

BWR Vessel and Internals Project
Vessel Internals Inspection Summaries
for Fall 2008 Outages

August 2009

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Reactor Internals Inspection History

Plant: **Browns Ferry Nuclear Plant: 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	2005	UT	<p>Baseline: UT (two-sided) examination of H1, H2, H3, H4, H5, H6, H7 performed per BWRVIP-76. Results as follows:</p> <p>Weld #/Scan Side/% Coverage/% Flawed</p> <p>H1 / Upper / 83.0% / 0.0%</p> <p>H1 / Lower / 82.1% / 2.1%</p> <p>H2 / Upper / 81.8% / 0.4%</p> <p>H2 / Lower / 88.7% / 0.0%</p> <p>H3 / Upper / 88.7% / 0.0%</p> <p>H3 / Lower / 79.2% / 5.1%</p> <p>H4 / Upper / 90.0% / 20.1%</p> <p>H4 / Lower / 89.6% / 2.6%</p> <p>H5 / Upper / 91.3% / 1.2%</p> <p>H5 / Lower / 91.3% / 0.0%</p> <p>H6 / Upper / 91.9% / 0.0%</p> <p>H6 / Lower / 91.9% / 11.2%</p> <p>H7 / Upper / 91.4% / 12.0%</p> <p>H7 / Lower / 78.0% / 0.0%</p> <p>Barring license renewal impacts, all seven horizontal welds will not be reinspected for ten (10) years.</p>
Shroud Support	2005	VT-1, VT-3	<p>Access Hole Cover Welds at 0° and 180°: Replacement required prior to Unit 1 Restart - Both access hole covers replaced with bolted repair design per DCN 51193. VT-1 visual baseline exam performed to inspect nut to retainer tack welds only. VT-3 visual baseline exam performed to document the as-left condition of the AHCs. No relevant indications on either cover.</p>
	2005	EVT-1	<p>Baseline inspection per BWRVIP-104 of the H8 weld from the upper side with greater than 10% coverage between Jet Pumps 1 to 20 and 10 to 11. The lower</p>

			side was performed during the removal of the Access Hole Cover modification with approximately 10% total coverage around the AHC areas at 0 & 180 degrees. No relevant indications.
	2005	EVT-1, UT	Baseline inspection per BWRVIP-104 of the H9 weld from the upper side with greater than 10% coverage between Jet Pumps 1 to 20 and 10 to 11. The lower side was performed during the removal of the Access Hole Cover modification with approximately 10% total coverage around the AHC areas at 0 & 180 degrees. Also performed UT from the outside surface of the RPV obtained from access of the N1A and N1B (Recirculation outlet nozzles) windows. Achieved coverage was calculated to be 19%. No relevant indications.
	2005	VT-3	Baseline inspection per BWRVIP-104 of the H10 and H12 welds at 0 and 180 degrees. These inspections were performed through the access hole cover openings during the repair. No relevant indications.
	2008	VT-3	VT-3 visual inspection of replacement access hole covers at 0 and 180 degrees to confirm that the AHC is in place and the hardware has not changed appreciably from the installed condition. No relevant indications were observed.
Core Spray Piping	2005	EVT-1	Baseline inspection per BWRVIP-18: EVT-1 visual examinations (T-Box welds @ 120 (P1, AP3, BP3) and 240 degrees (P1, DP3), Piping Bracket (PB) welds @ 15, 110, 130, 165, 195, 230, 250, and 345 degrees). EVT-1 visual examinations of elbow and sleeve welds for Downcomers A through D (P4d, P8a, P8b). No relevant indications.
	2001	UT	Baseline inspection per BWRVIP-18:

	2008	EVT-1, VT-3	<p>UT of T-Box welds @ 120 (P2) and 240 degrees (P2, CP3). UT of elbow and sleeve welds for Downcomers A through D (P4a, P4b, P4c, P5, P6, and P7). No relevant indications.</p> <p>Reinspection per BWRVIP-18-A: EVT-1 visual inspections of T-Box Welds (P1 (120° & 240°), AP3, BP3, DP3) and Downcomer Welds (AP4d, A-D8a, A-D8b); no relevant indications were observed. VT-3 visual inspection of Core Spray Sparger S-1/S-2 Repair Clamp; no evidence of clamp assembly looseness or degradation detected.</p>
Core Spray Sparger	2005	EVT-1	<p>Baseline inspection per BWRVIP-18: EVT-1 visual examinations of sparger welds (S1, S2, S4). BS2-R weld @ 9 degrees (Sparger to T-Box Weld, R side (Lower Sparger) recorded a crack adjacent to the weld and was structurally replaced by weld repair clamp per DCN 51193. AS2-R weld @ 354 degrees (Sparger to T-Box Weld, R side (Upper Sparger) recorded a pin hole adjacent to the weld and evaluated as "accept as is". Otherwise, no relevant indications.</p>
	2005	VT-1	<p>Baseline inspection per BWRVIP-18: VT-1 visual examinations of sparger welds (S3a, S3b, S3c, Sparger Bracket (SB) welds @ 7, 45, 88, 93, 135, 172, 187, 225, 267, 273, 315, and 352 degrees). No relevant indications.</p>
Top Guide (Rim, etc.)	2005	VT-3	<p>Baseline inspection (NON-BWRVIP): VT-3 visual examinations of Locations 4 (Grid Beam to Rim Top / Bottom Cover Plate Pins), 6 (Fuel Guard Weld and Bolting), 12 (Rim & Cover Plate Fabrication Weld), and 13 (Eye Bolt Boss). 1 area recorded as a condition on the plate (Location 12), evaluated as "accept as is". Otherwise, no relevant indications.</p>

	2005	EVT-1	Baseline inspection (NON-BWRVIP): EVT-1 visual examinations of Locations 1 (Grid Beam & Beam to Beam Crevice Slot) and 10 (Rim Pins). 3 areas recorded as not acceptable (Location 1), evaluated as "accept as is". Otherwise, no relevant indications.
	2005	EVT-1, VT-1	Baseline inspection per BWRVIP-26: Inspected Rim Welds (Location 11) (EVT-1) and Aligner Pins (Locations 2/3) (VT-1) at all locations. No relevant indications.
Core Plate (Rim, etc.)	2005	EVT-1, VT-3	Baseline inspection (2005) per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were EVT-1 inspected from the top side, and seventeen (17) holddown bolts (50%) were inspected from the bottom side with no reportable indications. All one hundred twenty-nine (129) plugs (Location 13) were VT-3 inspected; three plugs were replaced.
	2008	VT-3	Reinspection (2008) per BWRVIP-25: All thirty four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Three (3) core plate plugs replaced during Unit 1 Recovery were VT-3 examined to confirm that the replacement plug was in place. No evidence of movement, wear, or misalignment was visible.
SLC	2007	EVT-2	(2007): Bare metal examination (EVT-2) performed per BWRVIP-03, -27. No reportable indications found.
	2008	EVT-2	(2008): Bare metal examination (EVT-2) performed per BWRVIP-03, -27. No relevant indications were observed.
Jet Pump Assembly	2005	UT, VT-1	Baseline (2006) per BWRVIP-41, -138: UT of holddown beam locations BB-1, BB-2, and BB-3 (Jet Pumps 1 thru 20) -

	2008	EVT-1, VT-3	<p>no reportable indications.</p> <p>Baseline (2005) per BWRVIP-41 of all High and Medium Priority Weld locations. Circumferential crack indication in backing ring for DF-3 weld (Jet Pump 19) will be inspected for change during UIC7 RFO in Nov. 2008.</p> <p>Baseline (2005) per BWRVIP-41: VT-1 of Medium Priority Location WD-1 (Jet Pumps 1 thru 20); No wedge wear observed. VT-1 of Set Screw Locations AS-1 and AS-2 performed for Jet Pumps 1 thru 20. Backlighting identified nine (9) set screw gaps ranging from 12 to 35 mils in width. Two reportable linear indications identified on one of two set screw tack welds for Jet Pump Nos. 15 (shroud-side) and 16 (vessel-side). Nine (9) auxiliary wedges installed on Jet Pumps 2, 3, 4, 6, 7, 8, 10, 12, and 14.</p> <p>VT-3 visual examination of the holddown beam for Jet Pump #8 was performed in response to misalignment concerns raised during Unit 1 Recovery and an RFI identified during the October 2007 INPO BWRVIP Review Visit. There was a minor misalignment with the beam but no relevant indications were observed.</p> <p>VT-3 visual examination of sensing line clamps installed during Unit 1 Recovery 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> <p>EVT-1 visual inspection performed of a circumferential crack indication in the backing ring for High Priority Location DF-3 (Jet Pump #19) to determine if the</p>
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	2008	VT-1	<p>indication had increased in length. This indication was previously recorded during Unit 1 Recovery and does not appear to have changed.</p> <p>Reinspection (2008) per BWRVIP-41 R1: VT-1 of Medium Priority Location WD-1 (Jet Pumps 1 thru 20) - No vibration-induced wear noted. Indication of vertical wedge movement at ten (10) locations was observed, but the movement markings did not appear to be recent and correlated with findings during the Unit 1 Recovery examinations. VT-1 of Set Screw Locations AS-1 and AS-2 performed for Jet Pumps 1 thru 20. Backlighting identified no new set screw gaps. Inspection results identified eight apparently new set screw tack weld indications in addition to the two set screw tack weld indications that were previously observed during Unit 1 Recovery. Justification for Continued Operation (JCO) was prepared and concluded that the jet pumps are acceptable as-is for one fuel cycle. Nine (9) auxiliary spring wedges installed during Unit 1 Recovery were inspected to verify contact; no relevant indications were observed.</p>
Jet Pump Diffuser	N/A	N/A	N/A
CRD Guide Tube	2005	EVT-1, VT-3	Baseline (2005) per BWRVIP-47: 19 control rod guide tubes (10% of total) 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	2005	VT-3	VT-3 examinations performed for accessible areas for 145 stub tubes at various core locations. No damage or distortion was noted.
In-Core Housing	N/A	N/A	N/A

Dry Tube	2006	VT	All twelve (12) SRM/IRM 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 (2027).
Instrument Penetrations	2007	VT-2	Visual leak check is performed during Unit Startup. No reportable indications reported.
	2008	VT-2	Visual leak check performed during Unit Startup. Leak observed in safe-end to pipe weld for N11B instrumentation nozzle was repaired with weld overlay.
Vessel ID Brackets	2005	EVT-1, VT-1, VT-3	(2005): The dryer support brackets, guide rod brackets, feedwater sparger brackets, core spray piping brackets, jet pump riser support bracket, and shroud support were visually inspected in accordance with BFN Surveillance Instruction 1-SI-4.6.G. No indications recorded.
	2008	VT-3	(2008): VT-3 visual examination performed of all twelve (12) Feedwater Sparger End Brackets and Retaining Pins. No relevant indications were observed.
LPCI Coupling	N/A	N/A	Not applicable to this plant
Steam Dryer	2005	VT-1, VT-3	(2005): Full baseline inspection performed in accordance with BWRVIP-139 and GE SIL 644 R1. Three Drain Channel Vertical Welds were found to have indications, and were repaired with weld overlays.
	2008	VT-1, VT-3	(2008): Four previously recorded relevant indications noted during Unit 1 Recovery were VT-1 visually examined and confirmed. No change in condition was noted from what was previously reported. General visual inspection (pre-EPU baseline) performed in accordance

			<p>with BWRVIP-139 and GE SIL No. 644 R1; no relevant indications were observed.</p> <p>In preparation for ascension to EPU and operation at EPU conditions, various steam dryer modifications were performed. All thirteen (13) Steam Dryer Tie-Bars were replaced with a new design and three (3) additional steam dam gussets on each steam dam were added to the Steam Dryer. A visual (VT-1) inspection was performed to document the as-left condition.</p>
DM Welds - BWRVIP-75-A Cat. C	2008	UT	3 welds inspected (RCRD-1-33, CS-1-002-008, CS-1-002-033A): PDI-qualified, automated exams. No flaws identified, no repairs.
DM Welds - BWRVIP-75-A Cat. D	2008	UT	2 welds inspected (DRHR-1-2, DRHR-1-11): PDI-qualified, automated exams. No flaws identified, no repairs.

