-8 and H-9 welds from annulus at 0 and 180 Degree azimuths. No indications identified.
	2004 (1R10)	EVT-1 & UT	Visually examined H-8 from annulus at 0° and 180° and UT examined 10% of H9. One indication was identified by UT on H9 that was acceptable to the requirements of IWB-3000.
	2010 (1R13)	EVT-1	Visually examined H-8 from annulus at 0° and 180°. No indications identified.
Core Spray Piping	1987 (1R01) to 1996 (1R06)	VT-1	Enhanced VT-1 (1 mil resolution) examination performed every refueling outage on piping and welds per IEB 80-13. No indications identified.
	1998 (1R07)	UT & CSVT-1	UT baseline and visual of piping. No indications identified.
	2002 (1R09)	UT	UT all creviced welds plus 25% sample of P4(c) welds. One indication was identified on P3bA (~ 3.1 inches). No other indications were identified.
		EVT-1	EVT-1 of un-demonstrated welds P4dB, P4dC, P4dD, P8aA, P8aB, P8aC, and P8aD. No indications identified.
	2004 (1R10)	EVT-1	EVT-1 of previous P3bA indication. No change in identified length. EVT-1 of un-demonstrated welds P4dA, P8aA, P8aB, P8aC, and P8aD. No indications identified.
	2006 (1R11)	UT & EVT-1	UT of previous P3bA indication (~ 2.8 inches – no change) and most other creviced welds. UT equipment issues on 13 of 24 welds and alternatively EVT-1 examined. No new indications identified.

Core Spray Piping (Cont.)	2008 (1R12)	EVT-1	EVT-1 of un-demonstrated welds P4dB, P8aA, P8aB, P8aC, and P8aD. Two indications were identified on P8aC as weld discontinuities that were likely opened up from construction. No other indications were identified.
		EVT-1	EVT-1 of previous P3bA indication. No change in identified length. EVT-1 of un-demonstrated welds P4dC, P8aA, P8aB, P8aC, and P8aD. No change in previous discontinuities. No new indications identified.
			Due to UT failure in 2006, the following 13 welds were visually inspected in 2008 - P3aB, P3bB, P4aB, P4aC, P4aD, P5B, P6B, P6D, P7B, P8bA, P8bB, P8bC, and P8bD. These welds are expected to return to a UT reinspection frequency of 2R after the next UT in 2010. No indications identified.
	2010 (1R13)	UT	One-sided UT examination of P1, P2, P3a, P3b, and P8b welds was performed. Two-sided UT examination of P4b, P5, P6, and P7 welds was performed. UT of previous P3bA indication indicated no change in flaw length. No other indications were identified.
		EVT-1	EVT-1 of the far-side of the P1, P2, P3a, P3b, and P8b welds was performed. EVT-1 of the un-demonstrated P4dD and P8a welds was also performed. No change in previous discontinuities noted in P8aC weld. No indications were identified.
	2012 (1R14)	EVT-1	EVT-1 of the far-side of the P1, P2, P3a, P3b, P4b, and P8b welds was performed. EVT-1 of the un-demonstrated P4dA and P8a welds was also performed. No change in previous discontinuities noted in P8aC weld. A new indication was detected in the P3bA weld. After review of previous UT data, it was determined that this new indication was a part of the original flaw seen by UT, and therefore, not new. No change in growth occurred in the P3bA flaw. No other indications were identified.

Core Spray Piping (Cont.)	2014 (1R15)	UT	Two-sided UT examination of P4cA, P4cB, P4cC, and P4cD was performed. UT of previous P3bA indication was performed with no change in flaw length identified. No other indications were identified.
		EVT-1	EVT-1 of the P1, P2, P3a, P3b, P5, P6, P7, and P8b welds (all loops) was performed. EVT-1 of the un-demonstrated P4dB and all P8a welds was also performed. No change in previous discontinuities noted in P8aC weld. No indications were identified.
Core Spray Piping Brackets	1987 (1R01) to 1996 (1R06)	VT-1	VT-1 examination performed every refueling outage on piping and welds per IEB 80-13. No indications identified.
	1998 (1R07)	CSVT-1	Examined all eight brackets (PB1 through PB8). No indications identified.
	2000 (1R08)	EVT-1	Examined brackets PB1 and PB2. No indications identified.
	2002 (1R09)	EVT-1	Examined brackets PB3 and PB4. No indications identified.
	2004 (1R10)	EVT-1	Examined brackets PB5 and PB6. No indications identified.
	2006 (1R11)	EVT-1	Examined brackets PB7 and PB8. PB7 was identified with indications on the two upper bolts. In each case, one of two tack welds was found to be cracked. No other indications identified.
	2008 (1R12)	EVT-1	Examined brackets PB1 and PB2. No indications identified. PB7 indication was re-inspected with no change in condition noted.
	2010 (1R13)	EVT-1	Examined bracket PB3 and PB4. No indications identified. PB7 indication was re-inspected with no change in condition noted.

Core Spray Piping Brackets (Cont.)	2012 (1R14)	EVT-1	Examined bracket PB5 and PB6. No indications identified. PB7 indication was re-inspected with no change in condition noted.
	2014 (1R15)	EVT-1	Examined brackets PB7 and PB8. No change was identified in the PB7 tack weld indication. No other indications identified.
Core Spray Sparger	1987 (1R01) to 1996 (1R06)	VT-1	Enhanced VT-1 (1 mil resolution) examination performed every refueling outage on piping and welds per IEB 80-13. No indications identified.
	1998 (1R07)	EVT-1 & CSVT-1	EVT-1/CSVT-1 all spargers. No indications identified.
	2000 (1R08)	EVT-1	EVT-1 examined welds S1A, S1B, S2aA, S2aB, S2bA, S2bB, S4aA, S4aB, S4bA, and S4bB. No indications identified.
		VT-1	VT-1 examined welds S3aXXA, S3bXXA, and S3dXXA on nozzles 1A through 65A. No indications identified.
	2002 (1R09)	EVT-1	EVT-1 examined welds S1C, S1D, S2aC, S2aD, S2bC, S2bD, S4aC, S4aD, S4bC, and S4bD. No indications identified.
		VT-1	VT-1 examined welds S3aXXB, S3bXXB, and S3dXXB on nozzles 1B through 65B. VT-1 examined welds S3c4B, S3d4B, S3c62B, and S3d62B. No indications identified.
	2004 (1R10)	EVT-1	EVT-1 examined welds S1A, S1B, S2aA, S2aB, S2aD, S2bA, S2bB, S4aA, S4aB, S4bA, and S4bB. No indications identified.
		VT-1	VT-1 examined welds S3aXXC, S3bXXC, and S3dXXC on nozzles 1C through 65C. No indications identified.
	2006 (1R11)	EVT-1	EVT-1 examined welds S1C, S1D, S2aC, S2aD, S2bC, S2bD, S4aC, S4aD, S4bC, and S4bD. No indications identified.

Core Spray Sparger (Cont.)	2006 (1R11)	VT-1	VT-1 examined welds S3aXXD, S3bXXD, and S3dXXD on nozzles 1D through 65D. VT-1 examined welds S3c4D, S3d4D, S3c62D, and S3d62D. No indications identified.
	2008 (1R12)	EVT-1	EVT-1 examined welds S1A, S1B, S2aA, S2aB, S2bA, S2bB, S4aA, S4aB, S4bA, and S4bB. No indications identified.
		VT-1	VT-1 examined welds S3aXXA, S3bXXA, and S3dXXA on nozzles 1A through 65A. Re-examined welds S3aXXD, S3bXXD, and S3dXXD on nozzles 1D through 65D due to camera quality issues from 2006. No indications identified.
	2010 (1R13)	EVT-1	EVT-1 examined welds S1C, S1D, S2aC, S2aD, S2bC, S2bD, S4aC, S4aD, S4bC, and S4bD. No indications identified.
		VT-1	VT-1 examined welds S3aXXB, S3bXXB, and S3dXXB on nozzles 1B through 65B. VT-1 examined welds S3c4B, S3d4B, S3c62B, and S3d62B. No indications identified.
	2012 (1R14)	EVT-1	EVT-1 examined welds S1A, S1B, S2aA, S2aB, S2bA, S2bB, S4aA, S4aB, S4bA, and S4bB. No indications identified.
		VT-1	VT-1 examined welds S3aXXC, S3bXXC, and S3dXXC on nozzles 1C through 65C. Minor damage identified (raised metal) on nozzle 54C at 268 deg. Evaluated as acceptable. No other indications identified.
	2014 (1R15)	VT-1	VT-1 examined welds S3aXXD, S3bXXD, and S3dXXD on nozzles 1D through 65D. VT-1 examined welds S3c4D, S3d4D, S3c62D, and S3d62D. Minor raised metal piece on nozzle 54C at 268 deg was re-inspected with no change. No other indications identified.

Core Spray Sparger Brackets	1987 (1R01) to 1996 (1R06)	VT-1	VT-1 examination performed every refueling outage on piping and welds per IEB 80-13. No indications identified.
	1998 (1R07)	CSV-T-1	Examined all brackets (SB01 through SB12). No indications identified.
	2000 (1R08)	VT-1	Examined brackets SB01, SB02, SB03, SB10, SB11 and SB12. No indications identified.
	2002 (1R09)	VT-1	Examined brackets SB04, SB05, SB06, SB07, SB08, and SB09. No indications identified.
	2004 (1R10)	VT-1	Examined brackets SB01, SB02, SB03, SB10, SB11, and SB12. The middle bracket on SB11 was found slightly deformed. No other indications identified.
Core Spray Sparger Brackets (Cont.)	2006 (1R11)	VT-1	Examined brackets SB04, SB05, SB06, SB07, SB08, and SB09. SB08 was found slightly deformed, no other indications identified.
	2008 (1R12)	VT-1	Examined brackets SB01, SB02, SB03, SB08, SB10, SB11, SB12. Discrepancies on SB08 and SB11 were re-examined with no change in condition.
	2010 (1R13)	VT-1	Examined brackets SB04, SB05, SB06, SB07, SB08, and SB09. SB08 was re-examined with no change in condition. No other indications identified.
	2012 (1R14)	VT-1	Examined brackets SB01, SB02, SB03, SB10, SB11, SB12. SB11 indication (bent bracket) was re-examined with no change in condition. No other indications identified.
	2014 (1R15)	VT-1	Examined brackets SB04, SB05, SB06, SB07, SB08, and SB09. SB08 was re-examined with no change in condition. No other indications identified.
Top Guide (Rim, etc.)	1987 (1R01)	VT-3	VT-3 examination of accessible welds and surfaces.

Top Guide (Rim, etc.) (Cont.)	1990 (1R03)	VT-3	VT-3 examination of accessible welds and surfaces. Also, VT-3 examination of 32 wedges, bolts, and keepers. No indications identified.
	1994 (1R05)	VT-1 & VT-3	VT-1 examination of accessible welds and surfaces at core locations 14-31, 22-23, 22-39, 30-15, 30-47, 38-23, 38-39, and 46-31. Also, VT-3 examination of 32 wedges, bolts, and keepers. No indications identified.
	1998 (1R07)	VT-1 & VT-3	VT-1 of grids 30-31 and 34-35. Also, VT-3 surfaces and welds (0°-180°) including wedges, bolts and keepers. No indications identified.
	2000 (1R08)	VT-3	C-Clamps at 0°, 90°, 180° and 270°. No indications identified.
	2004 (1R10)	VT-3	C-Clamps at 0°, 90°, 180° and 270°. No indications identified.
	2012 (1R14)	EVT-1	EVT-1 examined 10 top guide cell locations (14-47, 18-07, 18-55, 22-23, 22-39, 30-51, 38-23, 46-47, 50-47, and 54-35). No indications identified.
	2014 (1R15)	VT-3	C-Clamps at 0°, 90°, 180° and 270°. No indications identified.
Core Plate (Rim, etc.)	1998 (1R07)	VT-3	VT-3 welds and surfaces, including 17 hold down bolts/nuts and 7 fuel support castings. No indications identified.
SLC			N/A, SLC connects to Core Spray System.
Jet Pump Assembly	1987 (1R01), 1990 (1R03), & 1994 (1R05)	VT-3	VT-3 examination of all jet pump components No indications identified.
	1998 (1R07)	MVT-1	Examined all RB-1, RB-2, RS-1, RS-2, RS-3, RS-6, RS-7, RS-8, RS-9, IN-4, MX-2, WD-1, DF-1, DF-2, AD-1 and AD-2 welds on JP 1 through JP 10. Also, JP19/20 RS-3 weld was examined. No indications identified.

Jet Pump Assembly (Cont.)	2000 (1R08)	EVT-1	<p>EVT-1 examined RS-1, RS-2, RS-3, RS-6, RS-7, RS-8, RS-9, IN-4, MX-2, DF-1, DF-2, AD-1 and AD-2 welds, as well as all RB-1 welds and RB-2c on JP 11 and JP 12.</p> <p>EVT-1 examined RS-1, RS-2, RS-3, RS-6, RS-7, IN-4, MX-2, DF-1, DF-2, AD-1 and AD-2 welds on JP 13 and JP14.</p> <p>EVT-1 examined RS-1, RS-2, RS-3, RS-6, RS-7, RS-8, and RS-9, as well as RB-1a, b, d and all RB-2 welds on JP 15 and JP 16. Also, examined IN-4, MX-2, DF-1, DF-2, AD-1 and AD-2 welds on JP 15.</p> <p>No indications identified.</p>
		VT-1	VT-1 examined WD-1 for JP11, JP12, JP13, JP14 and JP15. No indications identified.
	2002 (1R09)	EVT-1	<p>EVT-1 examined all RB-1 and RB-2 welds on JP13/14 riser.</p> <p>EVT-1 examined RB-2a, RB-2b, and RB-2d welds on JP11/12 riser.</p> <p>EVT-1 examined IN-4, MX-2, DF-1, DF-2, AD-1 and AD-2 welds on JP16, and the RB-1c weld on JP15/16 riser.</p> <p>EVT-1 examined RS-3 weld on JP17/18 riser.</p> <p>EVT-1 examined RS-8 and RS-9 on all ten risers due to scope expansion from an indication identified on JP13/14 RS-9 weld (~0.38 inches). No other indications identified.</p>
		VT-1	VT-1 examined WD-1 for JP1, JP2, JP13, and JP14. No indications identified.
	2004 (1R10)	EVT-1	<p>EVT-1 examined RS-3, RS-6, and RS-7 welds on JP 1, JP 2, JP3, JP 4, JP 7, JP 8, JP 9, and JP 10.</p> <p>EVT-1 examined RS-3 weld on JP19/20 riser.</p>

Jet Pump Assembly (Cont.)	2004 (1R10)	EVT-1	<p>EVT-1 examined RS-1, RS-2, RS-6, RS-7, RS-8, RS-9, IN-4, MX-2, DF-1, DF-2, AD-1 and AD-2 welds, as well as all RB-1 and RB-2 welds on JP 17 and JP 18.</p> <p>Re-examined previous indication JP13/14 RS-9 by EVT-1. No change in flaw length. No other indications were identified.</p>
		VT-1	<p>VT-1 examined WD-1 on JP16, JP17, and JP18. Initially, suspected wedge movement on JP18 prompted an investigation into the condition of the setscrews. Both tack welds on the shroud side set screw were cracked on JP18. The setscrew was staked and an auxiliary wedge installed.</p> <p>No other indications were identified.</p>
	2006 (1R11)	EVT-1	<p>EVT-1 examined RS-1 and RS-2 welds on risers of JP3/4, JP5/6, JP7/8, JP9/10, and JP19/20.</p> <p>EVT-1 examined RS-3 weld on JP11/12, JP13/14 and JP15/16 risers.</p> <p>EVT-1 examined all RB-1 welds on JP7/8, JP9/10, and JP11/12 risers.</p> <p>EVT-1 examined all RB-2 welds on JP1/2, JP7/8, and JP9/10 risers.</p> <p>EVT-1 examined RS-6 and RS-7 welds on JP5/6, JP13/14, and JP15/16 risers.</p> <p>EVT-1 examined IN-4 weld on JP 11, and JP 16.</p> <p>EVT-1 examined IN-4, MX-2, DF-2, and AD-1 welds on JP 9.</p> <p>EVT-1 examined DF-2 on JP 10.</p> <p>EVT-1 examined DF-2, AD-1, and AD-2 welds on JP 6 and JP 7.</p> <p>EVT-1 examined previous indication at JP13/14 RS-9. No change in flaw length. No other indications were identified.</p>

Jet Pump Assembly (Cont.)		VT-1	<p>VT-1 examined all twenty WD-1, AS-1 and AS-2 locations in response to wear identified on Li2R08 during 2005. Gaps were identified on vessel side setscrews of JP4, JP7, JP9, JP13, JP15, JP19, and JP20. Cracked tack welds were identified on shroud side setscrews of JP8, JP12, JP14, JP17, JP18, and JP19. Slip Joint Clamps were proactively installed on all twenty Jet Pumps. Five auxiliary wedges installed: two at JP13 (pre-emptive due to RS-9 flaw), two at JP14 (pre-emptive due to RS-9 flaw), and one at JP15 (vessel side only due to 23 mil gap). No other indications identified.</p> <p>Visually examined auxiliary wedge previously installed at JP18 shroud side setscrew. No indications identified.</p>
	2008 (1R12)	EVT-1	<p>EVT-1 examined RS-3, RS-7, RS-8, and RS-9 weld on JP17/18 riser. No indications identified.</p> <p>EVT-1 examined IN-4, MX-2, DF-1, DF-2, AD-1, AD-2, RS-3, RS-6, RS-7, RS-8, and RS-9 welds, as well as all RB-1 and RB-2 welds on JP 19 and JP 20. No indications identified.</p> <p>EVT-1 examined previous indication at JP13/14 RS-9. No change in flaw length. No other indications were identified.</p>
		VT-1	<p>VT-1 examined all twenty main wedges (WD-1). Minor wedge wear was identified on JP 18, JP 19, and JP 20. WD-2a, WD-2b, MX-7, welds were also examined on JP 18, JP 19, and JP 20 as part of the expanded scope required from identifying main wedge wear. Minor wedge rod wear was identified on JP 4, JP 18, JP 19, and JP 20. Since slip joint clamps (installed in 2006) mitigate slip joint bypass leakage vibrations, this main wedge damage and rod wear was determined to be caused by turbulent flow. Two auxiliary wedges were installed around both the shroud and vessel side set screws on JP 19 and JP 20.</p>

Jet Pump Assembly (Cont.)	2008 (1R12) (Cont.)	VT-1	<p>JP 18 has one previously installed auxiliary wedge around the shroud side set screw. The main wedge wear and rod wear were found to be acceptable for continued service without repair.</p> <p>Set screw gaps (AS-1) and tack welds (AS-2) were inspected at all locations not blocked by an auxiliary wedge. Gaps were identified on vessel side setscrews of JP 2 (20 mils), JP 3 (5 mils), JP 9 (14 mils), and JP 20 (8 mils). One auxiliary wedge was installed to repair the gap on the vessel side set screw of JP 2. The remaining gaps were evaluated as acceptable without repair. Previously identified gaps at JP 4, JP 7, and JP 19 are no longer visible. Cracked tack welds were re-inspected on the shroud side setscrews of JP 8, JP 12, JP 14, JP 17, and JP 19 with no change in condition noted.</p> <p>All 20 Slip Joint Clamps were examined after one cycle of operation. No indications were identified.</p>
		VT-3	<p>Five auxiliary wedges were inspected after one cycle of operation: two at JP13, two at JP14, and one at JP15 (vessel side). No indications were identified.</p>
	2010 (1R13)	EVT-1	<p>EVT-1 performed on RS-1, RS-2, RS-8, and RS-9 of both JP01-02 and JP05-06 risers. EVT-1 performed on RS-8 and RS-9 of six jet pump risers (JP03-04, JP07-08, JP09-10, JP11-12, JP13-14, and JP15-16). One previously identified indication on JP13-14 RS-9 weld was unchanged. No other indications identified.</p>
		VT-1	<p>VT-1 examined all twenty main wedges (WD-1). Previous wedge wear identified on JP18, JP19, and JP20 had no change in condition reported. Minor wedge rod wear was identified on JP08, and previously identified rod wear on JP04, JP18, JP19, and JP20 had no change in condition reported. No indications were identified on the wedge rod</p>

Jet Pump Assy. (Cont.)	2010 (1R13) (Cont.)		<p>tack welds of JP04, JP08, JP18, JP19, and JP20.</p> <p>Set screw gaps (AS-1) and tack welds (AS-2) were inspected at all locations with previously identified indications. Gaps were identified on vessel side setscrews of JP03 (4 mils) and JP09 (13 mils). These gaps were acceptable without repair. Cracked tack welds were re-inspected on the shroud side setscrews of JP08, JP12, JP14, JP17, and JP19 with no change in condition noted, except that the second tack weld of JP17 now has a small indication identified. All were evaluated as acceptable.</p> <p>All 20 Slip Joint Clamps were inspected. The mid-support of two clamps (JP11 and JP19) was identified as having minor wear into the top ledge of the diffuser. One clamp (JP17) was identified as having slight movement from its original installed position. Indications were evaluated as acceptable with no repairs or re-work performed. No other indications were identified.</p>
	2012 (1R14)	<p>VT-3</p> <p>EVT-1</p>	<p>Five auxiliary wedges were inspected after one cycle of operation: JP02 VS, JP19 SS, JP19 VS, JP20 SS, and JP20 VS. No indications were identified.</p> <p>EVT-1 performed on IN-4, RS-3, RS-6, RS-7, RB-1a (thru d) and RB-2a (thru d) welds of JP01 and JP02. EVT-1 performed on IN-4, RS-1, RS-2, RS-6, RS-7, RS-8, RS-9, RB-1a (thru d) and RB-2a (thru d) welds of JP11 and JP12. EVT-1 performed on RS-3 of JP03-04, JP05-06, and JP09-10 risers.</p> <p>EVT-1 performed on JP09 MX-7 and JP09-10 RB-1a (thru d), RS-6, RS-8, and RS-9 welds as part of expanded scope required due to identification of minor wedge wear on JP09 main wedge..</p>

Jet Pump Assembly (Cont.)	2012 (1R14) (Cont.)	EVT-1	One previously identified indication on JP13-14 RS-9 weld was reexamined by EVT-1 and found to be unchanged. No other indications identified.
		VT-1	<p>VT-1 examined all twenty main wedges (WD-1). Previous wedge wear identified on JP18, JP19, and JP20 had no change in condition reported. New minor wedge wear identified on JP09. Minor wedge rod wear was identified on JP02, and previously identified rod wear on JP04, JP08, JP18, JP19, and JP20 had no change in condition reported.</p> <p>Set screw gaps (AS-1) and tack welds (AS-2) were inspected at all locations with previously identified indications. Gaps were identified on vessel side setscrews of JP01 (11 mils), JP03 (3 mils), JP04 (6 mils), JP05 (12 mils), JP06 (5 mils), JP07 (17 mils), JP09 (3 mils), JP11 (10 mils), JP17 (9 mils), and JP18 (3 mils). These gaps were acceptable except for JP07 which required installation of an Auxiliary Wedge.</p> <p>Cracked tack welds were re-inspected on the shroud side setscrews of JP08, JP12, JP14, JP17, and JP19 with no change in condition noted, except that JP01 now has a small indication identified in one of two tack welds on the shroud side setscrew. All were evaluated as acceptable.</p> <p>Indications were reinspected on JP11 and JP17 slip joint clamps (SJC) with no changes noted. JP19 SJC indication had a slight increase in wear but was evaluated as acceptable.</p>
		VT-3	JP18 Shroud Side Aux Wedge was inspected with no indications identified.
		UT	JP diffuser UT was performed on AD-1, AD-2, DF-1, DF-2, and MX-2 welds of JP01, JP04, JP05, JP11, JP12, JP13, JP14, JP15, JP16, JP17, JP18, JP19, and JP20. UT was also performed on AD-1, AD-2, DF-1, and MX-2 welds of JP02, and on DF-1, DF-2, and MX-2 welds of JP10. No indications were identified.

Jet Pump Assembly (Cont.)	2014 (1R15)	EVT-1	<p>EVT-1 performed on IN-4, RS-1, RS-2, RS-6, RS-7, RS-8, RS-9, RB-1a (thru d) and RB-2a (thru d) welds of JP15 and JP16. Also, an EVT-1 performed on RS-3 of JP7/8 risers. No indications identified.</p> <p>EVT-1 performed on JP13 MX-7 and JP13/14 RB-1a (thru d), and RS-6 welds as part of expanded scope required due to identification of minor wedge wear on JP13 main wedge. No indications identified.</p> <p>EVT-1 performed on JP9 RS-9 weld as part of expanded scope required due to identification of minor change in wedge wear on JP9 main wedge. No indications identified.</p> <p>One previously identified indication on JP13/14 RS-9 weld was reexamined by EVT-1 and found to be unchanged. No other indications identified.</p>
		VT-1	<p>VT-1 examined all twenty main wedges (WD-1). Previous wedge wear identified on JP17, JP18, JP19, and JP20 had no change in condition reported. New minor wedge wear identified on JP13 and JP9 had additional wedge wear compared to previous exam.</p> <p>New and/or additional rod wear was identified on JP2, JP3, JP4, JP9, JP10, JP14, JP15, and JP17. Previously identified rod wear on JP08, JP18, JP19, and JP20 had no change in condition reported.</p> <p>Set screw gaps (AS-1) were inspected at all locations not repaired by Aux Wedge. Gaps were identified on VS setscrews of JP01 (0.007), JP03 (0.007), JP04 (0.012), JP05 (0.017), JP06 (0.012), JP09 (0.008), JP11 (0.014), JP17 (0.006), and JP18 (0.007). These gaps were acceptable without the need for repair, except for JP05. JP05 main wedge was tapped and the .017" gap was closed during 1R15.</p>

Jet Pump Assembly (Cont.)	2014 (1R15) (Cont.)	VT-1	Tack welds (AS-2) were re-inspected on all setscrews. The shroud side setscrews of JP08, JP12, JP14, JP17, and JP19 had no change in condition, except JP01 SS has two small indications. JP13 SS and JP16 VS setscrews also now have one of two tack welds cracked. All were evaluated as acceptable.
		VT-3	All 20 Slip Joint Clamps (SJC) were inspected. New minor wear was reported on JP09 SJC. No contact was reported on JP11 and JP14 middle guide vane in 1R15. There were no changes in existing wear on JP11, JP17, and JP19. All conditions were evaluated as acceptable.
			Aux Wedges on JP7 Vessel Side (VS), JP13 Shroud Side (SS), JP13 VS, JP14 SS, and JP15 VS were inspected with no indications. JP14 VS Aux Wedge was inspected with minor wear into the restrainer bracket reported. This wear was evaluated as acceptable; no repair required.
Jet Pump Beams	1994 (1R05)	UT	UT baseline of replacement hold-down beams. No indications identified.
	2004 (1R10)	UT	UT examined BB-1, BB-2, and BB-3 of all 20 jet pump hold down beams. One indication identified in BB-2 region of JP 4. This beam was changed out during the same refuel outage with a Group 3 style beam. No other indications identified.
	2006 (1R11)	VT-3	VT-3 examined BB-1, BB-2, and BB-3 on replacement beam for JP 4. No indications identified.
	2008 (1R12)	UT & EVT-1	UT examined BB-1, BB-2, and BB-3 of all jet pump hold down beams with the exception of JP 4 (Group 3) beam that was installed in 2004.

Jet Pump Beams (Cont.)	2008 (1R12) (Cont.)		<p>One indication was identified in the BB-3 region of JP 1 beam. A supplemental visual exam (EVT-1) was performed and surface discontinuities were noted that could explain the UT indication. The UT indication was determined to be non-relevant and the beam was not replaced.</p> <p>One indication was identified in the BB-2 region of the JP 8 beam. A supplemental visual exam (EVT-1) could not confirm the presence of any surface discontinuities that would explain the indication; therefore, this beam was replaced during the same refuel outage with a Group 3 style beam.</p>
	2010 (1R13)	EVT-1	Re-inspected indication on JP 1 BB-3 region. Re-confirmed surface discontinuity. No change in condition.
		VT-1 & VT-3	Visually examined JP 8 beam after one cycle of service. No indications were identified.
	2012 (1R14)	VT-1/VT-3	Re-inspected indication on JP01 BB-3 region. Re-confirmed surface discontinuity. No change in condition.
	2014 (1R15)	UT & EVT-1	UT examined BB-1, BB-2, and BB-3 of all jet pump hold down beams with the exception of JP 4 (Group 3 installed in 2004) and JP 8 (Group 3 installed in 2008). Also, re-inspected surface discontinuity on JP01 BB-3 region. No indications identified and no change JP01 BB-3 condition or appearance.
Jet Pump Diffuser			See Jet Pump Assembly
CRD Guide Tube	1990 (1R03)	VT-3	<p>VT-3 examination of replacement CRDs at core locations 10-23, 14-19, 14-23, 14-31, 18-43, 18-55, 22-11, 22-39, 22-47, 26-03, 26-11, 26-27, 30-23, 30-3530-55, 34-23, 34-37, 34-31, 34-39, 38-07, 38-23, 38-31, 38-35, 38-39, 42-19, 46-11, 46-39, and 54-31.</p> <p>No indications identified.</p>

CRD Guide Tube (Cont.)	1992 (1R04)	VT-3	VT-3 examination of control rod assembly at core locations 30-11,22-55, 54-23, 38-07, 38-55, and 22-07. No indications identified.
	1994 (1R05)	VT-3	VT-3 examination of replacement CRDs at core locations 02-43, 10-19, 10-39, 14-39, 18-23, 18-39, 20-35, 26-27, 26-31, 30-47, 34-31, 34-47, 38-19, 38-35, 38-41, 42-15, 42-55, 50-43, 54-19, and 58-31. No indications identified.
	1998 (1R07)	VT-3	VT-3 of CRDs at core loc. 54-49, 48-55,50-51, 42-59, 30-31, 30-34, 34-35, 26-31, 34-31, 26-27, 30-27, and 34-27. No indications identified.
	2000 (1R08)	EVT-1 & VT-3	Examined CRGT-1,2,3 and FS/GT-ARPIN-1 at core locations 30-55, 38-31 and 38-39. No indications identified.
	2004 (1R10)	EVT-1 & VT-3	Examined CRGT-1,2,3 and FS/GT-ARPIN-1 at 10-39, 18-27, 18-35, 26-43, 30-15, 30-47, 34-15, 34-19, 34-43, and 46-11. No indications identified.
	2008 (1R12)	EVT-1 & VT-3	Examined CRGT-2 and CRGT-3 at 14-15, 14-51, 18-43, 18-55, 30-31, 34-35, 38-19, 42-23, and 42-27. The integrity of the CRGT-1 and FS/GT-ARPIN-1 at each core location identified above was verified via the cell disassembly / reassembly procedure (M-C-741-301) as allowed by BWRVIP-47-A. No indications identified.
CRD Stub Tube	1992 (1R04)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations once per interval, in excess of Section XI. No indications identified.
	1996 (1R06)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations. No indications identified.

CRD Stub Tube (Cont.)	1998 (1R07)	VT-3	VT-3 of tube to housing and tube to RPV weld at core loc. 54-49, 48-55, 50-51, 42-59, 30-31, 30-34, 34-35, 26-31, 34-31, 26-27, 30-27, and 34-27. No indications identified.
	2000 (1R08)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations. No indications identified.
	2006 (1R11)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations. No indications identified.
	2010 (1R13)	Best Effort VT-1 and VT-3	Visually examined CRDH/ST-1 and CRST/RPV-1 welds at core locations 22-31, 26-27, 26-31, 26-35, 30-23, 30-27, 30-31, and 34-27 due to control rod guide tube removal in support of bottom head drain cleaning. No indications were identified.
In-Core Housing	1992 (1R04)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations once per interval, in excess of Section XI. No indications identified.
	1996 (1R06)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations. No indications identified.
	1998 (1R07)	VT-3	VT-3 of housing and weld to RPV at core loc. 48-53, 32-29, 24-29, 24-33, and 32-33. No indications identified.
	2006 (1R11)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations. No indications identified.
	2010 (1R13)	Best Effort VT-1 and VT-3	Visually examined ICH/RPV-1 and ICHS-1 welds at core locations 24-29, 24-33, 32-25, and 32-29. Visually examined ICHS/ICGT-1 welds at core locations 24-33 and 32-25. These locations were examined due to control rod guide tube removal in support of bottom head drain cleaning. No indications were identified.

Dry Tube	1989 (1R02)	VT-3	VT-3 examination of accessible portions of dry tubes at core locations 16-45, 40-45, 40-21, 16-21, (SRM's), 16-53, 48-53, 24-37, 32-37, 32-29, 24-29, 48-13, and 16-13 (IRM's). No indications identified.
	1992 (1R04)	VT-1	VT-1 examination of 4 dry tubes. No indications identified.
	1994 (1R05)	VT-1	VT-1 examination of dry tubes at core locations: 24-37 (IRM), and 40-21 and 38-23 (SRM). No indications identified.
	2004 (1R10)	VT-1	Examined SRMs at 16-45 and 40-21 and IRMs at 24-29, 24-37, 32-37 and 48-13. Dry tube 24-29 identified as not fully engaged with the top guide. No other indications identified.
	2006 (1R11)	N/A	Replaced dry tubes SRMs 16-21 and 40-45 and IRMs 24-29, 24-37, 48-13, and 48-53 with new universal style dry tube and shuttle tube.
	2008 (1R12)	N/A	Replaced dry tubes SRMs 16-45 and 40-21 and IRMs 16-13, 16-53, 32-29, and 32-37 with new universal style dry tube and shuttle tube.
Instrument Penetrations	1990 (1R03)	VT-3	VT-3 examination of interior attachment of instrument nozzles N16A through D, N12A through D, and N11 A & B. No indications identified. PT examination performed on all instrument nozzle to safe end welds once per interval, per Section XI (includes N10 Core Differential Pressure penetration). No indications identified.
	1996 (1R06)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations once per interval, in excess of Section XI. No indications identified.
	2006 (1R11)	VT-2	VT-2 examination from vessel exterior once per interval. No indications identified.

Vessel ID Attachment Welds	1987 (1R01) to 1996 (1R06)	VT-1 & VT-3	VT-1 or VT-3 performed on all ID attachment welds once per interval per Section XI. No indications identified.
	1998 (1R07)	MVT-1 / CSVT-1	Examinations include 4 steam dryer support brackets, 5 jet pump riser brace support pads on JP 1 through 10, and 8 core spray support bracket welds. No indications identified.
		VT-1	VT-1 examined 2 surveillance sample holder attachment welds (30 deg and 120 deg). No indications identified.
		VT-3	VT-3 examined one Guide Rod bracket attachment weld at 0 degrees. No indications identified.
	2000 (1R08)	EVT-1	EVT-1 examination of two Core Spray Piping Brackets at 15 degrees and 85.5 degrees. No indications identified.
		VT-3	VT-3 examined one Guide Rod bracket attachment weld at 180 degrees. No indications identified.
	2002 (1R09)	EVT-1	EVT-1 examination of Jet Pump Riser Brace Support Pads on JP15/16 and JP17/18, Feedwater Sparger End Brackets at 5°, 55°, 65° and 115°, and Steam Dryer support lugs at 4° and 94°, and Core Spray Brackets at 112.5° and 165°. No indications identified.
	2004 (1R10)	EVT-1	EVT-1 examination of Jet Pump Riser Brace Support Pads on JP1/2, JP3/4, JP7/8 and JP19/20, Feedwater Sparger End Brackets at 125°, 175°, 185° and 235°, Steam Dryer support lug at 184°, and Core Spray Brackets at 195° and 247.5°. No indications identified.
	2006 (1R11)	EVT-1	EVT-1 examination of Jet Pump Riser Brace Support Pads on JP5/6, JP9/10, JP11/12 and JP13/14, Feedwater Sparger End Brackets at 245°, 295°, 305° and 355 °, Steam Dryer support lug at 274°, and Core Spray Brackets at 274.5° and 345°. No indications identified.

Vessel ID Attachment Welds (Cont.)	2006 (1R11) (Cont.)	VT-1	VT-1 examined attachment welds of one surveillance sample holder at 300°. No indications identified.
		VT-3	VT-3 examined both Guide Rod lugs at 0° and 180°. No indications identified.
	2008 (1R12)	EVT-1	EVT-1 examination of Jet Pump Riser Brace Support Pads (RBSP) on JP1/2 and JP19/20, Feedwater Sparger End Brackets (FWSB) at 5°, 55°, and 65°, and Core Spray Brackets (CSB) at 15° and 85.5°. No indications identified.
			EVT-1 examined the Steam Dryer support bracket attachment weld at 4° and identified a minor wear mark on the top surface of the bracket itself. When compared to previous inspection video, there was no change in condition. The attachment weld had no indications identified.
	2010 (1R13)	EVT-1 & VT-3	EVT-1 examined the Core Spray Bracket (CSB) attachment welds at 112.5° and 165° and Steam Dryer Support Bracket (SDSB) attachment weld at 94°. VT-3 examined the top surface only of the Steam Dryer Support Brackets at 4°, 94°, 184°, and 274°. No indications were identified in the attachment welds; however, all SDSBs were found to have various levels of wear identified on the top surface of the brackets. These indications were evaluated as acceptable with no repair required.
	2012 (1R14)	EVT-1	EVT-1 examination of Jet Pump Riser Brace Support Pads (RBSP) on JP17/18, Feedwater Sparger End Brackets (FWSB) at 115°, 125°, 175°, 185°, and 235°, Core Spray Brackets (CSB) at 195° and 247.5°, and Steam Dryer Support Bracket at 184°. No indications identified.
		VT-1	VT-1 examined lower attachment weld on Surveillance Specimen Holder bracket at 30° and 120°. No indications identified.