Reactor Internals Inspection History

Plant: **Dresden 3**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Spray Piping	1980's Through 1994	VT-1	IEB 80-13 (1 MIL) VT-1 of piping and welds in annulus. Indications observed at two lower elbow to pipe welds 2P4c and 4P4c. These welds were repaired using GE designed clamps.
	4/97-R14	UT/EVT-1	UT Baseline inspections per BWRVIP-18 of all piping circ welds in annulus. Repairs removed and not reinstalled. EVT-1 of any piping welds in annulus inaccessible to scanner. Additional flaws identified on 1, 2 and 3P8a welds.
	2/99-R15	EVT-1	EVT-1 examined undemonstrated welds P8a and P4d on all four downcomers. Installed a "bumper" repair on 1P8a at the 80° downcomer.
	9/00-R16	UT/EVT-1	UT of "Target" welds and EVT-1 of all undemonstrated welds. Also EVT-1 of welds made inaccessible from repair installed on the 80° downcomer including 1P7, 1P4c, 1P4d, 1P8a and b. Welds 2P4c and 4P4c exhibited flaw growth as predicted by Flaw Evaluation.
	10/02-R17	VT-1	Six P4 welds for presence of "excessive grinding". NRI. All undemonstrated welds P8a and P4d and long seams on thermal collars, NRI
	10/04 – R18	EVT-1	Examined piping welds 1P1, 2P1, 1P2, 2P2, 1P3, 2P3, 3P3, 4P3, 2P4a, 2P4b. Eight Core Spray Piping brackets, attachment weld, pad surface and HAZ of cladding. NRI.
		NA	Performed Core Spray Lower Sectional

	11/06 – R19	VT-1/VT-3	Replacement (all four downcomers) eliminating welds 1-4P4c, 1-4P4d, 1-4P8a, 1-4P8b, 1-4P5, 1-4P6, 1-4P7.
			Core Spray Lower Sectional Replacement - VT-1 of all accessible bolting, keepers, ratchets and latch springs. NRI - VT-3 of all repair hardware. NRI
		EVT-1	Examined piping welds: 1P1, 2P1, 1P2, 2P2, 1P3, 2P3, 3P3, 4P3, 3P4a, 3P4b and two piping brackets, attachment weld, pad surface and HAZ of cladding. NRI.
	11/08 – R20	EVT-1	Examined piping welds: 1P1, 2P1, 1P2, 2P2, 1P3, 2P3, 3P3, 4P3, 4P4a, 4P4b and two piping brackets, attachment weld, pad surface and HAZ of cladding. NRI.
		VT-1	Examined bolting and tack welds for one piping bracket
Core Spray Sparger	1980's Through 1994	VT-1	IEB 80-13 (1 MIL) VT-1 of spargers and tee-boxes. NRI.
	4/97-R14	EVT-1, VT-3	Examined tee-box cover plate welds (S1), tee-box to sparger arms (S2), and sparger end caps (S4) to EVT-1. NRI. Examined spargers nozzles (S3) and the sparger piping to VT-3. NRI.
	10/00-R16	EVT-1, VT-3	Per BWRVIP-18: EVT-1 of all S1, S2 and S4. VT-1 of 50% of S3. NRI.
	10/04 – R18	EVT-1	Sparger to End Cap Welds: 1S4 (7°), 1S4 (183°), 2S4 (7°), 2S4 (183°), 3S4 (3°), 3S4 (187°), 4S4 (3°), 4S4 (187°). NRI.
		VT-1	Nozzle Tack Welds: 3S3 (187-260°), 3S3 (260-003°), 4S3 (187-290°), 4S3 (290-003°). NRI. -All 12 sparger brackets and bracket to shroud welds. NRI. -Core Spray Lower Sectional

	11/08 – R20	EVT-1	Replacement (all four downcomers) eliminating inspection of the following welds: 1-4S1, 1-4S2a-b.
		VT-1	Sparger to End Cap Welds: 1S4 (7°), 1S4 (183°), 2S4 (7°), 2S4 (183°), 3S4 (3°), 3S4 (187°), 4S4 (3°), 4S4 (187°). NRI.
			Nozzle Tack Welds: 1S3 (007-080°), 1S3 (080-183°), 2S3 (007-110°), 2S3 (110-183°). NRI.
			All 12 sparger brackets and bracket to shroud welds. One relevant indication identified. Indication acceptable for one cycle of operation
Attachment Welds	4/94-R13	VT-1	Section XI inspections of jet pump riser brace, dryer, feedwater sparger, core spray, and surveillance capsule holder brackets, performed once per interval. NRI.
	10/00-R16	VT-1	ASME Section XI B-N-2, surveillance capsule holder attachments in beltline. All six sets examined. NRI.
	10/02-R17	EVT-1	BWRVIP-48 attachments: four dryer lugs, eight feedwater sparger end-brackets, eight Core Spray Piping brackets, attachment weld, pad surface and HAZ of cladding. NRI
	10/04 – R18	EVT-1	Four steam dryer wall support lugs, lug to pad, and pad to vessel attachment welds. Eight feedwater sparger lug to vessel attachment welds. NRI.
		VT-1	Eight feedwater sparger end-bracket lug assemblies. NRI
	11/06 – R19	VT-3	Examined attachment welds for two Core Spray piping brackets and all four steam dryer wall support lugs in accordance with ASME Section XI. NRI

	11/08 – R20	EVT-1 EVT-1 and VT-3 VT-3	Inspected piping bracket to piping weld and bracket to vessel attachment weld on 2 core spray piping brackets. NRI - Examined attachment welds for two Core Spray piping brackets. NRI - Examined surveillance capsule holder bracket attachment welds. NRI Examined steam dryer and steam separator guide rod attachment welds. NRI
Core Shroud	4/94-R13 4/97-R14 2/99-R15 10/00-R16 10/04 – R18	EVT-1 and UT EVT-1 and UT NA VT-1 UT EVT-1	Inspections per SIL 572, extensive indications in circumferential welds. Inspected all shroud repair design reliant structure prior to installation of comprehensive repair (4 GE designed tie-rod assemblies). Inspections consisted of EVT-1 of all ring segment welds (accessible surfaces), UT for minimum ligament of all vertical welds accessible to scanner and EVT-1 for minimum ligament on all accessible surfaces of all vertical welds not accessible to the scanner. Installed four tie-rod shroud repair assemblies and four core plate wedges. Examined all four tie-rod assemblies and core plate wedges at locations specified by the manufacturer (GE). Examined a 40° segment of H4 to assist in shroud qualification of Core Spray Repair. NRI. Examined Ring Segment Welds V1-V4 (Shroud Head RSWs), V8-V13 (Top Guide RSWs), and V20-V25 (Core Plate Support RSWs). Historical indications at V23 and V25 revealed no apparent change since last inspection in R14 (indications are not in HAZ. All other

	11/06 – R19	UT	<p>RSWs NRI.</p> <p>GE utilized the Telescoping Shroud Scanner to perform UT on Shroud vertical welds V5-V6, V14-V19, V26-V28. Coverage obtained as follows: V5 – 80.4% V6 – 34.8% V14 – 66.8% V15 – 75.6% V16 – 80.4% V17 – 77.9% V18 – 95.5% V19 – 69.8% V26 – 13.7% V27 – 69.4% V28 – 57.6%</p> <p>One indication identified on V27 (1.8" in length). Indication acceptable for continued operation in accordance with BWRVIP-76.</p>
		EVT-1	<p>Performed one-sided EVT-1 examinations on vertical welds. NRI. Coverage as follows: V7 – 40% V29 – 40% (between H7 and H8 welds) V30 – 0% (between H7 and H8 welds) V31 – 30% (between H7 and H8 welds) V32 – 0% (between H7 and H8 welds)</p>
		VT-3, EVT-1	<p>Performed GE recommended inspections of shroud repair hardware. Scope included inspections to address susceptible areas based on indications found at Hatch. One RI identified due to retainer clip not engage. This retainer clip is redundant and did not require repair.</p>
	11/08 – R20	EVT-1	<p>Examined historical indications at V23 and V25. No apparent change from previous inspection.</p>
Shroud Support	4/94-R13	UT/VT-1	<p>Access hole cover VT/UT for circ and radial flaws. NRI.</p>

	4/97-R14	EVT-1	Examined H8 and H9 for about 12" at 4 locations of shroud repair hardware attachment areas. NRI.
	2/99-R15	EVT-1	Per BWRVIP-38: Examined H8 and H9 between Jet Pumps 20 and 1 (312°-357°). NRI. Requirements for this inspection cycle are satisfied. NRI.
	10/02- R17	EVT-1	Welds on Access Hole Covers at 155° and 335°. The D3 AHC's have not been repaired. NRI.
	10/04 – R18	EVT-1	Examined H8 and H9 between Jet Pumps 10 and 11 (312°-357°). NRI
	11/06 – R19	EVT-1, VT-3	VT-3 of accessible areas of H9 and EVT-1 of 10% of H9 (between Jet Pumps 10 and 11). NRI.
	11/08 – R20	EVT-1	Examined H8 and H9 between Jet Pumps 20 and 1 (132°-177°). NRI.
SLC	10/02 - R17	PT	PT of surface of Safe-end extension and safe-end to nozzle weld. NRI.
	11/06 – R19	PT	PT of surface of Safe-end extension and safe-end to nozzle weld. NRI.
Jet Pump Assembly	4/94-R13	VT-1	Hold down beams, beam bolt keepers, lockplates and retainers; restrainer wedges, stops, and adjusting screws, clamp bolts and keepers; riser brace assemblies, adapters and baffle plate welds, sensing lines and sensing line brackets per various SILS. Prior to R13, visually inspect 100% of upper areas of each Jet Pump including beam retainers every other outage.
	4/94-R13	VT-1	Riser brace arm to yoke welds on three upper (secondary) riser braces found cracked. Repairs are not required. No other reportable indications.