Vessel ID Attachment Welds (Cont.)	2012 (1R14) (Cont.)	VT-3	VT-3 examined upper attachment weld on Surveillance Specimen Holder bracket at 30° and 120°. No indications identified.
	2014 (1R15)	EVT-1	VT-3 examined the top surface only of the Steam Dryer Support Brackets at 4°, 94°, 184°, and 274°. Reinspection of previously noted indications identified minor changes in wear. These indications were evaluated as acceptable with no repair required.
		VT-3	EVT-1 examination of Jet Pump Riser Brace Support Pads (RBSP) on JP7/8 and JP15/16, Feedwater Sparger End Brackets (FWSB) at 245° and 295°, Core Spray Brackets (CSB) at 274.5° and 345°, and Steam Dryer Support Bracket (SDSB) at 274°. No indications identified on any vessel attachment welds.
LPCI Coupling	1987 (1R01), 1990 (1R03), &1994(1R05)	VT-3	VT-3 examined the top surface only of the Steam Dryer Support Brackets at 4°, 94°, 184°, and 274°. Reinspection of previously noted indications identified some increased wear when compared to the previous inspection in 1R14; most notably on the 94° lug. These indications were evaluated as acceptable for another cycle with no repair required.
	1998 (1R07)	MVT-1	VT-3 examination of all 4 couplings. No indications identified.
	2000 (1R08)	EVT-1, VT-1 & VT-3	All of N-17A and B. No indications identified.
	2002 (1R09)	EVT-1 & VT-3	All of N-17C and D. No indications identified.
	2004 (1R10)	EVT-1, VT-1 & VT-3	N17A, locations 45-3b, 6a, 6b, 6c and 6d. No indications identified.
			N17A, locations 45-8a, 8b, 8c, 8d and 12 and all of N17B. No indications identified.

LPCI Coupling (Cont.)	2008 (1R12)	EVT-1, VT-1 & VT-3	<p>All of N17C and N17D were examined. No indications identified.</p> <p>Due to new angle and distance requirements for visual exams in accordance with BWRVIP-03 Revision 10, the 45-12 (Sleeve Flange to Thermal Sleeve) welds on both LPCI couplings were performed as best effort EVT-1 exams.</p>
	2012 (1R14)	EVT-1, VT-1 & VT-3	All of N17A and N17B were examined, including 45-03b, 45-06a thru 06d, 45-08a thru 08d, and 45-12 welds. No indications identified.
	2014 (1R15)	EVT-1, VT-1 & VT-3	All of N17C welds were examined, including 45-03b, 45-06a thru 06d, 45-08a thru 08d, and 45-12 welds. No indications identified
Steam Dryer	1998 (1R07)	VT-1 & VT-3	<p>VT-1 examined the steam dryer drain channel welds. No indications identified.</p> <p>VT-3 examined the overall condition of the steam dryer. No indications identified.</p>
	2000 (1R08)	VT-1	VT-1 examined the steam dryer drain channel welds. No indications identified.
	2002 (1R09)	VT-1 & VT-3	<p>VT-1 examined the steam dryer drain channel welds. Stain identified on drain channel SDDC4c. No other indications identified.</p> <p>VT-3 examined the overall condition of the steam dryer. No indications identified.</p>
	2004 (1R10)	VT-1 & VT-3	<p>VT-1 examined cover plate welds, outer bank hood seam welds, drain channel welds, and previous support ring indications. One support ring bolt was found with old mechanical deformation/damage and left as-is. Minor IGSCC previously identified on the support ring. No other indications identified.</p> <p>VT-3 examined steam dryer tie bars. During examination of tie bars, one cam nut was found to be protruding from end bank number 6. This cam nut was staked during the same outage.</p>

Steam Dryer (cont.)	2006 (1R11)	VT-1	<p>Performed BWRVIP-139 inspections of cover plates SDCP 1a-b and 7a-b, top and bottom hood SDBH 1a-b, 2a-b, 3a-b, 4a-b, 5a-b, and 6a-b, end bank welds SDEB 1a-d and 2a-d, lifting lugs, support ring and cam nut tack welds. Minor IGSCC identified on the support ring and tack weld cracking on cam nuts. No other indications identified.</p>
	2008 (1R12)	VT-1	<p>VT-1 examined cover plates (SDCP1a-b, SDCP7a-b), hood seam welds (SDHS1a-d, SDHS2a-e, SDHS3a-e, SDHS4a-e, SDHS5a-e, SDHS6a-d), lifting rod eye welds (SDLRALE, SDLRBLE, SDLRCLE, SDLRDLE), plenum partitions (SDPP2a-b, SDPP3a-b, SDPP4a-b, SDPP5a-b), and all 37 tie bars (SDTB01-SDTB37).</p> <p>Minor IGSCC indication re-examined on support ring in area of SDCP7b. No change in condition.</p> <p>IGSCC indication identified on SDHS4d at the top of the hood seam weld. Indication is approximately 1.5 inches in length and was evaluated as acceptable. No repair required.</p> <p>Indications identified on 11 cam nuts (SDCN). All were evaluated as acceptable. No repairs required.</p>
	2010 (1R13)	VT-3 & VT-1	<p>VT-3 examined the overall condition of the steam dryer. No indications identified.</p> <p>VT-1 examined all Steam Dryer Cam Nut (SDCN) locations, including areas of previously identified indications. From this inspection, indications were noted on 13 of 48 cam nuts. All flaws were evaluated as acceptable with no repairs required.</p>

Steam Dryer (cont.)	2010 (1R13) (Cont.)		<p>VT-1 examined the Steam Dryer Support Ring (SDSR), including areas of previously identified indications and the seismic blocks at 4°, 94°, 184°, and 274°. A few new IGSCC indications were noted with no change to the existing indications on the support ring. Minor wear and rub marks were identified on the underside of the seismic blocks at all locations. All flaws were evaluated as acceptable.</p> <p>VT-1 examined the previous indication identified at the SDHS4d location (at the top of the hood seam weld). No change in condition was noted.</p>
	2012 (1R14)	VT-1-89	<p>VT-1 examined all Steam Dryer Cam Nut (SDCN) locations, including areas of previously identified indications. From this inspection, indications were noted on 20 of 48 cam nuts. All flaws were evaluated as acceptable with no repairs required.</p> <p>VT-1 examined bottom hood horizontal welds (SDBH1a-b, SDBH6a-b), drain channel welds (SDDC3a-c), end bank welds (SDEB1a-d, SDEB6a-d), hood seam welds (SDHS1a-d, SDHS2a-e, SDHS4a-e, SDHS6a-d), lifting rod tack welds (SDLRDTW), man way welds (SDMWA-d), plenum partitions (SDPP2a-b, SDPP3a-b, SDPP4a-b), and top horizontal weld (SDTH1).</p> <p>Minor IGSCC indication re-examined on SDHS4d. No change in condition. Re-examined cracked tack weld on SDLRDTW with no changes noted. No other indications identified.</p> <p>VT-1 examined bottom hood horizontal welds (SDBH2a-b, SDBH5a-b), end bank welds (SDEB2a-d, SDEB4a-d), guide bracket (SDGB 0 Az), and plenum partition welds (SDPP5a-b). No indications identified.</p>

Steam Dryer (cont.)	2012 (1R14) (Cont.)		<p>VT-1 examined all Steam Dryer Cam Nut (SDCN) locations, including areas of previously identified indications. Indications were noted on 20 of 48 cam nuts with only minor changes.</p> <p>Minor IGSCC indications were re-examined on a hood seam weld (SDHS4d) and the support ring (SDSR). No change in condition. A cracked tack weld on a lifting lug (SDLRDTW) was re-examined with no changes noted. All flaws were evaluated as acceptable with no repairs required.</p>
	2014 (1R15)	VT-1-89	<p>VT-1 examined bottom hood horizontal welds (SDBH2a-b, SDBH5a-b), end bank welds (SDEB2a-d, SDEB4a-d), guide bracket (SDGB 0 Az), and plenum partition welds (SDPP5a-b). No indications identified.</p> <p>VT-1 examined all Steam Dryer Cam Nut (SDCN) locations, including areas of previously identified indications. Indications were noted on 20 of 48 cam nuts with only minor changes.</p> <p>Minor IGSCC indications were re-examined on a hood seam weld (SDHS4d) and the support ring (SDSR). No change in condition. A cracked tack weld on a lifting lug (SDLRDTW) was re-examined with no changes noted. All flaws were evaluated as acceptable with no repairs required.</p>
Access Hole Covers	1987 (1R01), 1990 (1R03), &1994(1R05)	VT-3	VT-3 examination of both access hole covers and welds at 0° and 180°. No indications identified.
	1998 (1R07)	VT-3	VT-3 examination of both access hole covers and welds at 0° and 180°. No indications identified.
	2004 (1R10)	EVT-1, VT-1	EVT-1 and VT-1 examination of both access hole cover welds at 0° and 180°. No indications identified.

Access Hole Covers (Cont.)	2008 (1R12)	VT-1	VT-1 examined all access hole cover welds at 0° and 180°. No indications identified.
	2012 (1R14)	EVT-1	EVT-1 exam performed on all welds on both access hole covers at 0° (1 weld) and 180° (3 welds). No indications identified.
DM Welds-BWRVIP-75-A Category A	2008 (1R12)	UT	1 weld inspected: 1 automated, no flaws, no repairs
DM Welds-BWRVIP-75-A Category C	2006 (1R11)	UT	3 welds inspected (DCA-318-3 N17C, RC 012, and RC 013): 1 weld with 82/182, 3 manual, no flaws, no repairs
	2008 (1R12)	UT	5 welds inspected (VRR-1RD-1B N2A, DCA-318-1 N17B, DCA-319-1 N5A, DCA-320-1 N5B, and RPV-1IN N9): 5 weld with 82/182, 1 manual, 4 automated, no flaws, no repairs
	2010 (1R13)	UT	5 welds inspected (VRR-1RS-1B N1B, VRR-1RD-1B N2D, VRR-1RD-1B N2E, VRR-1RD-1A N2G, and VRR-1RD-1A N2J): 5 welds with 82/182, 5 automated, no flaws, no repairs
	2012 (1R14)	UT	5 welds inspected (DCA-318-4 N17D, RPV-1IN N8A, VRR-1RS-1A N1A, VRR-1RD-1B N2B, VRR-1RD-1A N2F), 5 welds with 82/182, 5 manual phased array, no flaws, no repairs
	2014 (1R15)	UT	4 welds inspected (DCA-318-2 N17A, VRR-1RD-1B N2C, VRR-1RD-1A N2K, RPV-1IN N8B), 4 welds with 82/182, 3 automated, no flaws, no repairs
DM Welds-BWRVIP-75-A Category E	2010 (1R13)	UT	1 weld inspected (VRR-1RD-1A N2H): known indication mitigated with MSIP in 1992, first PDI examination, indication acceptable for continued service
	2014 (1R15)	UT	1 weld inspected (VRR-1RD-1A N2H) automated: known indication mitigated with MSIP in 1992, indication acceptable for continued service

Reactor Internals Inspection History

Plant: **Nine Mile Point Unit 2**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Shroud	RF14 (4/14)	N/A	No examinations performed.
	RF13 (4/12)	N/A	No examinations performed.
	RF12 (4/10)	UT	Performed two sided UT on all shroud vertical welds V4, V5, V12 through V17, V24 and V25. Achieved greater than 50% coverage. No indications observed.
	RF11 (3/08)	UT	Reinspection (2008): Performed and obtained limited two sided UT coverage on H1 thru H8. All recorded indications evaluated and compared to previously recorded indications.
	RF11 (3/08)	EVT-1	Performed supplemental single sided visual (EVT-1) examination at the intersection of H4 and H5 and vertical welds V4, V5 and V12-17. 12" of weld metal was inspected above and below the horizontal welds from the OD of the shroud. No indications noted.
	RF10 (3/06)	N/A	No inspections required
	RF09 (3/04)	UT	Re-examination of H4, H5 with no significant growth noted. Completed two sided coverage of H6A & H6B (phased array on ring side of H6B) no flaws noted in ring and no growth noted on lower side of H6B.
	RF08 (3/02)	EVT-1	Visual exam of V24 & V25 OD only, no indications noted
	RF07 (3/00)	UT	Performed UT exams of H4 & H5 only. Crack growth was within established limits.

	RF06 (5-98)	UT	RF06 (5-98) - Base line UT exams performed. Welds H1 through H7 inspected with indications observed in all but weld H6. Indications varied from approximately 2% to 85% of length inspected with maximum depth of 0.65 inches. All indications acceptable for continued operation. Welds V12 through V17 inspected with no indications observed.
	RF03 (10/93)	VT	H1, H2, H7 OD H3, H4, H5 ID No reportable indications
Shroud Support	RF14 (4/14)	N/A	No examinations performed.
	RF13 (4/12)	EVT-1	Performed visual examination on the accessible top side surfaces of H9A and H9B (H8 & H9) No indications found
		EVT-1 VT-1/VT-3	Best effort EVT-1, VT-1 and VT-3 examination of 14 shroud support legs (H10, H11 and H12) through the disassembly of Jet Pumps 1-20. No indications found
	RF12(4/10)	EVT-1	Access Hole Covers at 0 and 180 degrees No indications found.
	RF11 (3/08)	EVT-1	Access Hole Covers at 0 degree No indications found.
		EVT-1	Shroud to baffle plate between JP20-JP1 No indications found.
	Mid-Cycle (11/07)	VT-1	Disassembly of JP11 provided access to H-10, H-11 and H-12 welds of the shroud support legs at 190 and 210 degrees. Approximately 20% coverage was obtained with VT-1 resolution. No indications found
	Mid-Cycle (11/07)	VT-1	Disassembly of JP11 provided access to the bottom side of H9A (H8) and H9B (H9) welds at 202 degrees. Approximately 5.5% coverage was obtained with VT-1 resolution. No

	RF10 (3/06)	EVT-1	indications found H9 weld inspections performed between JP sets and one Access Hole cover plate examined (top hat design) examined. No indications found.
	RF09 (3/04)	UT	Obtained 100% coverage of H9 from vessel side, a single ½" long original construction flaw was noted (not surface connected)
	RF08 (3/03)	EVT-1	Both access hole covers examined, no indications noted. (SIL 462, rev 1 exam)
	RF07	EVT-1	~25% of H9A & H9B
	RF06 (5-98)		RF06 (5-98) - No Inspections Performed
	RF04 (5/95)	VT-3	The shroud support access hole cover welds were found to be free of radial cracking.
Core Spray Piping	RF14 (4/14)	EVT-1	Performed examination on scheduled welds P2, P3, P4, P5, P6, P7, P8a and P8b. No indications found
		EVT-1	Piping bracket welds at 15, 70, 95 and 165 degrees. No indications found.
	RF13 (4/12)	EVT-1	Performed examination on scheduled welds P2, P3, P5, P6, P7, P8a and P8b. No indications found
	RF12(4/10)	EVT-1	P2 piping T-Box cover plate welds at 120 and 240 degrees. No indications found.
		EVT-1	P3 piping to T-Box welds at 120 and 240 degrees. No indications found.
		EVT-1	P4a Piping to upper elbow weld and P4b upper elbow to downcomer weld at 350 degrees. No indications found.
		EVT-1	P5, P6 and P7 welds on all four downcomers at 10, 170, 190, and 350 degrees. No indications found.

	RF11 (3/08)	EVT-1	P8a pipe to thermal sleeve weld and P8b thermal sleeve to Shroud weld on all four downcomers at 10, 170, 190 and 350 degrees. No indications found.
		EVT-1	Piping bracket welds at 195, 265, 290 and 345 degrees. No indications found.
		EVT-1	P2 piping T-Box cover plate welds at 120 and 240 degrees. No indications found.
		EVT-1	P3 piping to T-Box welds at 120 and 240 degrees. No indications found.
		EVT-1	P4c downcomer to elbow welds and P4d elbow to pipe welds at 170 and 350 degrees. No indications found.
		EVT-1	P5, P6 and P7 welds on all four downcomers at 10, 170, 190, and 350 degrees. No indications found.
	RF10 (3/06)	EVT-1	P8a pipe to thermal sleeve weld and P8b thermal sleeve to Shroud weld on all four downcomers at 10, 170, 190 and 350 degrees. No indications found.
		EVT-1	Visual pick-up exams on 4 remaining target welds, P8a & P8b that were not UT examined last outage. No indications found.
	RF09 (3/04)	UT / EVT-1	Baseline UT, including both P1 welds, completed with no indications noted. Also other BWRVIP visual exams completed
	RF08 (3/02)	EVT-1	Inspections performed per BWRVIP guidelines. No indications found.
	RF07 (3/00)	VT	RF07 (3/00) – Per BWRVIP-guidelines, 100% of target welds and 25% of remaining welds. No indications found
	RF06, 1998	EVT-1	RF06 (5-98) - No Indications EVT-1 only

	RF04 (5/9) RF02 (3/92) RF01 (10/90)	VT	No indications
Core Spray Sparger	RF14 (4/14)	VT-1	Performed examinations on scheduled C and D sparger brackets at 100, 130, 135, 140, 170, 190, 220, 225, 230 and 260 degrees. No indications found.
	RF13 (4/12)	EVT-1	Performed examination on scheduled welds S1, S2 and S4. No indications found
		VT-1	Performed examination on scheduled drain welds S3c. No indications found
		VT-1	Performed examination on scheduled brackets at 10, 280, 310, 315, 320, 350, 40, 45, 50 and 80 degrees. No indications found
	RF12(4/10)	VT-1	S3a and S3b welds on C and D Sparger nozzles
		VT-1	Sparger Bracket to Shroud welds at 100, 130, 135, 140, 170, 190, 220, 225, 230, 260 and 265 degrees. No indications found.
	RF11 (3/08)	EVT-1	S1 cover plate to T-Box welds at 10, 170, 190 and 350 degrees. No indications found.
		EVT-1	S2 T-Box to sparger pipe welds at 10, 170, 190 and 350 degrees. No indications found.
		VT-1	S3a and S3b welds on the A and B Sparger nozzles. No indications found.
		VT-1	B and D Sparger drain welds at 260 and 280 degrees. No indications found.
		EVT-1	S4 end cap to Sparger pipe welds at 85, 95, 265 and 275 degrees. No indications found.

		VT-1	Sparger Bracket to Shroud welds at 10, 40, 45, 50, 80, 280, 310, 315, 320 and 350 degrees. No indications found.
	RF10 (3/06)	EVT-1 / VT-1	Inspections performed per BWRVIP guidelines. No indications found.
	RF09 (3/04)	EVT-1 / VT-1	Inspections performed per BWRVIP guidelines. No indications found.
	RF08 (3/02)	EVT-1 / VT-1	Inspections performed per BWRVIP guidelines. No indications found.
	RF07 (3/00)	VT	RF07 (3/00) Per BWRVIP guidelines - 1 sparger (welds S3a, S3b, S3c & brackets) No indications found
	RF06 (5-98)	VT	RF06 (5-98) - No Indications
	RF04 (5/95)	VT	EVT-1 & MVT
	RF02 (3/92)		
	RF01 (10/90)		No indications
Top Guide (Grid Beam, etc.)	RF14 (4/14)	EVT-1	Performed examination on the bottom 2" of four TG interior plates and the intersections of the gird beams near the slotted notch on 3 TG cells. No indications found
	RF13 (4/12)	VT-3	Performed examination on 4 hold-down clamps. No indications found
		EVT-1	Performed examination on the bottom 2" of all four TG interior plates and the intersections of the gird beams near the slotted notch on 3 TG cells. No indications found
		VT-3	Performed 100% scan of the Top Guide upper surface. No indications found
	RF12(4/10)	EVT-1	Examined 6 Top Guide Cells (Lower 25% of the vertical plate, bottom of plate and grid intersections) No indications found

	RF11 (3/08)	EVT-1	Examined one cell (Lower 25% of the vertical plate, bottom of plate and grid intersections) No indications found
	RF10 (3/06)	N/A	No inspections performed
	RF09 (3/04)	N/A	No Inspections required
	RF08 (3/02)		Completed inspections of 3 holddown clamps. No indications found. (1 restricted coverage of 50% due to fuel)
	RF07 (3/00)	VT-3	Limited inspection on the 4 "C-clamps" Limited due to fuel cells not removed. Scheduled for RF08 to meet BWRVIP requirements
	RF06, 1998	VT-3	
	RF04 (5/95)		
	RF02 (3/92)		
	RF01 (10/90)		No indications
Core Plate (Rim hold down bolts, etc.)	RF14 (4/14)	N/A	No inspections performed
	RF13 (4/12)	N/A	No inspections performed
	RF12(4/10)	N/A	No inspections performed
	RF11 (3/08)	N/A	No inspections performed.
	RF10 (3/06)	N/A	No inspections performed.
	RF09 (3/04)	N/A	No inspections required.
	RF08 (3/02)	N/A	Performed engineering evaluation to justify no inspections required in RF08
	RF07 (3/00)	N/A	No inspections performed
			Examine Bolt Locking Device per SIL 588R1
	RF06 (5-98)	VT-3	No Indications Core plate bolting & Core plate

SLC	RF14 (4/14)	VT-2	Performed inspection of N11 nozzle after flood-up to assess presence of leakage and during System Pressure Test, no leakage observed.
	RF13 (4/12)	VT-3	Best effort VT-3 performed on the SLC line stub tube to RPV, stub tube to pipe welds and piping shroud support attachment brackets. No indications found
		UT	Nozzle to Safe End DM weld 2RPV-KB34 (SIL571-N11) Performed 100% UT in accordance with ASME Section XI Appendix VIII. No indications associated with IGSCC noted, ID geometry and weld interface noise observed.
	RF12 (4/10)	N/A	No inspections performed
	RF11 (3/08)	N/A	No inspections required
	RF10 (3/06)	N/A	No inspections required
	RF09 (3/04)	N/A	N/A, NMP2 (injects boron through HPCS line)
	RF08 (3/02)	UT	UT of N11 safe-end to nozzle weld and accessible portions of adjacent base metal using PDI qualified technique. No indications found.
	RF07 (3/00)	N/A	No Inspections performed
	RF06 (5-98)	N/A	2RPV-KB34 provides core ΔP only Nozzle exams per ASME code No Inspections
	RF04 (5/95)	PT	Core plate ΔP only this unit 2RPV-KB34 No reportable indications

Jet Pump Assembly	RF14 (4/14)	EVT-1	Performed examinations on scheduled welds RS1, RS6, RS7, RS8 and RS9. No new indications observed. Compared previously identified indications on RS1 240°, RS9 240° and RS9 270° - no changes noted from previous inspection data on RS1 240° and RS9 270°. Could not confirm the indication at RS9 240° therefore it is evaluated as nonrelevant.
		VT-1	Examined sensing lines and stand-offs for Jet Pumps 1, 3, 5, 6, 8, 10, 12, 14, 16, 18 and 20. Circumferential indication on the bottom side of the lower stand-off on JP6 remains unchanged. No other indications found
		VT-1	Examined WD1, AS-1 and AS-2 on all Jet Pumps, No indications noted.
		VT-3	Examined hold down beam ratchet teeth for engagement on all Jet Pumps. Ratchet teeth on JP 8 and 15 as found showed partial engagement. Review of as left inspection video from 2012 showed the condition was unchanged and from the as left in 2012. JP beams are Westinghouse Toshiba Design and Toshiba provided technical justification that the ratchet locking device remained functional.
		VT-3	Examined main wedge hold down (MWHD) mechanism on all Jet Pumps. Wear noted on pinion gear teeth on JP 4, 5, 6, 15, and 16, use-as-is evaluation. Main wedge hold-downs are Westinghouse Toshiba design
		VT-1	Examined MX-7 main wedge bracket welds as expanded scope on JP 15 and 16 pinion gear teeth wear, no indications found. GEH slip Joint Clamps Installed on all 20 Jet Pump mixers to address risk of slip joint instability flow induced vibration under single loop operating

			conditions identified during full flow testing of the NMP2 JP mixer design. The NMP2 JP mixers are Westinghouse Toshiba design
	RF13 (4/12)	EVT-1	Performed examinations on scheduled welds RS1, RS3, RS6, RS7, RS8, RS9, RB1 and RB2. No new indications observed. Compared previously identified indications on RS1 240°, RS9 240° and RS9 270° - no changes noted from previous inspection data.
		VT-1	Examined sensing lines and stand-offs for Jet Pumps 2 and 6. Circumferential indication on the bottom side of the lower stand-off on JP6 remains unchanged. No other indications found
		VT-3	Performed ASME VT-3 on Jet Pumps 1-20. No indications found Replaced all 20 Jet Pump inlet mixers and hold down beams, removed all previously installed slip joint clamps and aux. wedges. Post modification inspections were performed and will be used as the baseline going forward.
	RF12 (4/10)	VT-1/VT-3	Examined clamp assemblies on Jet Pumps 5, 6 and 19
		VT-1	Sensing lines and stand-offs for Jet Pumps 6, 18, 19 and 20 Circumferential indication on the bottom side of the lower stand-off on JP6 remains unchanged.
		VT-1	Examined WD-1 wedges on Jet Pumps 1, 3-8, 13 and 18-20.
		VT-1	Examined WD-2a,b wedge rods on Jet Pumps 1, 3-8, and 18-20.
		VT-1	Examined AS-1 and AS-2 on Jet Pumps 2, 4, 14-16, 19 and 20.

	RF11 (3/08)	EVT-1	Examined BB3 area on Jet Pump 10 - indication in that area remains unchanged.
		VT-3	Examined Jet Pump 13 auxiliary wedges No indications found
		EVT-1	Examined RS-1 welds on Jet Pump Risers at 30, 60, 90 and 240 degrees. Previous indication on 240 Riser remained unchanged and no new indications found.
		EVT-1	Examined RS-2 welds on Jet Pump Risers at 30, 60 and 90 degrees. No indications found
		EVT-1	Examined RS-3 welds on Jet Pump Risers at 30, 60, 90, 120, 150, 210, 240, 270, 300 and 330 degrees. No indications found.
		EVT-1	Examined RS-8 welds on Jet Pump Risers at 30, 90, 120, 210, 240, 270, 300 and 330 degrees. No indications found.
		EVT-1	Examined RS-9 welds on Jet Pump Risers at 240 and 270 degrees. Previous indications remain unchanged and no new indications found.
		EVT-1	Examined IN-1 & IN-2 welds for Jets Pumps 1-10. No indications found
		VT-1/VT-3	Examined clamp assemblies on jet Pumps 1-12, 13-18 and 20
		EVT-1	Vibration instrumentation at 30 and 90 degrees.
		VT-1	Sensing lines and stand-offs for Jet Pumps 1-10, 16 and 17 - Circumferential indication was found on the bottom side of the lower stand-off. Use-As-Is Disposition
		VT-1	Wedges (WD1) and Wedge Rods (2A/B) for Jet Pumps 2 and 9-17 - No change in previously reported rod

			<p>wear on JP2</p> <ul style="list-style-type: none"> - No change in previously reported wedge movement and rod wear on JP09. - No change in previously reported wedge movement and rod wear on JP10. - No change in previously reported wedge movement and rod wear on JP11. - No change in previously reported wedge movement and rod wear on JP12. - No change in previously reported wedge movement on JP13. - No change in previously reported wedge movement on JP15. - No change in previously reported wedge movement and rod wear on JP17.
		EVT-1	<p>Jet Pump Beams (BB1 & BB3) on pumps 8-11, 16 and 20</p> <ul style="list-style-type: none"> - JP10 was found with an indication in the BB3 area. Use-As-Is Disposition
		EVT-1	<p>Riser welds RS6 & RS7 on the 30, 60, 120, 150, 240 and 270 degree risers.</p>
		EVT-1	<p>Riser welds RS 8 & RS9 on the 30, 60, 90, 120, 150, 210, 240, 270, 300 and 330 degree risers</p> <ul style="list-style-type: none"> - Indication was found adjacent to the RS9 weld on JP14 side of the 240 degree riser. Use-As-Is Disposition - Indication was found adjacent to the RS9 weld on JP16 side of the 270 degree riser. Use-As-Is Disposition
		EVT-1	<p>Riser Brace Yoke to riser welds (2a,b,c and d) on the 30, 60, 120, 150, 240 and 270 degree risers</p>
		EVT-1	<p>Riser Brace Leaf to pad welds (1a,b,c and d) on the 30, 60, 120, 150, 240 and 270 degree risers</p>
		VT1/VT3	<p>Aux. wedges on Jet Pumps 11, 16 and 20</p>
		VT-1	<p>Set Screw gaps on Jet Pumps 11, 13-16 and 20</p> <ul style="list-style-type: none"> - Gap was found on the vessel side of JP13. Aux. wedge installed

	RF10 (3/06)	EVT-1	Riser weld RS1 on the 120, 240 and 270 degree risers - Indication was found adjacent to RS1 weld on the vessel side. Use-As-Is Disposition
		EVT-1	Riser weld RS2 on the 240 and 270 degree risers
		VT-3	Riser Brace assembly 270 degree risers on the 240 and
	RF09 (3/04)	UT / EVT-1 VT-1	Examined all previously installed repair clamps & wedges a. Pre-emptive repair, clamps installed, on the remaining 13 JP's due to increase in core differential pressure in Cycle 10 (20 JP's now have clamps) b. UT JP beams, replaced two that had flaw like indications
			UT of 2 risers with no indications noted. Have completed 50% of inspections per BWRVIP guidelines. a. Performed re-inspection of main wedges and set screws for gaps (all) b. Identify locations where gaps/ wedge wear was noted during RF09, which required aux. wedge/ clamp installation c. Pre-emptive repair (i.e., clamp / wedge installation) performed. Installed clamps on JP's 5, 6, 13, 15, 16, 19 and 20. Installed auxiliary wedges on JP's 1, 7, 16, 19 and 20
	RF08 (3/02)	EVT-1 VT-1	Baseline inspection of 5 JP's performed. Expanded sample of all to determine restrainer bracket wedge wear and / or set screw gaps. Installed 2 aux. wedges, (JP 6 & 11) to address gaps. 3 additional set screw gaps identified (JP 7,16,20 gaps within engineering allowable) No other indications were noted.

	RF06	VT EVT-1 VT-1	RF07 JP 5 & 6 reinspected wedges for previously identified movement, no major change noted No Indications Welds RS-1, RS-2 & RS-3 Riser welds RB-1, RB-2, RB-8 & RB-9
	RF06 (5-98) Expanded Scope	VT-1	Beam engagement, Rams head seating, Set screw gap & tack welds, and wedge assembly
	RF05 (11/95)		Adjusting screws gap RF04-RF05
	RF04 (5/95)		Replaced Beams RF04
	RF02 (3/92)	VT-1	Adjusting screws tack welds RF01, 2
	RF01 (10/90)		
Jet Pump Diffuser	RF14 (4/14)	N/A	No inspections performed.
JP 16 thru 20	RF13 (4/12)	N/A	No inspections performed.
	RF12(4/10)	EVT-1	Examined DF-1, DF-2 DF-3 and AD-2 Jet Pump Diffuser and Adaptors on Jet Pumps 6 and 13-20. No indications found
	RF11 (3/08)	N/A	No inspections scheduled
	RF10 (3/06)	N/A	No inspections required
	RF09 (3/04)	UT	UT (TEJET / DF-1, DF-2, DF-3 and AD-2) of 11 Jet Pump diffusers. No indications found
	RF08 (3/02)		Diffuser welds were part of JP baseline
	RF07 (3/00)		JP 5,6,15,16 Inlet mixers, crud buildup noted
	RF06 (5-98)		ISI Program plan has no special inspection frequency, it is performed during the code required B-N-1 examinations.

CRD Guide Tube	RF14 (4/14)	N/A	No inspections performed.
	RF13 (4/12/)	N/A	No inspections performed.
	RF12(4/10)	N/A	No inspections performed.
	RF11 (3/08)	EVT-1 VT-3	1 guide tube examined in place, no indications found
	Mid-Cycle (11/07)	VT-1	Guide Tube Base to Body Weld CRGT-3 at core locations 1803 and 2203 from Lower Plenum. Approximately 30% coverage was obtained with VT-1 resolution. No indications found
	RF10 (3/06)	EVT-1 VT-3	1 guide tube examined in place, no indications noted
	RF09 (3/04)	EVT-1	6 guide tubes examined in place, no indications noted
	RF08 (3/02)	VT-1 EVT-1	9 guide tubes examined in place, no indications noted
	RF07 (3-00)	N/A	No inspections performed
	RF06 (5-98)		N/A
Lower Plenum	RF14 (4/14)	N/A	No inspections performed.
	RF13 (4/12)	EVT-1 VT-1 VT-3	Performed best effort examinations on 21 CRDHs below core plate made accessible by disassembly of Jet Pumps. Areas examined include CRDH/ST-1, CRDH-1, ST/RPV-1 and Stub Tubes. No indications found
		EVT-1 VT-1 VT-3	Performed best effort examinations on 11 shroud support legs. Areas examined include H10, H11 and H12.
		VT-3	Performed examination of RPV bottom head through 12 Jet Pump locations. Minor debris noted and retrieved.
		VT-3	Performed ASME VT-3 of all shroud support legs. No indications found
	RF12 (4/10)	N/A	Inaccessible

	RF11	N/A	Inaccessible
	Mid Cycle (11/07)	VT-1	CRD Stub Tube to RPV (ST/RPV-1) weld at core locations 1803 and 2203. Approximately 30% coverage was obtained with VT-1 resolution. No indications found
		VT-1	Stub Tube Base Metal (Stub Tube) at core locations 18-03 and 22-03. Approximately 25% coverage was obtained with VT-1 resolution. No indications found
		VT-1	CRD Housing to Stub Tube Weld (CRDH/ST-1) at core location 22-03. Approximately 25% coverage was obtained with VT-1 resolution. No indications found
		VT-1	Bottom Head Cladding (RPV-BOT) at 202 degrees. 100% of the accessible area was inspected with VT-1 resolution. No indications found
	RF10	N/A	Inaccessible
	RF09	N/A	Inaccessible
	RF08	N/A	Inaccessible
	RF07	N/A	Inaccessible
	RF06	N/A	Inaccessible
In-Core Housing	RF14 (4/14)	N/A	Inaccessible
	RF13 (4/12)	N/A	Inaccessible
	RF12 (4/10)	N/A	Inaccessible
	RF11 (3/08)	N/A	Inaccessible
	RF10	N/A	Inaccessible
	RF09	N/A	Inaccessible
	RF08	N/A	Inaccessible
	RF07	N/A	Inaccessible
Dry Tube	RF14 (4/14)	N/A	No inspections performed.
	RF13 (4/12)	N/A	No inspections performed.

	RF12 (4/10)	EVT-1	Two (2) dry tubes inspected No indications found.
	RF11 (3/08)	EVT-1	Two (2) dry tubes inspected per SIL 409 R2. No indications found.
	RF10 (3/06)	VT-1	Two (2) dry tubes inspected per SIL 409 R2. No indications noted. Two (2) original dry tubes replaced due to age.
	RF09 (3/04)	N/A	No inspections performed.
	RF08 (3/02)	VT	9 dry tubes examined per SIL409-R2, no indications noted
	RF07 (3/00)	N/A	No inspections performed
	RF06 (5/98)	VT	Examined 12 Dry Tubes, 3 were reported separation at the collar to shaft interface
	RF05 (11/96)		
	RF04 (5/95)		Bent plunger found @RF04 Replaced @RF05
	RF01 (10-90)		
Instrument Penetrations	RF14 (4/14)	VT-2	Performed VT-2 on eleven (11) instrument nozzles. No indications found
	RF13 (4/12)	VT-2	Performed VT-2 on eleven (11) instrument nozzles. No indications found
	RF12 (4/10)	VT-2	Performed VT-2 on eleven (11) instrument nozzles. No indications found
	RF11 (3/08)	VT-2	Performed VT-2 on eleven (11) instrument nozzles. No indications found
	RF10 (3/06)	N/A	No inspections required
	RF09 (3/04)	N/A	No inspections performed
	RF08 (3/02)	UT	Nozzle N-14 (ICS) required by SIL 571, No indications found

	RF97 (3/00) RF06 (5/98)	N/A N/A	No inspections performed No Inspections performed
Vessel ID Brackets	RF14 (4/10)	VT-3	<p>Performed examinations on twelve Feedwater Sparger end bracket pins. No new wear observed. Compared previously identified wear on 240° and 290° pins - no change noted from previous inspection.</p> <p>Pre-emptive repairs performed on 240° and 290° pins to mitigate further wear. Post inspections performed to re-establish new baseline.</p>
	RF13 (4/12)	EVT-1	Performed examination on four Jet Pump Riser Brace to RPV attachment welds. No indications found
		VT-3	Performed examinations on twelve Feedwater Sparger end brackets and pins. Two brackets (240° and 290°) have evident of wear into the top plate of the bracket. No other indications found
		VT-3	Performed examinations on two Steam Dryer Guide Rods to RPV attachment welds and HAZ. No indications found
	RF12 (4/10)	VT-3 EVT-1	Examined four Core Spray Piping Brackets (195, 265, 290 and 345) No indications found.
			Examined Feedwater A, B, C, D, E and F Sparger End Brackets. No indications found.
	RF11 (3/08)	EVT-1	Examined six (6) Jet Pump Riser Brace to RPV attachment welds at 30, 60, 120, 150, 240 and 270 degree locations. No indications found
	RF10 (3/06)		No inspections required
	RF09 (3/04)	EVT-1	Examined 2 JP riser brace attachments, no indications noted
	RF08 (3/02)	EVT-1	Examined 3 JP riser brace and 8 CS

	RF07 (3/00)		vessel attachment welds, no indications noted
	RF06 (5-98)		RF07 (3/00) - No inspections performed
	RF04 (5/95)	VT	RF06 (5-98) - No Indications Jet Pumps 1 thru 10 riser brace welds
	RF02 (3/92)		50% riser brace welds each outage No indications
	RF01 (10/90)		
LPCI Coupling	RF14 (4/14)	EVT-1, VT-1, VT-3	Examined 135 degree coupling, no indications noted.
	RF13 (4/12)	EVT-1	Performed examination of the Shroud attachment ring to Shroud weld only. No indications found
	RF12 (4/10)	VT-1, VT-3 EVT-1	Examined 45 degree coupling - No indications found.
	RF11 (3/08)	N/A	No inspections performed
	RF10 (3/06)	EVT-1	RF010, One coupling inspected. No indications found.
	RF09 (3/04)	N/A	No inspections performed.
	RF08 (3/02)	EVT-1	Examined the remaining 2 couplings, no indications noted
	RF07 (3/00)	EVT-1	Per BWRVIP guidelines one LPCI coupling was examined. No indications found
	RF06 (5-98)	N/A	No inspections performed
Steam Dryer	RF14 (4/10)	EVT-1, VT-1, VT-3	Performed post EPU baseline re-inspection in accordance with BWRVIP-139-A and the NRC safety evaluation issued for the NMP2 Extended Power Uprate license. This baseline included inspection of all EPU modification locations and pre-EPU service repair areas implemented in 2012. These examinations confirmed that EPU has not caused any change in