			Diffuser to baffle plate welds on all twenty jet pumps. NRI.
	4/97-R14	EVT-1	All ten RS-1, 2, 3, 4 and RS-5. NRI.
	2/99-R15	EVT-1	Initiate BWRVIP-41: Medium Priority: 50% of DF-1, MX-1, MX-3 and IN-5 welds. All twenty RB-1, 2, RS-8 and RS-9. NRI. High Priority: 50% of DF-2, AD-1, 2 and 3. NRI.
		VT-1	Examined all twenty WD-1 locations. NRI.
	10/02-R17	EVT-1	Repeat examination of four DF-2 welds to improve coverage. NRI. Five RS-9 and 10 riser to secondary brace yoke welds, NRI. Eleven secondary brace RB-3 welds per ASME XI and BWRVIP-48. NRI.
	03/03-D3M09	VT-1	Verified acceptable restrainer set-screw gaps when replaced beams (reference Jet Pump Beams section of this report). Aux wedges installed two set-screw locations. The other locations were NRI.
	10/04 – R18	VT-1	Examined jet pump sensing line clamps on jet pumps 1, 2, 3, 10, 11, 12, 13, & 20.
		EVT-1	Examined all twenty WD-1 locations. Noted normal movement of wedges 11 & 20 with no abnormal wear. All other wedges NRI. Examined AS-1 (set-screw gaps) on five jet pumps: 8 (Vessel Side, Shroud Side), 9 (VS,SS), 11 (SS), 12 (VS,SS), 20 (VS,SS). No unacceptable gaps were identified (all less than 0.010”). Examined AS-2 (set-screw tack welds) on five jet pumps: 8 (VS, SS), 9 (VS,SS),

	11/06 – R19	UT EVT-1	<p>11 (SS), 12 (VS, SS), 20 (VS,SS). Lack of fusion of tack welds was identified on jet pumps and set screws: 9 (VS), 11 (SS), & 13 (VS). Indications noted on the tack welds for 9 and 13 were accepted as-is for one-cycle. Jet pump 11 had a set screw missing from its housing. The set-screw was retrieved and an auxiliary wedge was installed. Also discovered during the inspection of jet pump 11 was a poor quality tack weld on the swing-gate keeper. The condition of the bolt keeper was accepted for one cycle.</p> <p>The auxiliary wedge installed during D3M09 on jet pump 13 was examined and historical cracking was re-identified on the set-screw mounting block. This indication is historical and was caused by the ejection of the inlet-mixer following the failure of a beam-bolt. The indication has been accepted as-is. Also discovered on jet pump 13 was a gap between the vessel side restrainer bracket and the swing gate. The condition of the bracket and swing gate was accepted for one cycle.</p> <p>Examined RS-10 & -11 on jet pumps: 2, 3, 4, 12, & 13. NRI. Examined RS-1, 2, & 3 on five jet pump pairs: 1/2, 3/4, 9/10, 11/12, 13/14. NRI.</p> <p>Examined MX-3a&b, DF-1, -2 & -3 and AD-1, -2 on jet pumps: 2, 3, 4, 5, 8, 9, 12, 13, 18, & 19. NRI.</p> <p>Examined RB-1 & 2 on jet pumps: 1, 2, 3, 4, & 20. NRI Examined RS-4 & 5 on jet pump pairs: 9/10, 11/12, 13/14. NRI Examined RS-8 & 9 on jet pump pairs: 1/2, 3/4, 5/6. NRI Examined MX-1 and IN-5 on jet pumps: 1, 2, 3, 4, 5, 11, 12, 13, 14, and 15. NRI</p>
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		VT-1	Examined aux wedge on JP 11. RI for slight wear on JP 11 aux wedge. Justified continued operation for one cycle. Examined main wedge WD-1 on JPs 1, 2, 3, 4, and 11 for wedge wear. NRI.
		NA	- Installed new ratchet style swing gate on JP 11 to address degraded keeper tack weld identified in R18. - Staked threads due to cracked tack welds (found in D3R18) and installed aux wedges on JP 9 vessel side and JP 13 vessel side set screws.
	11/08 – R20	EVT-1	Examined RB-3 on JPs 1, 2, 3, 4 and 5. NRI
		VT-1	- Examined aux wedges on JPs 9, 11 and 13. RI for slight wear on JPs 9 and 11 aux wedges. Justified continued operation for one cycle. - Examined AS-1 on JP 9 SS and JP 11 VS. NRI - Examined main wedge WD-1 on JPs 1, 2, 7, 8, 9, 11, 12, 13, 14, 17, 18, 19 and 20 for wedge wear. One RI for a bent main wedge handle. Condition acceptable as-is. - Examined swing gate keeper tack welds on JPs 7, 8, 9, 10 and 20. NRI - Examined JPs 1 and 2 transition pieces and sensing lines to address operating trends. NRI - Examined JP 11 swing gate bolting and ratchets. Swing gate installed in D3R19. NRI
Jet Pump Beams	4/94-R13	UT	Jet pump beams are UT examined each outage using technique capable of detecting cracking at throat and ears. Original group 1 beams.
	4/97-R14	UT	Examined all beams. Two beams with indications replaced. Balance NRI.

	2/99-R15	UT	Examined all beams. NRI.
	10/00-R16	UT	Two beams with indications replaced with group 2 style beams. Balance NRI.
	03/03-D3M09	NA	Replaced all 17 original beams with weld-less keeper group 3 beams.
	10/04 – R18	VT-3	Examined 17 group 3 beam bolt retainer mechanisms (weld-less keeper) to ensure all keepers were engaged. NRI.
		EVT-1	Examined 3 group 3 welded keeper style beams. BB-1 and BB-2 on Jet Pumps 5, 8, and 13. NRI.
	11/06 – R19	NA	Pre-emptively replaced ageing beams on JPs 5, 8 and 13 rather than UT examine.
	11/08 – R20	VT-1	- Examined beam ratchet engagement on JPs 5, 8 and 13 after 1 cycle of operation. NRI - Examined beam and ratchet engagement on JPs 1 and 2 to address operating trends. NRI
LPCI Couplings	NA		
Lower Plenum	4/97-R14	MVT-1	CRD Stub Tube, CRD H7. NRI.
	4/97-R14	MVT-1	ICH/RPV-1 and ICHGT/ICH-1, two inspected from cell H7. NRI.
	10/00-R16	EVT-1	Per BWRVIP-47: examined CRGT-1, 2 and 3 on D10. NRI.
	10/02-R17	EVT-1 and VT-3	Examined 9 CRGT-1, 2 and 3 and FS/GT-ARPIN. NRI. This completes first 5% in 6 years.
	10/04 – R18	VT-3	Bottom Head Drain cleaning project created access for the following examinations: - Examined eight Stub Tube to Vessel Welds (ST/RPV-1) and eight Stub Tube to CRD Housing Welds (CRDH/ST-1) in

	11/08 – R20	VT-3 EVT-1	<p>cells: F7, G6, G7, G8, H7, H8, H9, J8. NRI.</p> <p>- Inspected two locations for Core Plate to Stiffener Plate Stitch welds: G7 & G8 beam welds. NRI.</p> <p>- Examined two locations for Stiffener Plate to Stiffener Rods welds: G7 and H8 beam tie rods. NRI.</p> <p>Examined 9 CRGT-1 and FS/GT-ARPIN. NRI. This completes 10%.</p> <p>Examined 9 CRGT-2 and 3. NRI. This completes 10%.</p>
Steam Dryer	10/04 – R18	“Best effort” VT-1	<p>- Examined exterior surfaces including outer hoods, historical repair areas, tie bars and attachment welds, four lifting assemblies, four hold down assemblies, two man way covers, cover plates, fourteen gussets, upper ring welds, vertical guide welds, outlet plenum lower horizontal welds, outlet plenum vertical welds, and perforated plates. Multiple indications identified, including structural fatigue flaws in the outer hood areas. Outer hoods modified to repair cracking.</p> <p>- Examined interior surfaces including: drain channel welds, supports, vertical and horizontal plates, support ring, horizontal cross beams, and horizontal cross beam gussets. Initial start-up steam sample probe discovered missing. Probe located and retrieved from steam separator. Multiple non-structural indications also noted.</p>
	11/06 – R19	VT-3 “Best Effort” VT-1	<p>Examined interior and exterior skirt. Indications noted.</p> <p>Performed VT-1 inspection of outer hood welds on old dryer where previous indications had been identified and repaired. NRI.</p>

	11/08 – R20	NA “Best Effort” VT-1	Installed new dryer. Examined critical components on steam dryer after one cycle of operation per GE recommendations. One RI where dryer contacted steam separator guide rod (RI on guide rod also). Dryer and guide rod indications acceptable for one cycle of operation.
Top Guide	4/94-R13	VT-1	Examined beam intersections in five cells in response to industry experience. NRI.
	4/97-R14	VT-1	Per BWRVIP-26, baseline examined all four top guide alignment assemblies. NRI.
		EVT-1	Examined rim to bottom plate weld at the four aligner assembly locations. NRI.
	10/00-R16	VT-1	Examined 0° and 270° top guide alignment assemblies. NRI.
		EVT-1	Examined rim weld 11. NRI.
	10/04 – R18	VT-1	Examined 90° and 180° top guide alignment assemblies. NRI.
		EVT-1	Examined rim to bottom plate weld at 90° and 180°. NRI.
	11/06 – R19	EVT-1	Examined rim weld from cell 03-34. NRI
	11/08 – R20	VT-1	Examined 0° and 270° top guide alignment assemblies. NRI.
		EVT-1	Examined top guide rim weld. NRI
Vessel	10/02 – R17	UT	Examined vertical welds SC1A, SC1C, SC2B, SC3A, SC3B, SC3C, SC3D, SC4A, SC4B, SC4C, SC4D. NRI.
	10/04 – R18	UT	- Examined vertical welds SC1B, SC2A, SC2C, SC3A, SC3B. NRI. Satisfies third interval Section XI inspection

			<p>requirements.</p> <p>- Examined two original vessel construction base metal repair areas in beltline as required by Section XI. NRI.</p>
	11/06 – R19	VT-3	<p>Inspected cladding in accordance with ASME Section XI. NRI.</p>
	11/06 – R19	VT-3	<p>Inspected the reactor vessel cladding from the shroud flange to the reactor flange in accordance with ASME Section XI. NRI</p>
Nuclear Instrument Dry-tubes	4/94-R13	VT-1	<p>Identified one cracked dry tube (24-37). Replaced. Examined every other outage to date. Per Reutter-Stokes recommendations, have not reached manufacturer's service life.</p>
	11/06 – R19	VT-1	<p>Examined two SRM and four IRM dry tubes from 3 sides to meet SIL 409. NRI</p>
	11/08 – R20	VT-1	<p>Examined two SRM and four IRM dry tubes from 3 sides to meet SIL 409. NRI</p>
Steam Separator	10/04 – R18	VT-1	<p>Examined shroud head bolt pin and window condition. RI identified minor wear that was evaluated as-is for continued operation.</p> <p>Examined eight standpipe to shroud head welds and eight gusset to ring welds, NRI.</p>
Feedwater Spargers	11/06 – R19	VT-1	<p>Inspected all of the end bracket pins for tack weld and pin wear. RI – Wear identified between head of pin and bracket on four brackets. Justified operation for one cycle.</p> <p>Inspected sparger repair hardware from D2R18 isokinetic probe retrieval. NRI</p>
	11/08 – R20	VT-1	<p>Inspected all of the end bracket pins for tack weld and pin wear. RI – Wear identified between head of pin and bracket on five brackets. Justified</p>

			operation for one cycle.
Piping Welds (BWRVIP-75-A)	11/08 – R20	UT	Performed manual UT on four (4) IGSCC Category C welds and two (2) IGSCC Category A welds. None of these welds were dissimilar metal (DM) welds. No relevant indications identified.