			<p>the material condition of the Dryer.</p> <p>Pre-emptive Mod installed two stiffener channels on the Dryer center closure plates. Stiffener channels installed shift the center closure plate resonance away from a measured strain gage ACM 4.1 model predicted load and maintain the NRC recommended alternating stress ratio above 2.0 for this location at EPU conditions. No indications associated with this location were identified after one cycle of operation at EPU without the stiffener.</p> <p>Examined 16 interior Hood Plate attachment welds on A – F hoods. Minor cracking found at locations B,C,D,E banks at end of weld consistent with previous cracking identified pre-EPU in 2010 interior baseline. Use-As-Is Disposition</p> <p>One indication associated with EPU modification mass plates on B-hood and one indication associated with EPU modification mass plates on E-hood identified. Indications associated with new weld defect. Stop drill performed.</p>
	RF13 (4/12)	VT-1	<p>Performed examination on four earthquake blocks and previously recorded wear. No new indications were found and no change was noted in previous indications.</p>
		VT-1	<p>Performed examination on five high stress welds (HS5, 6, 7, 8, 9 and 10) and previously recorded indications. No new indications were found and no change was noted in previous indications.</p>
		VT-1	<p>Performed examination on the 0° and 180° lower guides and previously recorded wear and deformed plates. No new indications found and no change was noted in previous indications.</p>

	RF12 (4/10)	VT-1	Performed examination on the 0° and 180° lower to mid support ring vertical welds. Two indications were noted , one on each weld. Indications were 9” and 9.5” respectively. Indications were repaired by welding.
		VT-3	Performed an overall examination on the Dryer and no additional indications were found
		EVT-1 VT-1 VT-3	Performed extensive repairs and modifications to support EPU. Construction inspections were performed and will be used as the baseline going forward.
		VT-1	Steam Dryer Exterior Examined several previously identified indications on Cam Nut Tack welds for change. No significant changes noted.
		VT-1	Examined exterior Seal Plates and welds At 4, 94, 184 and 274 degrees. No indications found.
		VT-1	Examined several previously identified indications on Tie Bar welds for change. No changes noted.
		EVT-1	Examined vertical Drain Channel welds and previously noted indications at 140 and 320 degrees. No significant changes noted.
		VT-1	Examined High Stress Area HS16 – no indications noted
		VT-1	Examined several previously identified indications on Lifting Rod assemblies at 40, 140, 220 and 320 degrees for change. No significant changes noted.
		VT-1	Examined Hood Repaired welds V07, V16, V29 and V40. No indications found.
		UT	Performed supplemental UT depth sizing on previously identified visual

			<p>indications on two Drain Channel welds and the Upper Support Ring. All indications in ring confirmed shallow IGSCC in the ring. Drain channel indications confirmed shallow part through-wall.</p> <p>Steam Dryer Interior</p>
		VT-1	Examined interior Seal Plates and welds At 4, 94, 184 and 274 degrees. No indications found.
		VT-1	Examined 16 interior Hood Plate attachment welds on A – F hoods. Cracked welds found at several locations. Indications consistent with BWRVIP-139. Use-As-Is Disposition
		VT-1	Examined 12 interior Drain Trough Pipe assembly welds on A – F drain troughs. No indications found.
	RF11 (3/08)	VT-1	Completed baseline inspection of BWRVIP-139 and SIL-644. The following locations were visually inspected:
		VT-1	Cam Nut/Washer Tack Welds on all banks. Cracked tacks found at six locations. Use-As-Is Disposition
		VT-1	Four (4) Earthquake blocks – wear and deformation noted from misalignment during installation. Use-As-Is Disposition
		EVT-1	Thirty four (34) upper and lower bank horizontal welds no indications found
		VT-1	Two (2) drain channel vertical welds with previous indications. Some of the previous indications could not be found – no change noted in the remaining indications.
		VT-1	Six (6) hood high stress welds – no indications found.

		EVT-1	Lifting eye to rod tack welds - cracked tacks found on all four (4) lifting rods. Use-As-Is Disposition
		VT-1	Upper Support Ring – reinspected previously identified indications with no change noted. Identified several new indications. Use-As-Is Disposition
		VT-1	Twenty four(24) vertical bank welds - no indications found
		VT-1	Reinspected bent gusset plate on the 180 degree lower guide. No change from previous inspection. Steam Dryer Upper Guides at 0 and 180 degrees – No indications found
	RF10 (3/06)	VT-1, VT-3 EVT-1	All BWRVIP-139 required inspections have been completed. Supplemental inspections of drain channels performed. Monitoring of cracking in upper support ring, no changes noted.
	RF09 (3/04)	VT-1, VT-3 EVT-1	RF09, Baseline SIL-644 exams completed. Repairs made to one hood due to cracking, opposite hood was preemptively repaired. Monitoring of cracking in upper support ring, no changes noted.
DM Welds (BWRVIP-75A) Category D	RF14 (4/14)	UT	Conventional UT exam of N16 nozzle to safe-end weld. No ID connected indications.
	RF13 (4/12)	UT	Conventional UT exams of N5, N6A and N16 safe-end to safe-end extension welds, and N1A, N1B, N2B, N2D, N2G, N2K, N4C, N5, N6A and N9A nozzle to safe-end welds. No ID connected indications.
	RF12 (4/10)	UT	Conventional UT exams of N6B and N6C safe-end to safe-end extension welds, and N2A, N2C, N2E, N2F, N2H, N2J, N4A, N4B, N4E, N4F, N6B, N6C and N9B nozzle to safe-end welds. No ID connected indications.

Reactor Internals Inspection History

Plant: **Quad Cities Unit 2**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Shroud (BWRVIP-76)	04/95	EVT-1 and UT	Inspections per BWRVIP Guidelines of all shroud repair design-reliant hardware prior to installation of comprehensive repair (4 GE designed tie-rod assemblies). Inspection of shroud consisted of EVT-1 of all ring segment welds (100% of accessible ring surfaces examined), EVT-1 of vertical welds between H1 & H2 OD surface >35% length/weld (ID not accessible), UT of all 6 beltline vertical welds >30% length/weld, and EVT-1 of vertical welds between H6 & H7 OD surface >22% length/weld (ID not accessible). Approximately 51" of 356" examined at the core plate support ring weld (HAZ of H5) had indications (H5 is structurally replaced by comprehensive shroud repair). All other areas examined had No Reportable Indications. Performed EVT-1 on all shroud vertical welds adjacent to beltline (six verticals, 100% of accessible OD surfaces). No Reportable Indications.
	03/97	EVT-1, VT-3	Performed VT-3 of all four tie-rod assemblies. One reportable indication related to original installation of locking device at upper spring, not service induced. Properly latched locking device.
	01/00	ET/UT	Performed automated volumetric examination (TEIDE 2 tooling) of shroud vertical welds V-14 through V-19 in accordance with BWRVIP-03, BWRVIP-07 and BWRVIP-63. No Reportable Indications.
	02/02	EVT-1	6 vertical welds from the OD per BWRVIP-76. No indications.

	03/04	EVT-1	Examined six welds, including 3 welds inaccessible to UT and three with only single side access. No reportable indications.
	04/06	EVT-1	Ring segment vertical welds. Since the location of the welds was not known, examined 100% of the ring segments. No reportable indications in vertical welds. Indications adjacent to weld H-5 were noted; however, the shroud tie rods structurally replaced this weld.
	03/08	EVT-1	Examined accessible areas of the 6 non-beltline vertical welds from the OD. No reportable indications.
	03/10	UT	Performed automated UT of the six shroud beltline vertical welds and two non-beltline vertical welds (one upper barrel and one lower barrel). No Reportable Indications.
	04/12	EVT-1	<p>Visually examined 16 Ring Segment vertical welds (V1, V2, V3, V4, V8, V9, V10, V11, V12, V13, V20, V21, V22, V23, V24, and V25) per BWRVIP-76-A requirements. Since the location of the welds are not known, examined all accessible areas of the ring segments from the OD. No reportable indications in the vertical welds. Known indications adjacent to weld H-5 were again noted, however, the shroud tie rod repair structurally replaces the H5 weld and these indications have been evaluated as-is.</p> <p>Visually examined the 4 vertical welds below H7 (V29, V30, V31, and V32) BWRVIP-76 rev 1 requirements for a repaired Core Shroud. No reportable indications.</p>

	04/14	EVT-1	Examined welds V5, V6, V7, V26, V27 and V28 with NRI. Due to shroud repair hardware interferences, exam of V27 was a "best effort" exam with no credible EVT-1 coverage.
Shroud Support (BWRVIP-38)	04/95	EVT-1	EVT-1 of H8 and H9 for approx 10" -12" at 4 locations of shroud repair hardware attachment areas. Access Hole Covers; VT/UT in 1991, circ indications observed and permanent repair installed 1993.
	01/00	EVT-1	Performed visual examination of H8 and H9 in accordance with BWRVIP-38 adjacent to AHC between jet pumps #20 - #1 (e.g. at least 10% of total circumference examined). No Reportable Indications.
	04/06	EVT-1	Examined >10% of H8 and H9 from annulus adjacent to AHC between jet pumps 10 & 11. No Reportable Indications.
	04/12	EVT-1	Visually examined H8 and H9 welds accessible areas from the Annulus top side adjacent to the AHC (between JP10& JP11 and JP20 & JP01) per BWRVIP-38 requirements. Approximately 22% coverage. No reportable indications noted.
Shroud Repair Hardware (BWRVIP Letters 2006-112 and 2006-220)	04/06	EVT-1, VT-3	EVT-1 of all tie rod upper support vertical faces, VT-3 of high-stressed fasteners and other contact points, and overall VT-3 per BWRVIP Letters 2006-112 and 2006-220. Also, VT-3 of core plate wedges adjacent to repair hardware. No reportable indications.
Core Spray Piping (BWRVIP-18)	1980's to 1996	VT-1 (1 mil)	IEB 80-13/NUREG of piping and welds in annulus. No indications observed.
	03/97	UT, EVT-1	UT or EVT-1 performed in accordance with BWRVIP-18. Two indications (1.60" and 2.25" in length) observed at slip joint (P6), evaluated for at least 48 months of hot operation.

	01/00	EVT-1	Performed visual examination of P4d and P8a (4 connections) and P2 at both T-boxes in accordance with BWRVIP-18. No Reportable Indications.
	02/02	UT	BWRVIP-18 UT examinations of all accessible welds (32). No relevant indications.
		EVT-1 on Piping	BWRVIP-18 EVT-1 on 5 welds inaccessible to UT. No indications.
	03/04	EVT-1	Examined 100% of P8a & P4d target welds. No relevant indications.
	04/06	UT EVT-1	BWRVIP-18 UT examinations of all accessible welds (32). No relevant indications. Examined two P4a, one P4b, one P4c, four P4d, two P8a and two P8b welds. No relevant indications.
	03/08	EVT-1	Examined all four P4d, all four P8a and all four P8b welds. No relevant indications.
	03/10	UT EVT-1	UT examinations of all accessible welds (32). No relevant indications. Examined welds for which two-sided UT has not been demonstrated (P2s, P3s, P8as, P8bs, P4d). No relevant indications.
	04/12	EVT-1	Visually examined 18 welds per BWRVIP-18 rev 1 requirements; 1P2, 2P2, 1P3, 2P3, 3P3, 4P3, 1P8a, 2P8a, 3P8a, 4P8a, 1P8b, 2P8b, 3P8b, 4P8b, 1P4d, 2P4d, 3P4d, 4P4d. No reportable indications.
	04/14	EVT-1	Examined 36 welds per BWRVIP-18 rev 1 requirements; 2-P1, 2-P2, 4-P3, 4-P5, 4-P6, 4-P7, 4-P8a, 4-P8b, 4-P4b, 4-P4d. No reportable indications. Note-P1 welds had 0% EVT-1 coverage.

Core Spray Sparger (BWRVIP-18)	1980's to 1996	VT-1 (1 mil)	IEB 80-13/NUREG of welds on sparger. No indications found
	03/97	CSVT-1, VT-3	CSVT-1, VT-3 performed in accordance with BWRVIP-18, geometry tolerant. No Reportable Indications.
	01/00 02/02	EVT-1 of S1, S2, S4 and brackets; VT-1 of S3	Examined 50% sparger nozzles, 100% of the S3a, S3b, & S3c nozzle welds, and 100% of S1, S2 and sparger bracket welds. Examined for IEB 80-13 and BWRVIP- 18. No indications.
	04/06	EVT-1 of S1, S2, S4 and brackets; VT-1 of S3	Examined 50% sparger nozzles, 100% of the S3a, S3b, & S3c nozzle welds, and 100% of S1, S2 and sparger bracket welds. No Reportable Indications.
	03/10	EVT-1 of S1, S2, S4 and brackets; VT-1 of S3	Examined 50% Sparger nozzles, 100% of the S3a, S3b, & S3c nozzle welds, and 100% of S1, S2 and sparger bracket welds. No Reportable Indications.
	04/14	EVT-1 of S1, S2, S4 and brackets; VT-1 of S3	Examined 50% (Upper) Sparger nozzles S3a, S3b, & S3c nozzle welds, 100% of the S1, S2 and S4 welds and 100% sparger bracket SB welds. No Reportable Indications.
Top Guide (Rim, etc.) (BWRVIP-26 & 183)	04/95	VT-1	VT-1 of 5 cells. No indications. VT-1 of alignment assemblies. No indications.
	04/97	VT-1	VT-1 of alignment assemblies and adjacent rim weld. No Reportable Indications.
	01/00	N/A	No examinations performed.
	02/02	EVT-1, VT- 1	Inspected 2 alignment assemblies (VT-1) and accessible rim welds (EVT-1) per BWRVIP- 26. No indications.
	03/04	EVT-1	Inspected two Guide Aligner Pins and rim

	03/08	EVT-1, VT-1	welds at adjacent locations. No recordable indications. Examined the rim weld adjacent to all four aligner pins. Not able to claim any EVT-1 coverage per BWRVIP-03 Rev. 10. Obtained 50% VT-1 coverage per BWRVIP-03 Rev. 10. No reportable indications. Actual exam coverage same as previous – change is due to change in EVT-1 definition.
	03/10	EVT-1	EVT-1 of 9 top guide grid cells (5%). NRI.
	04/12	EVT-1	Visually examined the Rim Weld (11) at all accessible cell locations (20 cells) and two Aligner Pins (0° & 270°) per BWRVIP-26-A requirements. No reportable indications.
Core Plate (Rim, etc.) (BWRVIP-25)	N/A	N/A	Core Plate Wedges installed 4/97.
	04/06	VT-3	Examined core plate wedges as part of shroud repair (tie rod) inspections. No Reportable Indications.
SLC (BWRVIP-27)	01/00	UT	Performed augmented (non PDI) volumetric examination of nozzle to safe-end weld. No Reportable Indications.
	03/04	PT	Performed surface examination of Nozzle To Safe End weld. No Reportable Indications.
	03/08	UT	UT in accordance with ASME Section XI Appendix 8 Supplement 10 was performed on the Unit 2 nozzle-to-safe end weld with acceptable results.
Jet Pump Assembly (BWRVIP-41)	03/93	VT-1	JP#7 and JP#18 set screws backed out, repaired and tack welded.
	04/95	VT-1	Hold down beams, beam bolt keepers, lock plates and retainers; restrainer wedges, stops, and adjusting screws, clamp bolts and keepers; riser brace assemblies, adapter and baffle plate welds, sensing lines and sensing line brackets per various SILS.

			No Reportable Indications. Inspect 100% every other outage.
	04/97	UT	Performed UT examination of jet pump beams. JP#7 beam rejectable indication at center hole region. Beam replaced.
	01/00	UT/EVT-1	Performed UT examination of jet pump beams using technique capable of detecting cracking at throat and ears. NO Reportable Indications. Performed visual examination of RS-1,-2,-3 riser welds. No Reportable Indications.
		UT/ET or EVT-1	Performed examinations of at least 50% of the medium and high priority jet pump assembly welds in accordance with BWRVIP-41 using combination of automated (e.g. TEJET tooling) volumetric and visual techniques. JP#15 observed possible wedge (WD-1) movement, expanded inspection to include restrainer components, with no relevant indications. All other components No Reportable Indications.
	02/02	EVT-1, VT-1	Jet pump beams were replaced on 18 jet pumps. EVT-1 and VT-1 of 18 beams; pre- and post replacement (pumps 7 and 18 not replaced because they already had BWR-4 style beams) A gap was identified on jet pump 1, and a setscrew was missing on jet pump 17. Auxiliary wedges were installed at these locations. Additionally, the set screws on pumps 7 and 18 and the riser braces for jet pumps 17 and 18 were inspected. Jet pump sensing line clamps were installed on 8 jet pumps (1, 2, 3, 10, 11, 12, 13, 20)
	03/04	EVT-1	Examined 50% of jet pump high priority welds (AD-1, AD-2, DF-2, AD-3a, AD-3b, RS-1, and RS-2, RS-3). Examined a mix of jet pump medium priority welds (MX-1, MX-2, MX-4, RB-1, RB-2, RS-4, RS-5, RS-8, RS-9). No reportable indications.

		VT-1	Examined all 20 jet pump WD-1 main wedges. Found very minor wedge movement on 2 jet pumps, severe movement on one jet pump, and one actuating rod resting against - and wearing into - the guide sleeve. All evaluated for another cycle.
	04/06	EVT-1, VT-1	EVT-1 of 17 high-priority RS-1, RS-2 and RS-3 welds. VT-1 of all 20 main wedges (WD-1). Found signs of wedge movement on four jet pumps. Replaced the restrainer gate and installed a mitigating slip joint clamp as planned on the pump with the most severe movement. No significant change since 2004 on the other jet pumps. The other jet pumps were evaluated for another cycle.
	03/08	EVT-1	Inspected 10 each DF-2, AD-3a,b AD-1 and AD-2 high priority welds Inspected 8 medium priority Riser Brace welds (RB-1a, 1b, 2a, 2b), 16 medium priority riser welds (RS-4,5,8,9. 27 medium priority MX1, MX-3a, MX-3b welds, and 10 medium priority DF-1 welds.
		VT-1	Inspected all 20 Jet Pump main wedges (WD-1), and Aux wedges and set screws on 2 jet pumps. A second aux wedge had to be installed on JP17, which already had one aux wedge. Inspected 5 restrainer bracket posts retainer tack welds.
		VT-3	Inspected medium priority bolting on inlet-to-mixer clamps (IN-5) on 10 jet pumps. Inspected new restrainer bracket and slip joint mitigation clamp on one jet pump.
	03/10	EVT-1	Inspected three RB-1a/b, three RB2a/b, seven DF-1, four AD-1 and 4AD-2 welds. No recordable indications.
		VT-1	Inspected all 20 WD-1 and three aux wedges, 5 retainer tack welds, 2 JPSSL clamps. No recordable indications.