Reactor Internals Inspection History

Plant: James A. FitzPatrick Nuclear Power Plant

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Re-inspections
Core Shroud	1994 to present	UT, EVT-1 VT-3 For Shroud Tie Rods	<p>94/95 Outage: Planar flaws on H2, 35" length intermittent (ID/OD) less than 0.75" depth by UT; two small planar flaws on H3, 1.42" length (ID/OD) by UT . A calculated 136" of vertical weld were inspected by EVT-1 or UT with no relevant indications.</p> <p>96 Outage: Crack like indications on H2, 55" length intermittent (OD) by EVT-1. This cracking is being mitigated by the shroud repair from 94/95 outage with 10 tie-rods; vertical crack like indications on SV5A intermittent (OD) totaling 6-3/4" in length out of total 92", and two horizontal 1/2" each (one OD and one ID). Crack like indications were less than 10% of weld length and are within allowable per BWRVIP-07. Shroud inspections included 25% vertical welds with 50% at beltline areas, and 3 tie-rods. A calculated 286" of vertical welds were inspected. No relevant indications on other welds. Tie-rod assemblies were found acceptable.</p>
	Fall 1998 (RO13)	EVT-1	<p>Baseline completed per BWRVIP-07 Guidelines (by EVT-1) for all vertical welds. 100% of beltline shroud welds inspected in RO-13. Relevant indications found in 5 welds as follows:</p> <ul style="list-style-type: none"> *SV5A OD-There are 6 indications with a combined length of 9.3 inches. *SV5B OD-There are 18 indications with a combined indication length of 45.8 inches. *SV6A OD-There is 1 indication that is measured to be 1" long. *SV6B ID-There is 1 indication in the

	2000(RO14)	EVT-1	<p>weld which is measured to be 0.8 inches long.</p> <p>*SH4 Indication-Indication is 3 inches from SV5A ID and is 6 inches long and goes across the SH4 horizontal weld.</p> <p>No relevant indications noted on other vertical welds.</p> <p>Re-inspected per BWRVIP-76 Guidelines: Vertical Welds SV5A, SV5B, SV6A and SV6B. Relevant indications found in these welds are as follows:</p> <p>*SV5A OD-There are 7 indications total with a combined indication length of 11.7" vertical and 3.3" circ.</p> <p>*SV5B OD-There are 19 indications total with a combined indication length of 50.7" vertical.</p> <p>*SV6A OD-There is one vertical indication that is measured to be 1" long.</p> <p>*SV6B ID-There is one vertical indication in the weld measured to be 1.25" long.</p> <p>*SH4 ID-There is 2 vertical indications across SH4 with total combined length of 6.4". The closest indication is 3" from SV5B. This indication is branching out near the bottom portion.</p>
	2002(RO15)	EVT-1	<p>Re-inspected by BWRVIP-76 Guidelines: Vertical Welds SV2B, SV5B, and SV8A; and Radial Ring Welds SV3A and SV3D. Relevant indications were only noted on the SV5B weld, as follows:</p> <ul style="list-style-type: none"> SV5B ID and OD. There appears to be no discernable changes this outage affecting the cracks length from RO14; though one additional indication is noted on the ID CCW side of the weld approximately 1/2" long. This indication may be associated with indications on the opposite side (OD) at the same

			location.
	2004(RO16)	EVT-1.	Inspected Vertical Welds SV2A, SV8C, SV9A, SV9B and SV9C. No relevant indications noted.
	2006 (RO17)	UT	Inspected Vertical Welds SV4A, SV4B, SV5A and SV5B. No relevant indications noted for welds SV4A and SV4B. For Welds SV5A and SV5B, there is close correlation of flaws from previously seen by EVT-1 in R14, with limited crack growth and no through wall indications. Identified some additional (short intermittent) flaws at Weld SV5A. All indications were satisfactorily disposition
		EVT-1	Inspected Vertical and/or Radial Welds SV3B, SV3E, SV6A, SV6B and SV8B. Previous indications were observed in Welds SV6A and SV6B with no apparent change since R14.
		EVT-1	Linear indications (<1/2" length) were observed in the upper section of the shroud where the slot was EDM'd for the tie-rod bracket support. The indications are located at 8 out of 10 tie-rod locations. The indications were satisfactorily disposition as having no effect on the structural integrity of the load path between the shroud and the tie-rods for applied vertical or radial loads.
	2008(RO18)	EVT-1	Inspected Vertical/Radial welds SV2B, SC3A, SV3C, SV3F, SV7B, SV7C and SV7E. Inspection included 100% of accessible area of the ID/OD. No relevant indications were noted.
		EVT-1	Re-inspected indications identified in RO-17 on the shroud ring segment in locations EDM'd for Tie Rod upper supports. No change was noted from RO17 results.
		EVT-1	Inspected previously recorded flaw on

			the shroud ID @ SH4 near SV5B. The inspection revealed no changes in size and configuration from the previous inspection in 2002. This inspection was performed per an INPO recommendation from the 2008 BWRVIP review visit to assist the industry in understanding the flaw mechanism-potentially irradiation – assisted corrosion cracking (IASCC).
Shroud Support	1992 to present	UT or EVT-1	92 Outage: Inspected 0 and 180 deg access covers by UT. One planar indication detected at 180 deg, which is believed to be inherent to the fabrication process and is not ID connected. 94/95 Outage: Inspected 40” of H9 weld and accessible areas of 10 gusset plates used for tie-rod repair. 96 Outage: Inspected access hole cover at 0 deg, and inspected 36” of H9 weld and gusset plate welds at 3 tie-rod locations. No relevant indications noted.
	1998(RO13)	EVT-1 VT-3	Baseline completed per BWRVIP-07 and BWRVIP-38 guidelines for all shroud repaired tie rods and load transfer gusset plate welds. *7 out of 10 tie rod assemblies inspected (by EVT-1/VT-3) in Fall 1998. No relevant indications noted. *All load transfer gusset plate welds and 12 inches of H9 weld each side of the gussets were examined by EVT-1. 7 out of 10 gussets inspected in RO13. No relevant indications noted. Examined by EVT-1 the access hole cover at 180 degrees. No relevant indications noted.
	2000/2002	N/A	No inspections during RO14 and RO15
	2004(RO16)	EVT-1	Inspected two shroud support gusset plate welds and 12 inches of H9 top weld each side of the gussets. No relevant indications noted.

	2006(RO17)	EVT-1	<p>Inspected all ten shroud repair tie-rod systems and corresponding shroud support gusset welds at same locations. No relevant indications were noted.</p> <p>Inspected top portion of horizontal weld H9 at each side of tie-rod locations and between gussets at 180°. No relevant indications were noted.</p>
		VT-1	<p>Inspected the access hole cover at 180°, with no relevant indications noted.</p>
	2008(RO18)	N/A	<p>No inspection performed in RO18</p>
Core Spray Piping	1987 to present	VT-3, MVT-1 or EVT-1	<p>IEB 80-13 of piping and welds in annulus. One clamp repair in 1988 at cracked weld in "B" loop at 190 deg below upper elbow piping. Welds were brushed and inspected by EVT-1 per BWRVIP-18 in Fall, 1996. No relevant indications found.</p>
	1998(RO13)	EVT-1, MVT-1	<p>Re-inspected 100% of loop "A" and "B" welds per BWRVIP-18 Guidelines (by EVT-1). No relevant indications noted, except for a rub-mark near CSA-10 weld.</p> <p>Support brackets were examined by MVT-1. No relevant indications noted.</p>
	2000(RO14)	EVT-1	<p>Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds, including repair clamp welds per BWRVIP-18 Guidelines (by EVT-1). A relevant indication was noted on weld CSB-12. No other relevant indications were noted.</p>
	2002(RO15)	EVT-1	<p>Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds; repair clamp at Loop "B" downcomer pipe; and rotating sample of pipe elbow upper/lower welds in Loop "A" at 10 degrees. No relevant indications noted.</p>

			Re-inspected the indication noted in RO14 on weld CSB-12. Level III's assessment is that the indication is now believed to be a scratch.
	2004(RO16)	EVT-1	Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds; repair clamp welds at Loop "B" downcomer pipe; and rotating sample of pipe elbow upper/lower welds in Loop "A" at 170 degrees. No relevant indications noted.
	2006(RO17)	EVT-1	Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds; repair clamp welds at Loop "B" downcomer pipe , and rotating sample of pipe elbow upper/lower welds in Loop "B" at 190 degrees. Also, inspected all bracket support welds, including RPV side for Loop "A" and "B". No relevant indications noted.
	2008(RO18)	EVT-1	Re-inspected all Loop "A" and "B" creviced and T-box-to-pipe welds; repair clamp welds at Loop "B" downcomer pipe; and rotating sample of pipe elbow upper/lower welds in Loop "B" at 350 degrees. No relevant indications noted
Core Spray Sparger	1987 to present	VT-3, MVT-1 or EVT-1	IEB 80-13 of sparger and welds. MVT-1 and EVT-1 inspections per BWRVIP-18 in the Fall, 1996. An indication characterized as weld profile deficiency was recorded on spray nozzle D-28. Historical IVVI data was reviewed and the indication was previously noted and disposition as acceptable.
	1998(RO13)	EVT-1, MVT-1	Re-inspected 100% of sparger piping "A" and "B" welds per BWRVIP-18 Guidelines (EVT-1/MVT-1) including tee boxes, end caps, drain welds, and support brackets. No relevant indications noted.