	04/12	EVT-1	<p>Visually examined 4 medium priority Riser Brace welds (RB-1a and RB-2b on JP 10 and RB-1b and RB-2b on JP 15 per BWRVIP-41 rev 3 requirements. No recordable indications.</p> <p>Visually examined 24 high priority Riser welds; RS-1 and RS-3 on risers 5/6, 13/14, 15/16, and 19/20 per BWRVIP-41 rev 3 requirements. Additionally, examined the RS-2 on all 20 JP Risers per BWRVIP-41 rev 3 requirements and for extent of condition from the RS-2 crack on Unit 1 JP13/14 Riser. No recordable indications.</p> <p>Visually examined 5 medium priority Mixer welds (MX-1) on JP10, 11, 14, 15, 16) per BWRVIP-41 rev 3 requirements. No recordable indications.</p>
		VT-1	<p>Visually examined 19 Jet Pump wedges (WD-1) per BWRVIP-41 rev 3 requirements and on-going program guidance. An INR documents existing wear on JP14 due to the rod wearing into the guide tube. Evaluated as-is for 1-cycle.</p> <p>Also, replaced two main wedges (JP05 and JP08) due to known degraded conditions. NRI post repairs.</p> <p>Visually examined Aux Wedges and Set Screws on JP01. No recordable indications.</p> <p>Visually examined the Swing gate Retainer Cup (Keeper) tack welds on 5 swing gates per Extent of condition for Dresden OE; JP06, 12, 14, 16, 19, and 20. An INR documents a broken tack weld on the sole tack weld for JP06 Keeper. No rotation or wear was evident. Evaluated for 1-cycle as-is.</p>
		VT-3	<p>Visually examined the Jet Pump Beam Retainer Clips on 19 Jet Pumps per OE</p>

	04/14	UT	33533 (note-JP07 and JP08 clips have been removed). NRI.
		EVT-1	Performed UT examination of jet pump beams at welds BB-1, BB-2, BB3. NRI.
		VT-1	Visually examined two jet pump riser RS-8 and 9 welds, NRI.
		VT-3	Visually examined 100% of main wedges/rods including four replaced main wedges, three aux wedges, and four swing gate retainer bracket keeper welds six slip joints per SC 12-12 and 12-14. All NRI, except JP03 and JP06 have cracked keeper tack welds.
CRD Guide Tube (BWRVIP-47)	04/97	VT-3	Visually examined one slip joint repair clamp, six JP sensing line repair clamps and three replaced swing gates. NRI.
	02/02	VT-1, VT-3 on CRGT-1; EVT-1 on CRGT-2 & 3	Performed visual examination of CRGTs G-7 and H-8 while removed from core. No Reportable Indications.
	03/04	EVT-1, VT-3	Examined 6 sets of guide tube welds (CRGT-1, CRGT-2, and CRGT-3) per BWRVIP-47. No Indications. Examined 6 pin welds (FS/GT-ARPIN-1). No Indications.
	04/06	EVT-1, VT-3	Examined 3 sets of guide tube welds (CRGT-1, CRGT-2, and CRGT-3). Examined 3 pin welds (FS/GT-ARPIN-1). No Indications
	03/08	EVT-1, VT-3	Examined 4 sets of guide tube welds (CRGT-1, CRGT-2, and CRGT-3) and FS/GT-ARPIN. No Indications.
			Examined 5 pin/welds (FS/GT-ARPIN-1) and 5 each CRGT-1, CRGT-2 and CRGT-3 per BWRVIP-47 to complete baseline. No Reportable Indications.

	03/10	N/A	No exams performed since 10% baseline completed.
CRD Stub Tube	N/A	N/A	N/A
In-Core Housing	N/A	N/A	N/A
Dry Tube (GE SIL-409 and BWRVIP-47)	04/97	VT	Replaced 6 dry tubes 1997. Dry tubes examined every other outage. Plunger engagement verified each outage.
	01/00	VT	Verified plungers engaged at Top Guide. NO Reportable Indications.
	02/02	MVT-1	Examined 6 dry tubes. Indications observed on 5 dry tubes, and authorized for one additional cycle of operation.
	03/04	N/A	No inspections required until 2016. All original dry tubes have been replaced.
Feedwater Spargers (BWRVIP-48)	1983	Manual UT	UT of all four N4 nozzles and inner radii. NRI
	1986	Manual UT	UT of all four N4 nozzles and inner radii. NRI
	1990	Manual UT	UT of all four N4 nozzles and inner radii. NRI
	1993	Manual UT	UT of all four N4 nozzles and inner radii. NRI
	1995	UT (GERIS)	UT of all four N4 nozzles and inner radii. NRI
	02/02	VT-1	Examined all Feedwater Spargers. Examined per NUREG-0619 program and BWRVIP-48. No indications.
	2004	UT (GERIS)	UT of all four N4 nozzles and inner radii. Acceptable.
	04/06	VT-1, VT-3	VT-3 overall condition and VT-1 bracket welds of all FW sparger end brackets. Three FW sparger end brackets showed signs of wear where the pins had worn into the brackets. All stop pin nuts were welded to the pins as a pre-planned

	03/08	VT-1, VT-3	measure. Visual inspection of sparger end brackets. Seven of eight brackets have some amount of acceptable wear. OE26726.
	03/10	VT-1, VT-3	Visual inspection of Sparger end brackets. Brackets have no additional discernable wear since 2008.
		VT-1	Inspected FW Sparger welds and nozzles. NRI.
	04/12	VT-1	Visually examined Feedwater Sparger end brackets and pins per on-going program guidance due to minor wear. No additional discernable wear since 2010.
Instrument Penetrations (BWRVIP-49)	04/97, 01/00, 02/02, 03/04, 04/06, 3/08, 03/10	VT-2	VT-2 system leakage test. Acceptable.
	04/12	VT-2	VT-2 during system leakage test not acceptable. N11B (Upper Inst penetration at 225°) had leakage noted. Repaired prior to S/U. Retest sat.
	04/14	EVT-1	Visually inspected inner surface of all 4 nozzles, N11A/B and N12A/B, NRI.
Vessel ID Attachments (BWRVIP-48)	04/95	VT-1, VT-3	Section XI inspections of jet pump riser brace, dryer, feedwater sparger, core spray, and surveillance capsule holder brackets, performed once per interval. VT-3, or VT-1 if in beltline region. No Reportable Indications.
	02/02	VT-1, EVT-1, VT-3	Inspected 8 core spray brackets, 4 feedwater sparger brackets, and 4 steam dryer wall support brackets per BWRVIP-48. No indications.
	03/04	VT-1, EVT-1, VT-3	Examined dryer support lugs and surveillance specimen brackets, with no reportable indications. Examined steam separator and steam dryer guide rod bracket welds. One separator guide rod was bent, but the welds had no reportable indications.

	04/06	EVT-1, VT-3	Examined feedwater sparger end brackets. One FW sparger end bracket pin was missing a lower nut. A new nut was welded into place.
	03/08	EVT-1, VT-3	Performed BWRVIP-48 and ASME Code inspections of four steam dryer wall support lugs. All four lugs sustained some damage during May 2005 installation of new steam dryer, but all lugs acceptable as-is. No recordable indications in welds.
	03/10	EVT-1, VT-3	Performed follow-up exams all 4 steam dryer wall support lugs. No additional damage except for expected wear and tear.
	04/12	EVT-1, VT-3	Performed follow-up exams all 4 steam dryer wall support lugs. No additional damage except for expected wear and tear.
	04/14	EVT-1 EVT-1, VT-3	Performed follow-up visual exams all 4 steam dryer wall support lugs per BWRVIP-48-A and on-going program guidance. Minor additional damage documented in an INR; categorized as normal wear. Visually examined 2 JP Riser Brace RPV attachment welds (JP09/10 RB-1a & JP15/16 RB-1b per BWRVIP-41 Rev 3. No recordable indications.
RPV Internal Spaces (ASME B.N.1)	02/02	VT-3	VT-3 visual examination for ASME Section XI, B-N-1 of RPV internal surfaces for 360 degrees between steam dam and flange. No indications.
	03/04	VT-3	VT-3 visual examination for ASME Section

	03/08	VT-3	XI, B-N-1 of RPV internal surfaces for 360 degrees between steam dam and shroud support plate flange. No indications.
	04/12	EVT-1, VT-3	ASME Section XI VT-3 of RPV internal surfaces credited to other exams in annulus area in accordance with Relief Request for alternate examination methods for B-N-1 and B-N-2 components.
	04/14	EVT-1, VT-3	Visually examined the RPV interior surfaces for ASME Section XI VT-3. Exams are credited to other exams in annulus area near H9/H8 welds and near WSL's in accordance with Relief Request (I4R-15) for alternate examination methods for B-N-1 and B-N-2 components.
			ASME Section XI VT-3 of RPV internal surfaces credited to other exams in annulus area in accordance with Relief Request for alternate examination methods for B-N-1 and B-N-2 components.
LPCI Coupling	N/A	N/A	Not applicable to Quad Cities.
Steam Dryer (GE SIL-644 and BWRVIP-139)	02/02	VT-3	The dryer was modified to accommodate the Extended Power Uprate. The modification installed a mechanical device on the outlet of the dryer chevrons that would more uniformly distribute the velocity through the dryer and increase moisture removal. General Condition Inspection (VT-3) of general top-view post-modification. No indications.
	03/04	Best Effort VT-1, VT-3	Conducted the following inspections per GE SIL-644 S1: Best effort VT-1 inspections of 100% external vertical and horizontal welds, tie bars, and perforated plates; Best effort VT-1 inspections of 100% internal vertical and horizontal hood welds, struts and supports, plates, drain channels;

			<p>VT-3 inspections of dryer skirt welds (internal and external).</p> <p>Repaired indications in drain channel-to-skirt welds and tie bar welds, and at outer hood gussets and a stiffener plate added after previous dryer failures.</p> <p>Also found indications (acceptable as-is) at the following locations: Internal struts, vane assembly end plate supports, internal hood welds, guide channels, one drain channel, a hold down assembly tack weld, and perforated plate welds.</p>
	04/06	Best Effort VT-1, VT-3	<p>Performed baseline inspection of new steam dryer installed in May 2005 per BWRVIP-139 and GE recommendations. Inspection scope expanded due to indications found in vane bank end plates, gussets, and damage to skirt.</p> <p>The following damage was attributed either directly or indirectly to a lifting event during the original attempt to install the dryer in May 2005: fatigue cracks and distortion in the dryer skirt and base plate support lug cutouts, fatigue crack in a gusset attached to a vane assembly end plate, and a cracked latch box.</p> <p>The following indications were attributed as noted: lifting eyes rotated (design weakness), stress relief cracking in vane assembly plates (original construction issue), and distortion in perforated plates (original construction issue).</p>
	03/08	Best Effort VT-1, VT-3	<p>Inspections per BWRVIP-139 and GE recommendations, including all previous indications and at least 50% of areas similar to those that were cracked. There were no apparent changes to any of the previous indications, and no new recordable indications.</p>
	03/10	Best Effort VT-1, VT-3	<p>Inspections per BWRVIP-139 and GE recommendations, including all previous indications and at least 50% of areas</p>

	04/12	Best Effort GV, EVT-1, VT-1, VT-3	similar to those that were cracked. There were no apparent changes to any of the previous indications, and no new recordable indications.
	04/14	EVT-1	Visually examined the Steam Dryer OD per BWRVIP-139-A and GEH recommendations for replacement dryers, including all previous indications. There were no apparent changes to any of the previous indications. One new recordable indication was noted on a previously repaired base plate guide; this appears to be associated with the repair installation. Evaluated as acceptable for the next cycle as is.
		VT-3	Inspected SD-BA-TEE BRACE-OD and SD-BF-TEE BRACE-OD with NRI.
			Inspected SD-SKT-BP-Guide-03-OD, SD-SKT-BP-Guide-05-OD and SD-SKT-BP-Guide-06-OD with RI, but no changes from past inspections
Access Hole Covers (BWRVIP-180)	05/92	VT, UT	IGSCC observed adjacent to welds in both AHCs. Mechanical repairs made.
	11/94	VT, UT	UT performed during installation of permanent mechanical repair that replaced the first repair.
	03/04	VT-1	No recordable indications.
	03/10	VT-1	No recordable indications.
Dissimilar Metal Welds (BWRVIP-75-A Cat. A)	03/08	UT	Examined 7 Category A welds per BWRVIP-75 and ASME Section XI, Appendix VIII, Supplement 10. No flaws were identified and no weld overlays were performed. 100% of the required exam volumes were inspected on all of the welds. Three of the exams were manual. Four welds contained a stainless steel inlay. Automated exams were performed on those four welds.
	03/10	N/A	No Category A DM welds examined

Dissimilar Metal Welds (BWRVIP-75-A Cat. B)	03/08	N/A	No Category B DM welds examined – Quad has no Category B DM welds
Dissimilar Metal Welds (BWRVIP-75-A Cat. C)	03/08	UT	Examined 4 Category C welds per BWRVIP-75 and ASME Section XI, Appendix VIII, Supplement 10. No flaws were identified and no weld overlays were performed. 100% of the required exam volumes were inspected on all of the welds. Three of the exams were manual and one was automated. One weld contained Alloy 82/182 butter, which was also the weld on which the automated exam was performed.
	03/10	UT	Examined 4 Category C welds per BWRVIP-75-A and ASME Section XI, Appendix VIII, Supplement 10. No flaws were identified and no weld overlays were performed. 100% of the required exam volumes were inspected on all of the welds. Two of the exams were manual and Two were automated phased array. One of the automated exams was on a weld containing Alloy 82/182 butter. This last exam completes the requirements for BWRVIP-222.
Dissimilar Metal Welds (BWRVIP-75-A Cat. D)	03/08	N/A	No Category B DM welds examined – Quad has no Category D DM welds
Cast Austenitic Stainless Steel (CASS)	04/12	EVT-1	Visually examined CASS components on the following per NRC LR commitment: JP 20 <ul style="list-style-type: none"> • JP Mixer Flange • JP Mixer Flare • JP Mixer Ring • JP Inlet-Mixer Nozzle • JP Inlet-Mixer Elbow CRD Cell 58-35 <ul style="list-style-type: none"> • Fuel Support Piece • CRGT Base No recordable indications.
	04/14	EVT-1	Inspected 7 CASS components on JP14 and CRD Cell 54-31 with NRI

Steam Separators	04/12	UT	Volumetrically examined all 45 original SHBs. All earlier "suspects" had NRI and are resolved. All others NRI
		VT-3	Visually examined all of the gussets at the upper and middle support rings per station augmented inspections. Re-inspected indications on two gussets identified in Q2R18. No apparent changes. Both gussets were determined to be acceptable for use. Visually examined all 48 SHB's per SIL 433 & 650. Some Alignment pins and windows have minor wear evaluated acceptable for further use. Otherwise NRI
	04/14	VT-3/VT-1	Re-inspected indications on two gussets identified in Q2R18. No apparent changes.

Reactor Internals Inspection History

Plant: Susquehanna Unit 1

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Shroud	1993, 1995, 1996, 1997, 1998 and 2000 results.	VT-1 and UT	7 RFO (Fall 93), (VT-1) the OD of H3, H4, and H5, and the corresponding vertical welds in the 0 to 135 degree azimuth. No Recordable Indications.
		UT	8 RIO (Spring 95), circumferential welds H1 through H7 inspected ultrasonically using GE OD Tracker system. Cracking found in H1, H2, H4, H5, H6A, and H6B. Most significant in degrees of cracking were H2), H4), H5), and H6B). Structural margins were maintained based on BWRVIP documents GENE-523-113-0894, Rev 1, and Supplement 1, Rev 1, and independent calculations.
		UT	9 RIO (Fall 96), partial ultrasonic inspection of shroud ultrasonically for crack growth information using the OD Tracker. Weld areas inspected were H1, H2, H4, H5, and H6B. Structural margins were maintained based on BWRVIP documents GENE-523-113-0894, Rev 1, and Supplement 1, Rev 1, and independent calculations.
		UT	Unit 1 10 RIO (Spring 98), Partial UT examinations of the H4 and H5 welds were made in the 0 and 180 degree azimuth locations previously uninspected. On the H4 weld 3 new indications were found. The H5 weld did not have any indications in the inspected region.
		VT-1 Enhanced	Unit 1 10 RIO The vertical weld designated H5/H6A-135 was visually inspected on the OD for 41" and on the ID for 24" on both sides of the weld. No Recordable Indications.
		UT	Unit 111 RIO (Spring 2000) Horizontal

			<p>welds H4 and H5 were re-examined using the TEIDE tool from Spain. Full 360 degree UT examination revealed 60.3% of H4 cracked and 47.1% of H5 cracked, mostly on the ID of the shroud. Safety margins were calculated for each weld and analysis showed 6 years of useable life for the H4 weld and 10 years for the H5 remained before reinspection required using BWRVIP-76 techniques.</p>
		UT/VT-1E	<p>Unit 1-11 RIO (Spring 2000) vertical welds: Seven (7) vertical welds were examined using either UT or VT-1/1E techniques selected using BWRVIP criteria. One weld, V-15 @ 180 degrees between H4/H5 welds, showed a small defect 0.94" long and 0.37" deep. This weld met safety limits, but would have to be reinspected in 6 years.</p>
	2004	UT	<p>Unit 1 13RIO (Spring 2004) circumferential welds H1, H2, H3, H4, H6A, H6B, and H7 inspected ultrasonically using GE OD Tracker system. Additional cracking found in H1, H2, H4, H6A, and H6B. Most significant in degrees of cracking were H7), H4(, and H6A. Structural margins were maintained based on BWRVIP documents and independent calculations.</p>
	2006	EVT-1	<p>U1 -14RIO EVT-1 single sided exam of vertical welds per BWRVIP-76. No Recordable Indications.</p>
		VT-3	<p>Shroud flange exam 120 degrees of circumference to satisfy ASME XI core support structure. No Recordable Indications.</p>
	2008	VT-3	<p>Shroud flange exam additional 120 degrees of circumference to satisfy ASME XI core support structure. No Recordable Indications.</p>
	2010	UT	<p>16RIO Ultrasonic exam of Horizontal Welds H1, H2, H3, H4, H5, H6a, H6b, H7</p>

	2014	VT-3	<p>Ultrasonic exam of 10 Vertical Welds. Increase in crack length on all horizontal welds. Between 1% and 6% additional cracking.</p> <p>Minor increase in crack length in V6 weld. 0.94" in 2000 4" in 2010</p> <p>New Flaw in V4 2.3"</p> <p>All welds acceptable for 10 years</p> <p>VT-3 of Shroud H7 weld to satisfy ASME XI.</p>
Shroud Support	1993	VT-1	Unit 1 17RIO Shroud Support legs inspected in 1993 during Jet Pump Beam replacements. No Recordable Indications.
		VT-1	VT-1 of 0 deg to 360 deg of H8 and H9 during the first interval. No Recordable Indications.
	1995	EVT-1	Unit #1 8 RIO (Spring 95), H8 and H9 examined (enhanced VT-1) for 360 deg of accessible area. No Recordable Indications.
	1996	EVT-1, UT	Unit #1 9 RIO (Fall 96), 18 inch indication found behind AHC at 180 deg at the shroud support horizontal plate to shroud cylinder plate weld H8 while performing AHC inspections. UT performed of the accessible areas of the indication. Inspected (enhanced VT-1) remaining accessible areas of H8 and 360 deg of accessible H9 without any additional recordable indications. Structural margins were maintained.
	1998	UT	10-RIO (Spring 98) the H9 weld was inspected 100% from the OD of the vessel and No Recordable Indications. The H8 weld was inspected over 10.21% or 64.4" of the circumference from the OD of the vessel and No Recordable Indications.
		EVT-1	EVT-1 examinations were performed on shroud weld H8 at 180 deg. to verify a previously noted crack adjacent to the Access Hole Cover. The indication was

			determined to be non-relevant due to dark grit built up at the weld toe.
	2004	VT-1	13 RIO (Spring 2004) AHC at 0 and 180 degrees. No Recordable Indications.
		VOL/VT-3	H9 inspected from vessel OD 31% For VIP-38. No Recordable Indications.
		EVT-1/VT-3	H8 inspected 25% per VIP-38 and ASME XI. No Recordable Indications.
		VT-3	Shroud support legs and welds, all 13 per VIP-38 with GE remote Firefly inspection tool. No Recordable Indications.
	2008	EVT-1/VT-3	15 RIO AHC at 0 and 180 degrees. No Recordable Indications in 180 degree Top Hat design. Approximately .070 inch radial IGSCC crack in 0 degree in weld HAZ into cover plate. Use-As-Is
	2010	EVT-1	16RIO AHC at 0 degrees of existing IGSCC indication. No growth noted.
		EVT-1/VT-3	H8 inspected 25% per VIP-38 and ASME XI. No Recordable Indications.
	2012	EVT-1	17RIO EVT-1 ofAHC at 0 degrees of existing IGSCC indication. No growth noted.
		VT-3	VT-3 of Underside of H8 and H9 welds and Baffle Plate when access to below core plate was available during JP main wedge replacement. No Recordable Indications. VT-3 of 9 shroud support legs and welds during JP main wedge replacement. No Recordable Indications.
	2014	UT	18RIO H9 Inspected 100% of the weld length from Reactor Vessel OD and found No Recordable Indications
		VT-3	H9 VT-3 of weld for ASME XI acceptance. No Recordable Indications.

		EVT-1	ACCESS HOLE COVER 0 DEGREES. No growth from previous IGSCC indication discovered in 2008.
Core Spray Piping	1980's to 1995	VT-1, VT-3	Piping and welds in annulus. No Recordable Indications.
	1996	VT-1 enhanced, UT	9 RIO Inspect per BWRVIP-18, no relevant indications though one indication was ultrasonically examined and no depth was recorded.
	1998	VT-1E and VT-3	10 RIO Inspect per VIP -18. No Recordable Indications.
	2000	EVT-1	11 RIO Inspect per VIP -18. No Recordable Indications.
	2002	UT & EVT-1	12 RIO (spring 2002) Inspect per VIP-18. No Recordable Indications.
	2004	EVT-1	13 RIO Inspect per VIP -18, for welds that cannot be inspected by UT P8A, P4D, P4A. No Recordable indications were observed
	2006	UT	14RIO Inspect per BWRVIP-18A, UT 23 welds, P2, P3, P5, P7, P4a, P4b, P4c. No Recordable Indications.
		EVT-1	EVT-1 for 9 welds without an approved UT method, P4d, P8a, P8b. No Recordable Indications.
		VT-1	VT-1 of Core Spray Brackets (8) No Recordable Indications.
	2008	EVT-1	15 RIO EVT-1 of Core Spray piping per BWRVIP-18A. All P2, P3, P8a, and P8b welds. One each P4c and P4d. No Recordable Indications.
	2010	EVT-1	16 RIO EVT-1 of 41 Core Spray piping welds per BWRVIP-18 Rev. 1. All P2, P3, P5, P6, P7, P8a, P8b welds. Selected P4 welds. Junction Box OD exam for P1 locations. No Recordable Indications.
		VT-1	VT-1 of 4 Core Spray Brackets. No

	2012	EVT-1	Recordable Indications 17 RIO EVT-1 of 28 Core Spray piping welds per BWRVIP-18 Rev. 2. All P2, P3, P5, P6, P7, P8a, P8b welds. One P4C weld. Thermal sleeve T-Box OD exam for P1 locations. No Recordable Indications.
	2014	UT	18RIO UT of 40 Core Spray Piping Welds included all P1, P2, P3, P4a-c, P5, P6, P7, P8a,b. No Recordable Indications. P6 weld at 007 degrees was confirmed to be non-Relevant, previous exam noted a gouge that was not thoroughly investigated.
		EVT-1	EVT-1 of 28 Core Spray Piping welds which received a one-sided UT exam. This included all P1, P2, P3, P4d, P8a and P8b welds. Also P6 at 007 degrees to confirm no defect. All exams No Recordable Indications.
Core Spray Sparger	1980's to 1995 1996	VT-1,VT-3 VT-1, VT-3	No recordable indications, but one indication found in 1985 on S2, 173 degrees was identified. 9RIO Inspect per BWRVIP-18. Cracking found visually on shroud ID at #4 Core Spray Support Bracket. Determined acceptable to Use-as-is.
	2000	EVT-1	11 RIO – No Recordable Indications.
	2002	EVT-1	12 RIO – Linear indication core spray sparger tee box S2 weld @173 degrees. This was the same indication identified in 1985. It was evaluated for use as is since it did not grow in size over 17 years.
	2004	EVT-1, VT-1, UT	13 RIO – VT-1 8 sparger brackets. Cracking at Bracket 04 on shroud side inspected for sizing by UT and analyzed per VIP-76 vertical weld criteria. Determined acceptable to Use-as-is.
	2006	EVT-1	14 RIO EVT-1 of sparger piping both loops, S1, S2, and S4. No Recordable Indications. S2 weld at 173 degrees inspected, no growth noted.

			<p>VT-1 of 50% of sparger welds S3a, S3b, S3c, S4. One of three tack welds found cracked during S3a inspection in orifice to elbow. Per GE analysis only two are required for structural integrity. VT-1 of five sparger brackets. Six sparger brackets, SB01 through SB06. Visual re-inspection of SB04 to verify no visible growth in shroud side crack.</p>
	2008	EVT-1, VT-1	<p>15RIO VT-1 of six sparger brackets original scope. Bracket 11 Cracked approximately 1 inch in length on shroud side of bracket observed. Determined acceptable Use-as-is. Scope expanded to the six brackets inspected in 2006. No growth observed in SB04 reinspection. No Recordable Indications in all remaining brackets.</p>
	2010	EVT-1, VT-1	<p>16RIO EVT-1 of 20 Core Spray Sparger Welds (S1, S2, S4). 40 exams – No Recordable Indications. S2 exam one 1.5” IGSCC crack no growth since discovery in 1985.</p>
	2012	EVT-1	<p>VT-1 of 50% of S3a and S3b Nozzle Welds. Two cracked tack welds discovered during S3a and S3b exams.</p> <p>17RIO S2 exam one 1.5” IGSCC crack no growth since discovery in 1985.</p>
		EVT-1, VT-1	<p>EVT-1 of 3 Sparger Brackets with shroud side IGSS indications. Growth noted in SB11. VT-1 of remaining 9 Sparger Brackets, No Recordable Indications.</p>
	2014	EVT-1, VT-1	<p>18RIO EVT-1 of 20 Core Spray Sparger Welds (S1, S2, S4). 40 exams – No Recordable Indications. S2 exam one 1.5” IGSCC crack no growth since discovery in 1985.</p> <p>VT-1 of 50% of S3a, S3b and S3c Nozzle Welds. Two cracked tack welds discovered during S3a and S3b exams.</p>

Core Plate (Rim, etc.)	to date	VT-1 of surface welds and bolt tack welds on upper surfaces VT-3 of bolt and upper surface and cross-members	Unit #1 has not been accessible for inspection to date.
	2004	VT-3	13 RIO VT-3 of Core Support Plate Bolts and Tack welds from under-side with GE Firefly remote tool. No Recordable Indications.
	2008	VT-3	VT-3 of Core Plate surfaces and welds during CRGT inspections. Satisfy VIP-25 and ASME XI. No Recordable Indications.
	2010	VT-3	15RIO VT-3 of Core Plate surfaces and welds during CRGT inspections. Satisfy VIP-25 and ASME XI. No Recordable Indications.
SLC	92	VT-3	SLC 6 RIO One side of the Standby Liquid Control Standpipe inspected. Disassembly of the jet pumps for a Power Uprate modification made inspection possible. No Recordable Indications.
	2002-2014	EVT-2	Enhanced VT-2 during vessel post outage leak check. No Recordable Indications.
Top Guide	2008	EVT-1	15RIO EVT-1 of one Top Guide location to satisfy BWRVIP-26A. No Recordable Indications.
	2010	EVT-1	16RIO EVT-1 of 9 Top Guide locations to satisfy BWRVIP-183 initial selection of 5%. No Recordable Indications.

	2014	EVT-1	18RIO EVT-1 of 9 Top Guide locations to satisfy BWRVIP-183 continued selection of an additional 5%. No Recordable Indications.
		VT-3	VT-3 of four C-Clamps per ASME XI requirements. 180 degree C-Clamp had a Recordable Indication attributed to IGSCC of 0.25 inches in length.
Jet Pumps	93-96	VT-1, VOL, VT-3	Riser brace welds inspected every other outage. Jet pump beam volumetric exams once in ten years. Remaining components (welds (VT-1), set screws (VT-3), wedges (VT-3), sensing line clamps (VT-1 & VT-3), tack welds (VT-1), etc are once per period. Jet pump beams replaced.
	1993	VT-1M	7 RIO Beams replaced. Non-rejectable gaps in set screws reported over several outages.
	1998	VT-1 & EVT-1	10 RIO Jet Pumps 11-20 were inspected per BWRVIP-41 guidelines. No Recordable Indications.
	2000	VT-1 & EVT-1	11 RIO Jet pumps 01, 02, 03, and 04 inspected per BWRVIP-41. No Recordable Indications.
	2002	VT-1 & EVT-1	12 RIO Jet Pumps 05, 06, 11, and 12 inspected per BWRVIP-41, all jet pump set screw gaps measured, all wedges inspected. Excessive set screw gaps on JP-02 (shroud side set screw), JP-11 (shroud side set screw), JP-12 (shroud and vessel side set screws), JP-13 (vessel side set screw), JP-17 (shroud and vessel side set screws), and JP-20 (shroud side set screw). A total of eight auxiliary spring wedges installed. in the above listed jet pumps. Additional riser brace inspections were performed on JP-02, 11, 12, 13, 17 and 20. No Recordable Indications.
	2004	UT	13 RIO UT of all 20 Jet Pump Beams, BB-1, BB-2 only. No Recordable Indications.

	2006	EVT-1	EVT-1 of remainder of VIP-41 high priority welds, AD-1, AD-2 RS-1, RS-1A, RS-2, RS-3. No Recordable Indications.
		VT-1	VT-1 of jet pump wedges and set screw gaps pre-modification and post-modification. All 20 jet pump inlet mixer labyrinth seal EDM machining. New oversized wedges and wedge rods installed on 5 pumps. Auxiliary wedges installed in 3 set screws with excessive gaps after modification.
		VT-1	14 RIO VT-1 of all 20 Jet Pump wedges following inlet mixer labyrinth seal modification and VT-3 of modification hardware. Minor wear and movement found in several wedge rods and minor wear in two wedges. One wedge required expanded BWRVIP-41 exams due to wear. No set screw gaps or damage found. Expanded scope N2A JP01 RS6, RS7, MX-7 AS-1, AS-2. No Recordable Indications.
		EVT-1	EVT-1 of selected JP welds 2 each RS-1, RS-2, and RS-3 for second inspection cycle for High Priority welds and continued with Medium priority weld inspections for selected IN-4 4 welds, RS-8 and RS-9 welds 2 each. No Recordable Indications
	2008	EVT-1	N2D and N2G Riser brace welds RB-1 a-d and RB-2 a-d. No Recordable Indications.
		UT	15 RIO UT of all 20 Jet Pump Beams, BB-1, BB-2, and BB-3. No Recordable Indications.
		UT	UT of Jet Pump Diffuser Welds. All 20 jet pumps UT of AD-1, AD-2, DF-1, DF-2, and MX-2 welds. No Recordable Indications.
		EVT-1	EVT-1 of Jet Pump Medium and High priority welds. N2 F Riser welds RS-1, RS-1a, RS-2, and RS-3 High priority welds

			<p>3 each. N2D, N2E, N2G, and N2 H Riser Medium priority welds 6 each RS-6 and RS-7 welds 8 each and N2H riser RB1a-b and RB2-a-b welds. No Recordable Indications.</p>
		VT-1	<p>VT-1 of all 20 wedges WD-1 exams, one set screw AS-2 exam. Five jet pumps with previous wedge wear, no increase in wear noted, two jet pumps newly discovered wear this outage. Twelve jet pumps with previous wedge rod wear inspected, increase in wear noted in 4 jet pumps, newly discovered wear in one jet pump. Set screw on JP01 minor wear into bellyband. Three additional wedges showed minor rod wear.</p>
	2010	EVT-1	<p>16RIO EVT-1 High priority RS1, RS2, RS3 welds at two risers. RS6, RS7, IN4 welds at four jet pumps RB1a-d RB2a-d at two risers. All RS8 and RS9 welds per BWRVIP-41. Maximum weld coverage.</p>
		VT-3	<p>VT-3 Inspection of Jet Pump Sensing Lines and associated supports and welds in response to 2009 Unit 2 indication of movement of sensing line clamps. Sensing lines for 15 jet pumps inspected. 14 of 15 are jet pumps without clamps. JP20 inspected due to higher signal noise levels in this jet pump. No service induced defects were discovered. One indication attributed to a cutting tool was discovered and determined to be acceptable.</p>
		VT-1	<p>VT-1 of all Jet Pump Wedge WD-1 exams completed. 18 of 20 had prior rod or wedge wear. Five Jet Pumps had significant additional wedge and rod wear. Five Jet Pumps had additional minor rod wear. Eight Jet Pumps had no change in wedge or rod wear. Two continue to have no wedge or rod wear. Wedge movement noted on three jet</p>

			pumps.
		EVT-1	Scope expansion for 14 of 20 jet pumps. No cracking observed in EVT-1 weld exams RS6/RS7, VT-3 of MX7. No Recordable Indications.
		VT-1	<p>Jet Pump AS1 exams revealed significant set screw gaps and set screws digging into belly band.</p> <p>Set screw gaps observed in following locations:</p> <p>JP04VS 3 mils JP08SS 68 mils JP12SS 96 mils JP12VS 97 mils JP14VS 73 mils JP14SS 77 mils</p> <p>Set screw digging into belly band at 14 locations.</p>
		EVT-1	<p>EVT-1 - Set screw gaps greater than 58 mils requires RB-1 and RB2 exams. RB1a-d / RB2a-d EVT-1 exams performed on three risers due to gaps on JP08, JP12, and JP14.</p> <p>All exams No Recordable Indications</p>
		VT-1	<p>Modifications - Auxiliary Spring Wedges Installed at following locations due to set screw gaps or wedge movement:</p> <p>JP03VS JP04SS VS JP07VS JP08SS JP12SS VS JP14SS VS JP17SS</p> <p>Slip Joint Clamps were installed on Jet Pumps JP04, JP12, and JP14 due to the extent of wedge wear and movement</p>
	2012	EVT-1	17RIO EVT-1 original scope at two jet pump pairs, JP11/12, JP13/14 RB1a-d, RB2a-d, RS8, and RS9. JP11/12 RS9 two small weld shrinkage cracks observed, not service induced. No Recordable Indications in remaining welds. Due to

			<p>replacement of six Jet Pump wedges and observed set screw gaps, additional RB1, RB2, RS8, and RS9 scope expansion for six jet pump pairs. No Recordable Indications.</p>
		EVT-1 / VT-3	<p>Additional scope expansion EVT-1 of RS6 and RS7 welds and VT-3 of MX-7 welds for JP02, JP04, JP08, JP11, JP12, JP14, JP9, JP16, and JP18. No Recordable Indications.</p>
		EVT-1 / VT-3	<p>Additional weld scope expansion for main wedge replacement jet pumps JP02, JP04, JP08, JP11, JP12, and JP14. EVT-1 of OD AD1, AD2, DF1, DF2 at these jet pumps and RS3 at associated JP pairs. Also AD1, AD2 VT-3 exam of ID during replacement. EVT-1 of IN4 and MX2 exams on JP02 due to more extensive set screw damage. All exams No Recordable Indications.</p>
		VT-3	<p>VT-3 of the six installed original Power Up-Rate jet pump sensing line clamps. No Recordable Indications.</p>
		VT-1	<p>VT-1 of all twenty jet pump wedge WD1 locations. 18 of 20 wedges had previous rod or main wedge wear. New wedge and rod wear observed on JP06. No change in wedge and rod wear for JP05. Only JP16 has no wedge or rod wear. 17 wedges had additional rod or wedge wear and 19 of 20 wedges experienced movement. Use-As-Is for 13 of 19 main wedges with Recordable wedge / rod wear.</p>
		VT-1	<p>Modifications - Due to severity of wedge and rod wear, 6 main wedges and wedge rods were replaced, JP02, JP04, JP08, JP11, JP12, and JP14. No Recordable Indications for Baseline of new wedges.</p> <p>During main wedge replacement, with jet pump removed, inspections were performed on all six restrainer brackets, labyrinth seals and associated inlet mixer</p>