	2000(RO14)	-	No inspections performed
	2002(RO15)	EVT-1	Re-inspected all T-box and end caps to sparger pipe welds at Loops "A", "B", "C", and "D". No relevant indications noted.
		VT-1	Re-inspected Sparger "C" and "D" nozzle welds, and supporting brackets at "A" and "B". No relevant indications noted.
	2004(RO16)	VT-1	Re-inspected all sparger bracket support welds at "C" and "D". No relevant indications noted.
	2006(RO17)	EVT-1, and VT-1	Re-inspected by EVT-1 all T-box and end caps to pipe welds, and by VT-1 all bracket welds at spargers "A", "B", "C" & "D". Re-inspected by VT-1 all nozzle and drain to sparger welds at spargers "A" & "B". No relevant indications noted.
	2008(RO18)	N/A	No inspections performed in RO18
Top Guide (Rim, etc.)	1988, 92 and 94/95	VT-3, and EVT-1	2 cells inspected in 1988 and in 1992; 4 cells in 1994. Additional inspections included, alignment wedges, hold down bolts, and rim welds at several locations (EVT-1 at rim welds in 94/95). No relevant indications noted.
	1998(RO13)	N/A	No inspections performed
	2000(RO14)	VT-1, and VT-3	A total of 4 hold down assemblies were examined by VT-1 and 3 alignment pin assemblies by VT-3 per BWRVIP-26 Guidelines. No relevant indications were noted.
	2002 and 2004	N/A	No inspections in RO15 and RO16.
	2006(RO17)	VT-1 and VT-3	Inspected by VT-1 hold-down assemblies at 0 and 180 degrees (top only as below top guide is inaccessible). Inspected

	2008(RO18)	VT-1	<p>sampling of top guide surfaces by VT-1/VT-3. Also, inspected aligner pins at 0 and 180 degrees by VT-1. No relevant indications noted.</p> <p>Inspected by VT-1 hold-down assemblies at 90 and 270 degrees (top only as below top guide is inaccessible). Also, inspected aligner pins at 90 and 270 degrees by VT-1. No relevant indications noted.</p>
Core Plate (Rim, etc.)	1992 and 94	VT-3	Inspection at one core plate in 1992. Inspected approximately 25% of hold down bolting in 1994/95. No relevant indications noted.
	1998(RO13)	VT-3	Inspected 100% of hold down bolting. No relevant indications noted.
	2000(RO14)	VT-3	Inspected core plate plugs at 5 core locations. No relevant indications noted.
	2002(RO15)	-	No inspections performed
	2004(RO16)	VT-3	Inspected a total of 6 core plate plugs (at two locations). No relevant indications noted.
	2006(RO17)	VT-3	Inspected core plate plugs and the surrounding core plate surface at four LPRM locations. No relevant indications noted.
	2008(RO18)	VT-1	Inspected 33 core plate hold down bolt assemblies from 0-180 degrees with no indications noted.
		VT-1	Inspected 10 core plate plugs @ cell location 12-37, 28-29 and 36-37 to meet 10% sampling requirements. No indication noted, all plugs inspected were properly seated, with no evidence of movement.
SLC	2000(RO13)	EVT-2	Performed Enhanced VT-2 on SLC nozzle-to-safe end weld during RPV System Leakage Test per BWRVIP-27

	2002/2004	EVT-2	Guidelines. Test was "Accepted". Performed Enhanced VT-2 on SLC nozzle-to-safe end weld during RPV System Leakage Test per BWRVIP-27 Guidelines. Test was "Accepted".
	2006(RO17)	PT	Performed liquid penetrant examination on SLC nozzle-to-safe end weld per BWRVIP-27 Guidelines with no recordable indications noted.
	2008(RO18)	N/A	No Examination required based on 2006 inspection.
Jet Pump Assembly	1987 to 1994	VT-1,VT-3 and UT	Inspected all riser brace attachment welds by VT-1. No relevant indications but found debris at some weld locations. Have replaced all jet pump beams in 1992 because one exhibited indications of cracking by UT exam. Also inspected pump assembly, sensing lines, supports and diffuser to shelf welds, all by visual. No relevant indications but found debris at some weld locations. Cracking at a Japanese BWR of a Jet Pump riser weld prompted FitzPatrick to review IVVI tapes from previous refueling outages, including 1996 outage. Viewed accessible areas at two welds by VT-1, and at three welds by VT-3 examination. No cracking was found in the reviewed welds.
	1998(RO13)	MVT-1, and VT-3	Inspected by MVT-1 50% of all Jet Pumps (#7 to #16) for component safety priority H (high) and M (medium), per BWRVIP-41 Guidelines. No relevant indications noted. Interferences in the annulus region restricted inspection of AD-1 and AD-3b welds. Inspected by VT-3 sensing lines/brackets at same jet pumps (#7 to #16). No relevant indications noted.

	2000(RO14)	N/A	No inspections during RO14
	2002(RO15)	EVT-1, VT-1, and VT-3	Completed inspection of Jet Pumps 5 and 6, and portions of Jet Pumps 19 and 20, with no relevant indications noted. Used inspections guidelines of BWRVIP-41 and 48. There are no MX-1 welds on the inlet-mixer, but there are IN-4 and MX-2 welds. Interferences in the annulus region (gussets) prevented inspection of the AD-3b welds.
		VT-1	Inspected Jet Pump Beams at #5, 6, 19 and 20, at locations recommended by BWRVIP-41, and by latest Operating Experience. No relevant indications noted.
	2004(RO16)	EVT-1	Performed "High – priority" riser weld inspections at Jet Pumps #1, 2, 3, 4, 17 and 18. No relevant indications noted. Performed diffuser/adapter assembly weld inspections (Also "High"- priority) at Jet Pumps #17 and 18. No relevant indications noted.
		VT-1	Performed wedge bearing surface (WD-1) inspections at Jet Pumps #17 and 18. No relevant indications noted.
	2006(RO17)	UT	Inspected all twenty jet pump beams with no relevant indications recorded. Inspected "High"- priority welds AD-1, AD-2, AD-3a, AD-3b, DF-2 and DF-3 at all 20 jet pumps (JP) with recordable indications at welds DF-2 (#JP 1 & 3) and AD-3b/DF-3 (#JP12 & 17). All indications were satisfactorily disposition for one operating cycle.
		EVT-1	Inspected "High"- priority welds DF-2 at JP #1 &3 and DF-3 at JP #17 based on UT results. No recordable indication noted.

		EVT-1	Inspected riser welds RS-1, RS-2 and RS-3 at JP #19/20 & RS-3 at JP #03/04. Also inspected RS-6, RS-7, RS-8, RS-9 and RB welds at JP #01/02, 3/4, 17/18 & 19/20 with no recordable indications noted.
		EVT-1	Inspected weld DF-1 at JP #01/02, 3/4, 17/18 & 19/20 with no recordable indications noted.
		VT-1	Inspected wedge bearing surfaces (WD-1) at JP #1, 2, 3, 4, 19 & 20 with no relevant indications noted.
	2008(RO18)	EVT-1	Inspected "Medium – priority welds IN-4 and MX-2 at JP # 1-4 & 17- 20 with no relevant indications noted.
		EVT-1	Inspected wedge bearing surfaces (WD-1) at JP # 7-12 & 20 with no relevant indications noted.
		VT-1/3	Inspected JP sensing line @ 1-4, 7-12 and 17-20, including bracket and attachment welds to diffuser with no relevant indications noted.
		EVT-1	Inspected the ID of JP 12 & 17 DF-3 welds to aid in evaluating previous indications identified by UT in RO17. No indications were noted visually from the ID and surface geometry appears normal with no undercut or root concavity noted.
CRD Guide Tube	1992	VT-3	Inspected stub tube to vessel and stub tube to housing welds for 9 tubes. No relevant indications.
	1998(RO13)	N/A	No inspections performed.
	2000(RO14)	EVT-1 and, VT-3	Inspected accessible surfaces at 3 Guide Tubes per BWRVIP-47 Guidelines. Inspected accessible surfaces at 8 Guide Tubes (VT-3). No relevant indications

	2002(RO15)	EVT-1 and VT-3	noted. Inspected accessible surfaces at 4 Guide Tubes per BWRVIP-47 Guidelines. No relevant indications noted.
	2004(RO16)	N/A	No inspections performed.
	2006(RO17)	EVT-1 and VT-3	Inspected accessible surfaces at three Guide Tubes. No relevant indications noted.
	2008(RO18)	N/A	No Inspections performed
CRD Stub Tube	1992	VT-3	See above.
	1998	N/A	No inspections during RO-13.
	2000/2002/ /2004/2006/ 2008	N/A	No inspection requirements per BWRVIP-47 Guidelines.
In-Core Housing	1992	VT-1	No relevant indications.
	1998	N/A	No inspections during RO-13.
	2000 thru 2008	N/A	No inspection requirements per BWRVIP-47 Guidelines.
Dry Tube	1994	VT-1	No indications. Replaced all dry tubes in 1987/88.
	1998(RO13)	N/A	No inspections performed.
	2000(RO14)	VT-1	Inspected 4 IRM/SRM In Core Dry Tubes per GE SIL-409 and GE RICSIL-073 Guidelines. No relevant indications noted.
	2002(RO15)	VT-1	Re-inspected SRM Core Dry Tube 20-17 per GE SIL 409 and GE RICSIL-073 Guidelines. No relevant indications noted
	2004(RO16)	N/A	No inspections performed.
	2006(RO17)	VT-1	Inspected dry tubes at three locations with no relevant indications noted.

	2008(RO18)	VT-1	Inspected dry tubes at SRM locations 20-17, 28-41 and IRM location 20-25 per GE-SIL-409 Rev.2 with no relevant indications noted.
Instrument Penetrations	1992	VT-1	Two inspected in 1992. No relevant indications noted.
	1998(RO13)	N/A	No inspections performed.
	2000(RO14)	VT-2	Performed VT-2 ISI System Leakage Exam Test at 6 instrument nozzles (during RPV System Test) per BWRVIP-49 Guidelines. Test was conducted to the extent possible with insulation installed and shield doors closed. Test was "Accepted".
	2002/2004/ 2006/ 2008 (RO15-18)	VT-2	Performed a VT-2 leakage test at 6 instrument nozzles (same as in RO14-Fall 2000). Test was "Accepted" with no leakage noted.
Vessel ID Brackets	1987 to present	VT-1, VT-3, EVT-1 for core spray	Section XI inspections of jet pump riser brace, dryer, feedwater sparger, core spray, and surveillance capsule holder brackets, performed once per interval. Last inspection was Fall, 96 VT-3, or VT-1 if in beltline region. EVT-1 for core spray. No relevant indications noted.
	1998(RO13)	MVT-1	Inspected Core Spray Brackets and Jet Pump Riser Brace Attachments per BWRVIP-48 requirements. No relevant indications noted.
	2000(RO14)	-	No inspections in RO14
	2002(RO15)	EVT-1	Inspected Jet Pump Riser Brace (at JP #5/6 and #19/20); and Feedwater Sparger Bracket Attachments (at all 8-locations), per BWRVIP-48 requirements. No relevant indications noted.
	2004(RO16)	EVT-1	Inspected shroud support gusset plate welds to RPV wall at two locations, with no relevant indications.

		EVT-1, VT-3	Inspected all four steam dryer support brackets and attachment welds to RPV wall, with no relevant indications.
		VT-3	Inspected all four steam dryer hold-down brackets and attachment welds to RPV top head, with no relevant indications noted.
			Inspected guide rod and bracket to RPV weld at 180°, with no relevant indications noted.
	2006(RO17)	EVT-1	Inspected all core spray piping support bracket welds to RPV wall, with no recordable indications noted.
			Inspected shroud support gusset plate welds to RPV wall at ten locations, with no relevant indications noted.
			Inspected riser brace leaf welds to RPV wall at JP #01/02, ¾, 17/18 & 19/20, with no recordable indications noted.
		VT-1	Inspected surveillance sample holder brackets (upper and lower) at 030° and 120° to RPV wall, with no relevant indications noted.
		VT-3	Inspected guide rod and bracket to RPV weld at 000°, with no recordable indications noted.
	2008(RO18)	N/A	No inspections performed
LPCI Coupling	N/A	N/A	Not applicable to this plant.
Fuel Support Castings	1998(RO13)	VT-3	Inspected accessible areas at fuel support castings during in-process control rod blade change-out. No relevant indications noted.
	2000(RO14)	VT-3	Inspected accessible areas at fuel support castings during in-process control rod blade change-out. No relevant indications

	2002(RO15)	VT-3	noted. Inspected accessible areas at four fuel support castings during in-process control rod blade change-out. No relevant indications noted.
	2004(RO16)	VT-3	No inspections performed
	2006(RO17)	VT-3	Inspected accessible areas at fuel support castings at four locations. No relevant indications noted.
	2008(RO18)	N/A	No Inspections performed
CRD Nozzle NIR	1998(RO13)	VT-1	The Control Rod Drive Nozzle Inner Radius was examined. No relevant indications noted.
	2000(RO14)	EVT-1	Examined the CRD Nozzle Inner Radius, including adjacent vessel wall area. No relevant indications noted.
	2002-2008	N/A	No inspections in RO15 – RO18.
Steam Dryer Moisture Separator	1998(RO13)	VT-3	Inspected 25% of shroud head bolts at storage pit. No relevant indications noted.
	2000(RO14)	VT-3 and EVT-1	Re-inspected by VT-3 all areas of the steam dryer support ring and by EVT-1 previously found cracks (1992/1994). A total of 10 indications were noted in 2000 (RO14), with no discernable changes from previous inspection.
	2002(RO15)	N/A	No Inspections performed
	2004(RO16)	VT-1 and VT-3	Inspected steam dryer integrity per SIL 644 Supplement 1 (steam dryer integrity) and INPO OE 18796 (steam dryer hood crack and tie bar recordable visual indications) guidelines. Two relevant indications areas were noted. These indications resulted in expanded scope with additional brushing and evaluations. These indications are in the HAZ of

			<p>vibration block welds and at a drain channel. All indications were satisfactorily dispositions by calculations. Plans are to re-inspect the indications in RO17.</p> <p>Inspected steam dryer hold-downs and support brackets and attachment welds with no relevant indications noted.</p>
	2006(RO17)	VT-3	<p>Inspected steam separator lifting rod eye assemblies, and 25% of shroud head bolts with no relevant indications noted.</p>
	2006(RO17)	VT-1	<p>Inspected selected welds on the steam dryer (per requirements of BWRVIP-139 over those recommended by SIL 644). A relevant indication was noted at the intersection of H-2 and V-7 welds (SW quadrant), and the weld was grind out and repaired in R17.</p> <p>Inspected previous relevant indications noted in R16 (i.e., at eight vibration block welds and at weld adjacent to drain channel weld #8) with no observed change noted since R16. The linear indication length at one vibration block was re-configured from the previous R16 reporting.</p>
	2008(RO18)	VT-1	<p>Inspected previous relevant indications (i.e., at eight vibration block welds and at weld adjacent to drain channel weld #8) with no changed to indication size noted.</p> <p>Inspected R17 weld repair @ weld H2 & V7 intersection in SW quadrant with no relevant indications noted.</p> <p>Inspected upper support ring including previous indications noted in R14. 9 of the 10 previous indications have been determined to be scratches and are consider non relevant. No other indications were noted.</p>

		VT-3	Inspected Shroud head bolts #10 thru 19 based on with no relevant indications noted.
		VT-1	Inspected 25% of upper and mid-support ring gussets on the moisture separator based on recent OE25795. A linear indication was noted on the # 5 upper gusset. Scope was expanded to include all upper and mid support ring gussets and linear indication were also identified on gusset # 6 upper and mid gussets. The indication were evaluated and found acceptable. Additionally during the gusset examination a broken tie strap was noted on the separator @ 0 degrees. The broken strap was removed per EC-10523 and evaluated for acceptance. Note: OE27679 was issued to inform the industry of the condition.
Surveillance Capsule Specimen Holder	2000(RO14)	VT-1 and VT-3	Inspected at one location, the upper and lower mounting bracket (VT-1) and the condition of the specimen holder (VT-3) No relevant indications noted.
	2006(RO17)	VT-1	Inspected upper and lower mounting bracket welds at 030° and 120°. No recordable indications noted.
	2008(RO18)	N/A	No inspections performed
Lower Plenum	2000(RO14)	VT-1/3	Inspected by VT-3 accessible areas of lower plenum per BWRVIP-47 Guidelines. No relevant indications noted. Inspected by VT-1 accessible areas of bottom head drain. After removal of debris the area was re-examined and found acceptable.
	2002-2008		No access
Feedwater Sparger	2002(RO15)	VT-3	Inspected Sparger pipe assembly at 45, 135, 225 and 315 degrees azimuth,

			<p>sparger welds and end brackets. No relevant indications noted.</p> <p>VT-1 Inspected Junction T-box welds and Nozzle Inner Radius (NIR) at 45, 135, 225 and 315 degrees azimuth. No relevant indications noted.</p> <p>UT Inspected the NIR at all 4-locations. No relevant indications noted.</p>
	2004 & 2006	N/A	No inspections performed
	2008(RO18)	VT1/3	Inspected sparger brackets @ 45,135,225 and 315 degrees based on recent OE24382 for wear being identified. Brackets @ 45 and 135 were noted to have some wear noted around the pin. The condition was evaluated and found acceptable.
Dissimilar Metal welds	2004(RO16)	UT	Performed UT on DM welds 24-10-131 and 24-10-132 and nozzle N-9-C1 overlay with no relevant indications noted.
	2006(RO17)	UT	Performed UT on Nozzle to Safe End on the following welds with no relevant indications noted. N-1B-SE N-2H-SE N-2K-SE
	2008(RO18)	UT	Performed UT on the Nozzle to Safe End on the following welds with no relevant indications. N-1A-SE N-2A-SE N-2B-SE N-2D-SE N-2E-SE N-2F-SE N-2G-SE N-2J-SE N-5A-SE N-8A-SE

			<p>N-8B-SE</p> <p>Performed UT on Nozzle N-2C-SE and identified one axial indication approx 1/2" depth by 3/4 wide. The indication was located on the butter to butter and was ID connected. Assumed the flaw to be IGSCC. The weld was overlaid and found acceptable.</p>
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Reactor Internals Inspection History

Plant: Oyster Creek Generating Station

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Result, Repairs, Replacements, Reinspections
Steam Dryer	Fall 2008	Visual	<p>Completed BWRVIP-139 required inspections of the ID of the dryer using GEH FireFly ROV. Identified 2 areas of fatigue cracking in drain channels and 1 area of fatigue cracking in support beam to mid-support ring weld. Evaluated as use-as-is for one cycle in accordance with BWRVIP-139 generic flaw evaluation.</p> <p>Re-inspected Steam Dryer indications and repair areas identified during previous outages. Tie bar N-1 lower repair area was found degraded and GEH issued JCO for one cycle of operation.</p>
	Fall 2006	Visual	<p>Re-inspect Steam Dryer Indications identified during previous outages.</p> <p>EVT-1 cracks in hold-down area from IR19.</p> <p>VT-1 all 4 lifting lugs and EVT-1 indications on 135 deg. lug.</p> <p>BWRVIP-139 required inspections (top side) completed. New fatigue indications were identified that required repair. Dryer repair project completed with 2 areas stop drilled and one crack in center baffle plate was cut out.</p>
Core Shroud	Fall 2008	UT / EVT-1	<p>UT / EVT-1 inspection completed for all 10 shroud vertical welds. One indication found with UT in V10 weld – 1.76 inches long with depth of 0.47 inches. A technical evaluation was completed to</p>

			use-as-is.
	Fall 2006	EVT-1	<p>VT-3 Tie-Rods at 100 deg, 130 deg, 160 deg, 280 deg, and 350 deg. No findings.</p> <p>V-9 inspection of ID and OD. Two horizontal indications (transverse to the weld) were found adjacent to vertical weld on the ID surface. The indications were 2.75 and 1 inch in length and 30 and 35 inches above horizontal weld H5. A technical evaluation was completed to use-as-is.</p> <p>VT-3 Tie-Rods at 170 deg, 220 deg and 310 deg. No findings.</p> <p>VT-1 of Upper Bracket to Shroud Ledge interface on all 10 Tie Rods. No findings.</p>
	Fall 2004	None	No Examinations Required.
	Fall 2002	None	No Examinations Required.
	Fall 2000	EVT-1	V-3, V-4, V-15 and V-16. This was a one sided exam from the OD. No findings.
	Fall 1998	UT EVT-1	<p>V-7, V-8, V-10 and V-12. V-11 I.D. Seven tie-rod assemblies baseline inspected.</p> <p>V-10 exhibited minor OD cracking away from the heat-affected zone. This cracking is believed to be associated with handling lugs that were welded during construction and removed after installation. All other inspected vertical welds were found free of indications. With the inspections performed in 16R and 17R, all accessible vertical welds in the shroud core region are complete.</p> <p>The following vertical welds could not be located. V-3, V-4, V-15 and V-16.</p>
	Fall 1996	Visual	Inspected per BWRVIP-07. Three of ten

	Fall 1994	Ultrasonic and visual	<p>tie rods inspected, no change from installation. EVT-1, OD of V-9 and V-11, (120" total). V-9 exhibited 3 small axial cracks in HAZ on the OD totaling 1.75". The ID of V-9 was free of axial cracks. A number of small transverse cracks were found on the OD and ID of V-9. V-11 was free of any indications. Analysis showed structural margin maintained.</p> <p>Inspected per BWRVIP-01 and 03. Cracks were detected in the Shroud welds H2, H4, H6A, and H6B. Lack of fusion was detected in H3 weld and visual cracks on the ID surface. The Tie Rod modification was installed. Base line visual performed of the tie rods.</p>
Shroud Support	Fall 2008	Visual	EVT-1 of 8 Lug / Clevis pin assemblies - #10, #11, #14, #15, #17, #29, #30, and #36. No findings.
	Fall 2006	Visual	EVT-1 of 7 Lug / Clevis pin assemblies - #1, #18, #19, #23, #24, #32 and #33.
	Fall 2004	None	No examinations required.
	Fall 2002	UT	30% UT of H-9 from the OD (Drywell). UT inspected H-9 weld in Nozzle N1A, NIC and N1E bioshield openings. Found one 4" long indication in the N1E nozzle area. This "service induced" indication is in the bottom side of the H9 weld and does not penetrate into the base metal of the RPV.
	Fall 2000	Visual	25% of H-9, cleaning performed and EVT-1 inspection completed. This completes 100% inspection of the H-9 weld. No findings.
	Fall 1998	Visual	25% of H-9, cleaning performed and enhanced VT-1, no findings