		<p>slip joints, belly bands, and set screws. All components showed some degree of damage and wear. More significant damage observed for JP02, and JP08. Restrainer bracket wedge bearing surfaces were not resurfaced; contact surface area with wedge is less than 100%. All indications were dispositioned as Use-As-Is. JP02 beam replaced with Type 2 weldless style.</p> <p>VT-1</p> <p>VT-1 exam of all accessible jet pump AS1 locations, those not obscured by auxiliary wedges. Set screw gaps and digging into belly band observed at following locations.</p> <p>Gaps:</p> <p>JP02VS 93.3 mils JP09SS 69.9 mils JP09VS 5.6 mils JP16SS 5.9 mils JP16VS 65.9 mils JP18VS 58.9 mils</p> <p>Set Screw Wear into Belly Band:</p> <p>JP01SS New Indication JP02 SS New Indication JP04SS New Indication JP04VS New Indication JP06SS New indication JP07SS Growth of previous wear JP08VS Growth of previous wear JP11SS New Indication JP12SS Growth of previous wear JP13SS Growth in previous wear JP13VS Growth in previous wear JP14SS New Indication JP15VS New Indication JP17SS New Indication JP18SS New Indication JP20SS Growth in previous wear JP20VS New Indication</p>
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			<p>VT-1 of set crew AS2 tack weld exams performed at all accessible tack welds, two additional cracked tack welds were discovered at JP14SS and JP01SS. Use-As-Is.</p> <p>VT-1 of previously existing 14 auxiliary wedges. JP04SS, VS, JP12SS VS and JP19VS No Recordable Indications. Over travel and wear found at JP02SS, JP06VS, JP20VS, JP07VS, JP08SS, and JP14VS. Over travel found at JP03VS, and JP17SS. Due to condition of auxiliary wedges and removal of auxiliary wedges for main wedge replacement, original auxiliary wedges were not reused and new auxiliary wedges were installed at:</p> <p>JP03VS JP04SS VS JP06VS JP07VS JP12SS VS JP14SS VS JP17SS JP20VS</p> <p>No Recordable Indications during baseline exams expect for JP02VS and JP17SS. They showed wedges were not centered and arms not in contact with restrainer bracket. Use-As-Is.</p> <p>Damage to the set screws from the aux wedges wearing into the set screws were observed on all the above locations during inspections when the auxiliary wedges were removed. Use-As-Is.</p> <p>Modifications - Auxiliary Spring Wedges Installed at following locations due to set screw gaps or wedge movement and wear:</p> <p>JP02 VS JP08 VS JP09 SS VS</p>
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		VT-3	<p>JP11 SS VS JP13 SS VS JP16 SS VS JP18 VS JP20 SS Baseline exam revealed No Recordable Indications.</p> <p>Due to extensive set screw damage at JP02SS and JP08SS, the existing auxiliary wedges were not reinstalled. JP17SS set screw threads staked to prevent backing out.</p> <p>VT-3 exams of Slip Joint Clamps after one outage showed gap at middle clamp interface for JP12 and JP14. JP04 No Recordable Indications. Clamps were removed for main wedge replacement. Baseline after reinstallation showed No Recordable Indications.</p> <p>Slip Joint Clamps were installed on remaining 17 jet pumps that did not have clamps installed in 2010 – JP01, JP02, JP03, JP05, JP06, JP07, JP08, JP09, JP10, JP11, JP13, JP15, JP16, JP17, JP18, JP19, and JP20. No Recordable Indications for Baseline exams.</p>
	2014	EVT-1	<p>18RIO EVT-1 of scheduled Jet Pump welds, 9 Draw Bead Locations, 1 DF1 Arc Strike investigation, 4 IN4, 8 RS1, 4 RS2, 3 RS3 RB1a-d, RB2a-d at three Riser Braces, N2C, N2D, and N2K. RS6 and RS7 welds at JP5, JP6, JP19, and JP20. All 10 RS8 and 10 RS9 welds for all 10 Riser Brace Locations. JP11/12 RS9 two small weld shrinkage cracks observed, not service induced, No growth from 2012. All other inspections, No Recordable Indications.</p>
		EVT-1	<p>Scope expansion EVT-1 exams for RS6 and RS7 welds JP03, JP07, JP09, JP10 JP13, JP14</p>
		VT-3	<p>Scope expansion VT-3 MX7 welds JP03, JP07, JP09, JP10 JP13, JP14</p>

		UT	UT of all AD1, AD2, DF1, DF2 and MX2 welds, 100 total. No Recordable Indications.
		UT	UT of 19 of 20 Jet Pump Beams. No Recordable Indications. JP02 beam replaced in 2012, not due for exam.
		VT-3	VT-3 of 6 Jet Pump Sensing Lines. One non-service induced indication showed no change.
		VT-1	<p>VT-1 of all 20 jet pump wedge WD1 exams. Additional Rod and Wedge wear identified on 17 of 20 main wedges</p> <p>JP01 New rod wear and restrainer bracket wear.</p> <p>JP02 New rod and wedge wear</p> <p>JP03 New rod and wedge wear, significant movement downward.</p> <p>JP04 New wedge wear</p> <p>JP05 JP06 No change from 2012.</p> <p>JP07 New rod wear.</p> <p>JP08 New rod and wedge wear</p> <p>JP09 New rod and wedge wear.</p> <p>JP10 New rod wear new wedge movement downward.</p> <p>JP11 New rod wear.</p> <p>JP12 New rod and wedge wear.</p> <p>JP13 new significant rod wear and wedge wear.</p> <p>JP14 New rod and wedge wear.</p> <p>JP15 Drop in wedge noted.</p> <p>JP16 No change from 2012.</p> <p>JP17 New rod wear.</p> <p>JP18 New rod and wedge wear.</p> <p>JP19 New rod wear.</p> <p>JP20 New rod and wedge wear.</p>
		VT-1	<p>VT-1 of Set Screw AS1 and AS2 exams. A total of 18 Recordable Indications. No change in condition of JP11-20 indications. Additional cracked tack welds, AS2 JP02 SS, JP03 SS, JP07SS. Additional wear noted in set screws during auxiliary wedge removal for JP03VS, JP04SS, JP07VS.</p>

		VT-1	<p>VT-1 of previously installed auxiliary spring wedges. JP02VS, JP08VS No Recordable Indications.</p> <p>JP03VS New wedge wear and over travel JP04VS Aux wedge not centered on set screw and new wear. JP06VS New belly band wear JP07VS New restrainer bracket and belly band wear, over travel. JP09VS Aux wedge not centered over set screw. JP09SS New wear into set screw and restrainer bracket, and not centered over set screw.</p> <p>JP11SS, JP12SS, JP13SS/VS, JP19VS, JP20SS/VS No Recordable Indications for previously installed wedges. JP14SS No change in condition of wear in belly band.</p> <p>JP11VS New wear between wedge bearing surfaces. JP12VS New over travel on wedge fingers. JP16SS New wear into Restrainer Bracket, no contact on underside with belly band. JP18VS New wear into restrainer bracket, aux wedge not centered over set screw.</p>
		VT-3	<p>VT-3 of Slip Joints. Gaps noted on JP01 through JP10. Blow by noted on JP05 and JP06.</p> <p>Gaps noted on Slip Joints JP12, JP13, JP16, JP18, and JP19. Blow by at JP12.</p>
		VT-3	<p>VT-3 Overview of Rams Head showed Blow by between JP02 and JP03, JP03 and JP04 JP07 and JP08 JP13 and JP14</p>
		VT-3	<p>VT-3 of all 20 Slip Joint Clamps. JP03 Collar wear JP08 Middle Guide Gap JP12 Middle Guide Gap, Middle Guide strut wearing into Diffuser Collar. JP18 Middle guide not in contact with clamp.</p>

		VT-1/VT-3	<p>Modifications performed during the outage, planned and emergent items:</p> <p>Replace 2 Jet Pump Beams with non-welded Ratchet beams, JP03, JP07.</p> <p>Replacement of 8 Slip Joint Clamps on JP02, JP03, JP04, JP07, JP08, JP12, JP14, JP18.</p> <p>Reseat Slip Joint Clamps on JP09 and JP10.</p> <p>Increase Slip Joint Clamp Preload on 14 Jet Pumps, JP01, JP02, JP03, JP04, JP07, JP08, JP09, JP10, JP12, JP13, JP14, JP17, JP18, JP20</p> <p>Install Anti Vibration System, AVS, on 6 Jet Pumps, JP01, JP03, JP04, JP07, JP13, JP14</p> <p>Remove 8 auxiliary spring wedges for Jet Pumps with new AVS, JP03VS, JP04SS/VS, JP07VS, JP13SS/VS, JP14SS/VS</p> <p>Remove/reinstall 7 auxiliary wedges to support AVS installation, JP02VS, JP08VS, JP09SS/VS, JP12VS/SS, JP18VS.</p>
LPCI Couplings			Not applicable to this plant
Lower Plenum Components			
CRD Guide Tubes	2002	EVT-1 and VT-3	12 RIO, inspected 4 guide tubes, CRGT-1, 2, and 3 per BWRVIP-47. No Recordable Indications.
	2004	EVT-1 and VT-3	13 RIO inspected 6 guide tubes, CRGT-1, 2, and 3 per BWRVIP-47. No Recordable Indications.
	2008	EVT-1 and VT-3	15 RIO inspection of 2 guide tubes, CRGT-1, 2, and 3 per BWRVIP-47. No Recordable Indications.
	2010	EVT-1 and VT-3	16 RIO inspection of 7 guide tubes, CRGT-1, 2, and 3 per BWRVIP-47. No Recordable Indications.

Guide Tubes Below Core Plate	2004	VT-3	13 RIO VT-3 of 40 Guide Tubes OD with GE Firefly remote inspection tool when lower plenum made available by Jet Pump mod. No Recordable Indications.
	2012	VT-3	17RIO VT-3 of 16 Guide Tubes OD during JP main wedge replacement. No Recordable Indications.
Stub Tubes	2004	VT-3	13RIO VT-3 of 40 Stub Tubes with GE Firefly remote inspection tool when lower plenum made available by Jet Pump mod. No recordable indications.
	2012	VT-3	17RIO VT-3 OF 16 Stub Tubes during JP main wedge replacement. No Recordable Indications.
Dry Tubes	Every other outage 2004	VT-3	13 RIO VT-3 for gross damage only for 6 of 12 dry tubes. Remaining 6 dry tubes were replaced.
Instrument Penetrations	1985 to 2014	VT-2	VT-2 exams during RPV pressure test each outage. No Recordable Indications.
Vessel Brackets	to date	VT-1 and VT-3	<p>1989 ASME Section XI inspections of jet pump riser brace, dryer, feedwater brackets, core spray header brackets, and surveillance capsule holder brackets, performed once per interval.</p> <p>Unit #1 Dryer Support Block C replaced due to fatigue cracking.</p> <p>“Measurable but acceptable wear”</p>
	1998	VT-3	<p>10RIO VT-3 Examinations were performed on the dryer hold down bracket attachment welds located at 138 and 221 degrees. No Recordable Indications.</p> <p>VT-3 Examinations were performed on the dryer support brackets and attachment welds located at 4, 94, 184 and 274 degrees. No new indications were observed. Previously recorded wear on support lug “D” at 274 deg. was verified and no additional wear noted.</p>

	2000	EVT-1	11 RIO Core spray piping and sparger brackets, feedwater sparger brackets, and dryer support brackets. No Recordable Indications.
	2002	VT-3 & EVT-1	12 RIO. Core spray piping and sparger brackets examined, dryer support bracket, and surveillance sample holders. Some measurable wear on "D" dryer support bracket was noted.
	2004	VT-3 & EVT-1	13 RIO Jet pump riser support welds, Dryer support brackets, no additional wear noted on "D" dryer support bracket, guide rod bracket, dryer hold down bracket, Core spray brackets for ASME XI with No Recordable Indications.
	2006	VT-3 & EVT-1	14RIO Jet Pump riser support welds, Core Spray Bracket pad to vessel welds, guide rod bracket and surveillance specimen attachment welds. No Recordable Indications.
	2008	VT-3 & EVT-1	15RIO All four steam dryer support brackets were polished smooth and level by the EDM process to create a level surface for the new steam dryer to rest on. Minor wear on two brackets was observed. The 274 degree bracket had pronounced wear pattern prior to EDM. Post EDM all bracket seating surfaces were level with no sign of wear. No Recordable Indications.
	2010	VT-1, VT-3 & EVT-1	<p>16RIO EVT-1 of 4 Jet Pump riser brace pad to RPV, 4 Feedwater sparger brackets to RPV wall. No Recordable Indications.</p> <p>VT-3 of 4 Core Spray Brackets, 4 Steam Dryer Hold Down Brackets, 1 Surveillance Specimen Bracket. No Recordable Indications.</p> <p>VT-1 of 4 Steam Dryer Support Brackets as part of new dryer vendor inspection program. Minor markings noted on mating surface with dryer, consistent with</p>

	2012	EVT-1, VT-3	expected patterns. 17RIO EVT-1 of 5 Feedwater Bracket to RPV welds per BWRVIP-48 and VT-3 of same welds per ASME Section XI. No Recordable Indications.
		VT-3	VT-3 of 6 Surveillance Brackets for engagement to satisfy recent Industry OE. Lower 120 degree bracket found not to be engaged. This surveillance sample was removed per the BWRVIP ISP and holder was not reinstalled. Three of 6 brackets also inspected per ASME Section XI. No Recordable Indications.
	2014	EVT-1, VT-1	18RIO VT-1 of 4 Core Spray Header Brackets on Bravo Core Spray Loop, PB exams per BWRVIP-18. No Recordable Indications. EVT-1 of same brackets, Bracket to RPV weld per BWRVIP-48 and ASME XI. No Recordable Indications.
		EVT-1	EVT-1 of 4 sets Jet Pump to RPV welds, JP11/12 welds A/B, JP13/14 welds A/B, JP15/16 welds A/B. No Recordable Indications.
		EVT-1	EVT-1 of all 4 Steam Dryer Support Brackets per BWRVIP-48 and ASME XI. No Recordable Indications
		VT-1/VT-3	VT-1 of Steam Dryer Support Brackets contact surfaces for wear pattern. Slight change in wear patterns for all 4 brackets and mating surfaces on the 4 Steam Dryer Seismic Lugs.
		VT-3	VT-3 of B Guide Rod per ASME XI. VT-3 for engagement only for Surveillance Specimen Brackets. No Recordable Indications.
Steam Dryer	2006	VT-1	14 RIO VT-1 exam of all steam dryer components per GE SIL 644 Rev. 1 and BWRVIP-139 in anticipation of EPU. Inspections included Hood Panel Welds, Lifting Lugs, Drain Channel Welds, Hood/End Panel Welds, Steam Dam to

			<p>Hood Joint Welds, Tie Bar Welds, Vane Bundle to Vane Assembly, and all previously identified indications. Minor growth in existing minor IGSCC cracks some new IGSCC minor cracks in Drain Channel and Hood/End Panel Welds. Newly discovered Vane Bundle Assembly to Seam Dam weld 8" fatigue crack. Fatigue crack in Upper Dryer Lifting Lug Support for the 220° Lifting Lug found. Entire flaw lengths for both locations were repaired through underwater welding.</p>
	2008	VT-1	<p>15RIO VT-1 Baseline PSI exam of new replacement steam dryer prior to installation per BWRVIP-139. Four welds required re-work after acceptance by supplier.</p>
	2010	VT-1 VT-3	<p>16RIO VT-1 of 380 weld locations of new steam dryer after one cycle per supplier inspection guidance. Minor IGSCC discovered in 3 locations in one drain channel weld HAZ, Use-As-Is.</p> <p>VT-3 of dryer hoods and skirts, 12 locations for gross damage. Includes Instrument Removal areas. No Recordable Indications.</p> <p>VT-3 of Lifting Rods and Lifting Eye tack welds. All four lifting eye set screw anti-rotation tack weld locations were found to be cracked. Modification performed to install fillet welds between lifting eye and rod. Modification requires Deviation Disposition due to selection of filler material.</p>
	2012	VT-1 VT-3	<p>17RIO VT-1 of all dryer welds inspected in 2010 as continuation of vendor inspection recommendations for new steam dryers. Overall VT-3 of dryer hoods and skirt. Underside exams performed best effort VT-1. Minor additional growth in IGSCC at dryer drain channel weld. Minor IGSCC discovered at 2 Lifting Lug support bracket welds and dryer skirt weld. VT-3 of outer hoods revealed areas of</p>

	2014	VT-1/VT-3	<p>discoloration. All indications were Use-As-Is.</p> <p>18RIO VT-1 of all dryer welds inspected in 2012 as continuation of vendor inspection recommendations for new steam dryers. Overall VT-3 of dryer hoods and skirt. Underside exams performed best effort VT-1. Cracking attributed to fatigue observed in two interior Divider Plate welds. Minor additional growth in IGSCC at dryer drain channel weld. Minor growth in IGSCC discovered at 2 Lifting Lug support bracket welds and dryer skirt weld. Minor cracking observed in Lifting Rod to Eye fillet welds. VT-3 of outer hoods revealed areas of discoloration, no change in patterns. All indications were Use-As-Is.</p>
Steam Separator	2008	VT-1	15RIO VT-1 of 25% of support ring to gusset welds. Minor IGSCC cracks found in 4 welds. Use-As-Is.
		VT-3	<p>VT-3 of all tie bars. No Recordable Indications in tie bars. Nine exhaust tubes exhibited minor areas of deformation / denting all Use As-Is.</p> <p>VT-3 of shroud head bolt windows and pins. Minor wear observed in three bolts. Use-As-Is disposition.</p> <p>UT exam of 31 "old style" shroud head bolts. Two bolts contained Recordable Indications and were replaced.</p>
		VT-1	16RIO VT-1 exam of 32 Gusset welds per EPU requirement, one quadrant and 4 previous indications. Minor growth in one of four previous indications, 6 gusset welds minor IGSCC cracks, Use-As-Is.
	2010	VT-3	Three Shroud Head Bolt VT-3 exams of existing window and pin wear. No change noted.
	2012	VT-1	17RIO VT-1 exam of 58 Gusset welds per EPU requirements, one quadrant and 10 previous indications. Growth observed in indication in one weld, no growth observed

	2014	VT-3	in remaining 9 welds. Minor IGSCC discovered in 13 additional welds. All indications Use-As-Is.
		VT-1	Three Shroud Head Bolt VT-3 exams of existing window and pin wear. No change noted from 2010 inspection.
		VT-3	VT-1 of 23 upper and lower gusset welds with previous indications. Growth detected in 7 upper gusset welds and in 4 lower gusset welds. Use-As-Is
		VT-3	Three Shroud Head Bolt VT-3 exams of existing window and pin wear. No change noted from 2012 inspection.
		VT-3	VT-3 Minor denting deformation observed in 3 Standpipes during Tie Bar overview. Use-As-Is
		UT	UT of 27 "Old Style" Shroud Head Bolts. No Recordable Indications.
Feedwater Spargers and Brackets	2008	VT-1 / VT-3	VT-1 of feedwater sparger welds and nozzles. VT-3 of brackets for OE for pin wear into bracket top. No Recordable Indications Noted.
	2010	VT-3	16RIO VT-3 of all 12 brackets per EPU for pin wear. Minor acceptable movement was observed in all 12 brackets. Minor pin wear observed in 3 brackets, Use-As-Is.
	2012	VT-3	17RIO VT-3 of all 12 brackets per EPU for pin wear. No change in wear observed in 3 brackets in 2010 or degree of movement.
	2014	VT-3	18RIO VT-3 of all 12 brackets. No change in pin wear observed in 5 brackets with documented pin wear. Minor movement noted in all 12 brackets.
Miscellaneous DM Welds	2008	UT	During the U1-15RIO, six (6) dissimilar metal (DM) IGSCC Category C welds and two (2) IGSCC Category E weld overlays were examined to the requirements of ASME Section XI, Appendix VIII, Supplement 10, using automated

	2010	UT	<p>ultrasonic equipment. These eight (8) welds all contained Alloy 82/182 weld material. No failures were identified. Included in these eight examinations was the examination of vessel nozzle to safe end weld N2D NOZ-SE, which was added to the U1-15RIO inspection scope when review of its previous 2004 exam data (prompted by EPRI/BWRVIP Letter 2007-367 as the result of recent industry DM weld issues) identified a 'sub-surface reflector or discontinuity'. The U1-15RIO examination determined that the sub-surface flaw was from original weld manufacture and that it has not grown, nor are there any forces causing it to grow. The sub-surface flaw meets ASME Section XI Table IWB 3514-2 requirements</p> <p>16RIO, five (5) dissimilar metal (DM) IGSCC Category C welds examined to the requirements of ASME Section XI, Appendix VIII, Supplement 10. No Recordable Indications</p>
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