	Fall 1996	Visual	25% of H-9, (different area then the 1994 inspection), cleaning performed and enhanced VT-1, no findings.
	Fall 1994	Visual	25% of H-9 cleaning performed and enchanted VT-1, no findings.
Core Spray Piping	Fall 2008	Visual	EVT-1 of annulus piping fillet welds (all 10). No findings. EVT-1 of 25% shroud attachment welds - Pipe Bracket PB 195 deg. No findings. EVT-1 of 25% sample butt welds: P3aA, P3bA, P2B, P4dD, P4eD, P4fD, P4gD, P4hD, P3aB, P3bB, and P4dB. No findings.
	Fall 2006	Visual	EVT-1 of annulus piping fillet welds (all 10). No findings. EVT-1 of 25% shroud attachment welds - Pipe Bracket PB 103.5 deg. No findings. EVT-1 of 25% sample butt welds: P4bA, P4cA, P2A, P4g/aA, P4g/bA, P4hA, P4iC, P4g/aC, P4g/bC, P4hC, P4bB, P4eB, P4fB, P4gB and P4hB. No findings.
	Fall 2004	Visual	Accessible portions of the annulus piping welds were cleaned using a nylon brush and visual inspections performed utilizing the EVT-1 technique. All accessible portions of the following piping welds were visually inspected: <ul style="list-style-type: none"> • L-3, L-3A, L-4, L-20A, L-13A, L-5, L-7, L-8, L-10, L-11, and L-12 • U-3, U-3A, U-4, U-15A, U-24A, U-7, U-8, U-9, U-10, U-11, U-12, U-16, and U-17 100% of annulus pipe brackets at 15°, 105°, 195° and 285°. No findings.
	Fall 2002	Visual	EVT-1 of all creviced welds in the

			<p>annulus piping = U3, U3A, U4, U15A + U24A; L3, L3A, L4, L13A + L20A.</p> <p>EVT-1 of a 25% sample (11 welds) of the butt welds (non-creviced) not inspected in 17R or 18R:</p> <ul style="list-style-type: none"> • U1,U15,U17,U18,U19,U20 • L1,L9,L13,L16,L20 <p>Inspect 100% of annulus pipe brackets (15°, 105°, 195° and 285°) No Findings.</p>
	Fall 2000	Visual	<p>Accessible portions of the annulus piping welds were cleaned using a nylon brush and visual inspections performed utilizing the EVT-1 technique. All accessible portions of the following piping welds were visually inspected:</p> <ul style="list-style-type: none"> • L3, L3A, L4, L6, L13A, L14, L15 and L20A • U3, U3A, U4, U7, U8 and U15A <p>100% of annulus pipe brackets 15°, 105° 195° and 285°. No findings.</p>
	Fall 1998	Visual	<p>All creviced welds in the annulus piping; sample (25%) of the non-creviced welds in the annulus piping:</p> <ul style="list-style-type: none"> • L2, L9, L10, L11, L12, L13, L17, L18, L19 and L20 • U2, U5, U6, U13, U14, U15, U21, U22, U23 and U24 <p>Sample (25%) of pipe brackets 285°, 195°</p>
	Fall 1996	Visual	<p>Inspected per BWRVIP- 03. Cleaning of all accessible weld/HAZ surface and performed enhanced VT-1. No findings.</p>
	Fall 1994	Visual and air test	<p>Inspected VT-1, (1 mil wire). No change to pinhole weld defect detected in slip joint in 1992. Note: Pinhole weld defect detected in 1992 in System I. Analysis showed structural margin maintained.</p>
Core Spray Sparger	Fall 2008	Visual	<p>EVT-1 Sparger Pipe End Cap welds: S4A – 60 deg., S4A – 240 deg., S4B – 60</p>

			deg., S4B – 240 deg. No findings.
			EVT-1 "T" box welds - S1A, S2A (LH), S2A (RH), S1B, S2B (LH) and S2B (RH). No findings.
			VT-1 spray nozzles - S3a, S3b, S3c-C. No findings.
			VT-1 of 50% of the sparger bracket welds – SB – 055, 065, 150, 208, 235, 271 and 330 deg. No findings.
	Fall 2006	Visual	EVT-1 Sparger Pipe End Cap welds S4C - 60 deg., S4C - 240 deg., S4D - 60 deg., and S4D - 240 deg. No findings.
			EVT-1 "T" box welds - S1C, S2C (LH), S2C (RH), S1D, S2D (LH) and S2D (RH). No findings.
			VT-1 spray nozzles - S3a, S3b, S3c-B. No findings.
			VT-1 of 50% of the sparger bracket welds – SB – 026, 091, 120, 179, 240, 300, and 359 deg. No findings.
	Fall 2004	Visual	Inspected all sparger repair clamps. No findings. Inspected end cap welds S4A-60, S4A-240, S4B-60, and S4B-240. No findings. Inspected sparger brackets SB-055, 065, 150, 208, 235, 271 and 330. No findings
	Fall 2002	Visual and Air Test	VT-1 all spargers, nozzles, end cap welds and repair clamps. No findings. No new leaks were identified during the Air Test.
	Fall 2000	Visual and Air Test	All sparger end cap welds were cleaned and EVT-1 inspected. No findings. VT-1 of spargers, repair clamps, and nozzles. No findings. No new leaks were identified during the Air Test.

	Fall 1998	Visual and Air Test	All sparger repair clamps, both spargers.
	Fall 1996	Visual and air test	Inspected per BWRVIP-03. Cleaned end cap welds and performed enhanced VT-1. No findings. Tee box welds are clamped and not accessible to clean or visual. Performed VT-1, (1 mil wire), of sparger piping and nozzles. No findings.
	Fall 1994	Visual and Air Test	Performed VT-1, (1 mil wire) of sparger piping and nozzles. No findings.
	1978 - 1980	Visual	(2) Cracks in sparger piping. Repair clamps installed. Note: Cracking found in sparger in 1978; repaired with clamps. Sparger has been inspected and air tested every outage since then; report submitted to NRC for approval for restart every outage.
Top Guide	Fall 2008	None	Not required for this outage by analysis.
	Fall 2006	Visual	EVT-1 of selected known flaws in grid beams: #4, VT-3 and VT-6. One area showed no growth, while the other two had grown between 0.25" and 0.75" from the 2002 outage to the 2006 outage. A flaw evaluation was performed to use-as-is.
	Fall 2004	Visual	VT-1 of top guide hold down bolts at 303 and 123 degrees. No findings. EVT-1 of VT-6 crack showed no measurable growth. Could not visually locate two other existing UT indications.
	Fall 2002	Visual	EVT-1 of two existing cracks measured in 18R outage (#3 and #5). No change to crack length identified.
	Fall 2000	Visual	Top guide hold down bolt assembly VT-3 at 33° and 213°. Top guide beam to rim fillet welds VT-1

			at 33° and 213°. No findings.
	Fall 1998	None.	VT-1 of two existing cracks (#3 and #5) with cleaning. Both cracks measured on both sides. Crack #5 showed approx. 1" growth. Crack #3 showed no measurable growth.
	Fall 1996	Ultrasonic 100% grid beams	Not required for this outage by analysis.
	Fall 1994	Visual	12 indications emanating from notches detected at intersections of cross members. 5 of the 6 cracks on bottom side of member at mid span detected. Removed sample from beam with crack to investigate root case.
	Fall 1992	Visual	[Under side of Top Guide] Three additional vertical cracks were detected at mid span locations. Disposition use as is.
	Fall 1991	Visual	[Under side of Top Guide] Two additional vertical cracks were detected at mid span location. Disposition use as is.
Core Plate	Fall 2008	Visual	[Under side of Top Guide] A vertical crack was detected at mid span location. Disposition use as is.
	Fall 2008	Visual	Visually inspected core plate wedges at 96° and 276° azimuths. No findings.
	Fall 2006	None	No exams were required.
	Fall 2004	Visual	No wedge inspections required. Inspected in-core guide tube plugs 04-29, 20-37, and 12-21. No findings.
	Fall 2002	Visual	No inspections needed. Wedges replace hold down bolt inspections.
	Fall 2000	Visual	Visually inspected all 8 wedges to verify integrity after first cycle of operation. All wedges found as installed.

	Fall 1998	Visual	Wedges installed. No further exams of core plate were performed.
	Fall 1996	Visual	Inspected top portion only of 18 hold down bolt that were not inspected in fall 1994 and top periphery section at bolt locations. No findings.
	Fall 1994	Visual	Inspected 18 hold down bolt tops only and top periphery at bolt locations inspected. No findings.
Jet Pump Assembly	NA	NA	NA
Jet Pump Diffuser	NA	NA	NA
SLC	Fall 2008	VT-2 pressure test	Inspected insulated nozzle from drywell. No leakage observed.
	Fall 2006	UT	PDI - UT the Liquid Poison Nozzle N12 / SE. No findings.
	Fall 2004	VT-2 pressure test	Inspected insulated nozzle from drywell. No leakage observed.
	Fall 2002	Visual / PT	PT of Liquid Poison Nozzle – No Indications. Inspect insulated nozzle from drywell during RPV pressure test. No leakage observed.
	Fall 2000	VT-2 pressure test	Inspected insulated nozzle from drywell. No leakage observed.
	Fall 1998	VT-2 during Code pressure test.	Not made accessible for direct exam.
	Fall 1996	No Inspection Performed.	Not made accessible.

	Fall 1994	No Inspection Performed	Not made accessible.
CRD Guide Tube	Fall 2008	None	Not required and not made accessible.
	Fall 2006	EVT-1, VT-3	Inspected 4 guide tubes. No findings.
	Fall 2004	EVT-1, VT-3	Inspected 4 guide tubes. No Findings.
	Fall 2002	EVT-1, VT-3	Inspect 1 guide tube (46-43) removed to support stub tube inspection. No findings.
	Fall 2000	VT-1, VT-3	2 guide tubes. No findings.
	Fall 1998	VT-3	15, no findings.
	Fall 1996	No inspection Performed.	Not made accessible.
	Fall 1994	No Inspection Performed	Not made accessible.
CRD Stub Tube	Fall 2008	None.	No inspections required.
	Fall 2006	None.	No inspections required.
	Fall 2004	None	No inspections required.
	Fall 2002	VT-1	Visual Inspection of 2 stub tubes found leaking at bottom head in Fall 2000 (42-43 and 46-39). No indications noted.
	Fall 2000	VT-1 VT-2 pressure test	None made accessible. 2 stub tubes found leaking at bottom head (42-43 and 46-39). Performed UT of CRD housing to stub tube welds (J weld) and area of housing to be rolled. No indications. Roll repaired both leaking housings.

	Fall 1998 Fall 1996	No inspection Performed.	Not made accessible.
	Fall 1994	No Inspection Performed	Not made accessible.
In-Core Housing	Fall 2008	No inspection performed.	Not made accessible.
	Fall 2006	No inspection performed.	Not made accessible.
	Fall 2004	No inspection performed.	Not made accessible.
	Fall 2002	No inspection performed.	Not made accessible.
	Fall 2000 Fall 1998 Fall 1996 Fall 1994	No inspection performed.	Not made accessible.
Dry Tube	Fall 2008	Replacement	Replaced 4 Dry tubes due to service life: IRM-12, 13, 14 and SRM-21.
	Fall 2006	Replacement	Replaced 4 Dry tubes due to service life: IRM-11, 17, 18 and SRM-24.
	Fall 2004	Visual	VT-1 of SRM 24 found tube not fully engaged in top guide. VT-1 of IRM 17 and IRM 18 found both tubes bowed.
	Fall 2002	Visual	No inspections required.
	Fall 2000	Visual	VT-1 five dry tubes. One found slightly bent – use as is. No findings on others.
	Fall 1998	Visual	VT-1 one dry tube, no findings
	Fall 1996	Visual	VT-1 one dry tube, no findings.

	Fall 1994	Visual	VT-1 four dry tubes, no findings.
Instrument Penetrations	Fall 2008 Fall 2006 Fall 2004 Fall 2002 Fall 2000 Fall 1998 Fall 1996 Fall 1994	Visual	VT-2 exam from vessel exterior. No findings.
Vessel ID Brackets	Fall 2008	None	No inspection required.
	Fall 2006	EVT-1	EVT-1 both Guide Rod Brackets. EVT-1 all 3 Surv. Spec. Brackets. No findings.
	Fall 2004	EVT-1	Inspected all 4 dryer support brackets. No findings.
	Fall 2002	EVT-1	All feedwater sparger attachment brackets. Both guide rod attachment brackets. All surveillance sample brackets (30, 210 and 300 degree locations) No indications on attachment welds.
	Fall 2000	EVT-1	All 4 dryer support brackets. Observed wear indications on brackets. No indications on attachment welds. All feedwater attachment brackets inspected. No indications on attachment welds. Cracks observed on feedwater sparger to end bracket welds (non-safety-related component) on 2 ends.
	Fall 1998 Fall 1996 Fall 1994	VT-1	VT-1 of accessible portions of weld on guide rod brackets, steam dryer brackets, surveillance sample brackets. All attachment welds; no findings.
LPCI Coupling	NA	NA	NA
Fuel Support Casting	Fall 2008	None	No inspection required.

	Fall 2006	Visual	None inspected:
	Fall 2004	Visual	None inspected.
	Fall 2002	Visual	None inspected.
	Fall 2000	Visual	VT-3 (2) support casting. No findings.
	Fall 1998	Visual	VT-3 (24) support castings. No findings.
	Fall 1996	Visual	VT-3 (25) support castings. No findings.
	Fall 1994	Visual	VT-3 (17) support castings. No findings.
Reactor DM Welds (BWRVIP-75-A)	Fall 2008	UT – Auto	UT examined five (5) Category C nozzle to safe end dissimilar metal (DM) welds. One indication identified in N1A recirculation suction nozzle to safe end weld dispositioned as acceptable for 2 cycles in accordance with IWB-3600 flaw evaluation. The 0.21 inch ID connected indication was in the RPV nozzle to clad interface on the Reactor side of the Alloy 182 DM weld. The flaw evaluation was submitted to the NRC.

Note: All indications left “as is” were analyzed and structural margins were acceptable for continued service.

Reactor Internals Inspection History

Plant: Peach Bottom Atomic Power Station, 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	1994	UT & VT	<p>Comprehensive UT Baseline of some Category "C" circumferential welds (H-2, H-3, H-4, and H-5) per BWRVIP-01, Rev. 0.</p> <p>Partial UT baseline of welds H-1, H-6, and H-7, w/ partial Enhanced VT-1 of H-6 OD.</p> <p>Exams per BWR-VIP Core Shroud NDE Uncertainty and Procedure Standard, dated November 21, 1994.</p> <p>Indications identified on ID of H-1, H-3, H-4, and H-6, and OD of H-4 and H-5.</p> <p>Full structural margins calculated using two cycles of crack growth for comprehensively examined welds, one cycle for welds with limited exams.</p> <p>No indications identified on H-2 and H-7.</p>
	1996	UT	<p>Comprehensive UT of welds H-1, H-6 and H-7 per BWRVIP-01, Rev. 1.</p> <p>Exams per BWRVIP-03.</p> <p>Indications identified on ID of welds H-1, H-6 and H-7, on OD of weld H-1.</p> <p>Full structural margins calculated using two cycles of crack growth.</p> <p>Reexaminations planned per BWRVIP-76</p>
	2002	UT	<p>Comprehensive UT of welds H-1 through H-7 per BWRVIP-76.</p> <p>Indications identified on each weld.</p> <p>UT of Vertical welds V-1 through V-4.</p> <p>No indications identified.</p> <p>Reexaminations scheduled per BWRVIP-76.</p>

Shroud Support	1992	VT-3	VT-3 examination of support leg stub welds. No indications identified. VT-3 examination of welds H-7, H-8, and shroud support cylinder. No indications identified.
	1994	VT-3	VT-3 of accessible portions of H-8 weld between Jet Pump #1 and #10. No indications identified.
		VT-1	VT-1 examination around perimeter of 0 deg. access hole cover. No indications identified.
		UT	UT examination of both access hole covers. No indications identified.
	1998	EVT-1	EVT-1 examination of both AHCs. No indications identified. EVT-1 of 10% of shroud support weld H-8, top side, no indications identified. EVT-1 of 10% of shroud support weld H-9, top side, no indications identified.
		2000	EVT-1
	VT-3		VT-3 of accessible portions of H-9 weld between 0° and 180° Azimuth. No indications identified.
	2002	UT	UT of 10% of H-9 weld length from OD of vessel. No indications identified.
	2004	EVT-1	EVT-1 of > 10% of shroud support weld H-8, top side, between jet pumps 10 – 11 and 1 – 20. No indications identified.
		VT-3	VT-3 of accessible portions of H-9 weld between 180° and 360°. No indications identified
2008	EVT-1	EVT-1 examination of both AHCs. No indications identified.	

Core Spray Piping	1980 to 1996	VT-1 (1 mil)	Enhanced VT-1 (1 mil resolution) performed on piping and welds each refueling outage per IEB 80-13, No indications identified.
	1996	VT-1 (1/2 mil)	EVT-1 (1/2 mil resolution) performed on annulus piping welds per BWRVIP-18. Cracking identified in "B" Header tee-box cover plate weld (P2B). UT performed to characterize indication. Evaluation demonstrated structural margin for one operating cycle
	1998	EVT-1 & UT	Reinspection per BWRVIP-18, using UT technique. EVT-1 used to supplement UT. No new indications identified. P2B weld reexamination yielded additional margin.
	2000	EVT-1	EVT-1 of nine (9) piping welds not previously UT'd, and of six (6) pipe brackets and attachment welds. No indications identified.
	2002	EVT-1 & UT	Reinspection per BWRVIP-18, using UT technique (28 welds). EVT-1 used to supplement UT (6 welds). EVT-1 on two (2) support brackets. No new indications identified. P2B weld indication reexamination revealed minimal growth.
	2004	EVT-1	EVT-1 of twelve (12) piping welds not accessible for UT inspection. No indications identified
	2006	EVT-1 & UT	Reinspection per BWRVIP-18, using UT technique (24 welds). EVT-1 used to supplement all one-sided UT (12 welds). EVT-1 only on eight (8) pipe welds and six (6) support brackets. P2B weld indication reexamination revealed no growth. New 9/16" indication identified visually at intersection of P3B1 and P2B welds. Structural and leakage

	2008	EVT-1	<p>evaluations found flaw acceptable for continued service.</p> <p>Re-inspection per BWRVIP-18, EVT-1 used on (21) pipe welds. P2B weld indication re-examination revealed no growth. The P3B1 9/16" indication revealed no growth. New indication (0.49") identified visually on the upper side of P3B1 and P2B welds. Structural and leakage evaluations found flaw acceptable for continued service.</p>
Core Spray Sparger	1980 to 1994	VT-1 (1 mil)	<p>Enhanced VT-1 (1 mil resolution) performed on piping and welds each refueling outage per IEB 80-13, Cracking discovered at tee-box to sparger pipe weld ("B" Sparger, 1982), bolted repair clamp installed. No other indications identified.</p>
	1998	VT-3 & MVT-1	<p>Reinspections per BWRVIP-18, no indications identified.</p>
	2000	EVT-1	<p>EVT-1 of selected sparger welds per BWRVIP-18. No indications identified.</p>
		VT-1	<p>VT-1 of sparger tee-box repair clamp, and approx. 50% of sparger "C" and "D" nozzles and drains. VT-1 of eleven (11) sparger brackets and welds. No indications identified.</p>
	2002	VT-1, EVT-1	<p>VT-1 of six (6) sparger support brackets, one (1) tee box repair clamp, and 50% of sparger "A" and "B" nozzles and drains. EVT-1 of seven (7) sparger pipe welds. No indications identified.</p>
	2004	VT-1, EVT-1	<p>VT-1 of six (6) Sparger support bracket welds, one (1) sparger drain, and 50% of nozzles on spargers "C" and "D". EVT-1 of fifteen (15) Sparger pipe welds. No indications identified.</p>
	2006	VT-1,	<p>VT-1 of six (6) sparger support brackets,</p>

	2008	EVT-1 EVT-1, VT-1	one (1) tee box repair clamp, and 50% of sparger "A" and "B" nozzles and drains. EVT-1 of eight (8) sparger pipe welds. No indications identified. VT-1 of six (6) sparger support brackets and 50% of sparger "A" and "B" nozzles and drains. EVT-1 of ten (10) sparger pipe welds. No indications identified.
Top Guide (Rim, etc.)	1976 to 1994	VT-3	VT-3 exam every other refueling outage per Section XI. No indications identified.
	1987	UT	UT examination performed of specific cells. No indications identified.
	1994	VT-3	Visual (VT-3) examination of 4 cells (48-41, 08-25, 24-17, and 24-25), per SIL 554. No indications identified.
	1996	VT-3	Visual (VT-3) of 2 aligner pins (0 deg. And 270 deg.), per SIL 588. No indications identified.
Core Plate (Rim, etc.)	1996	VT-3	VT-3 examination of all accessible hold down bolts (cell 16-57, and area at 0 and 270 deg. Azimuth). No indications identified.
SLC	1992	PT	Surface (PT) examination of nozzle to safe end weld per Section XI. No indications identified.
	1998	PT & UT	PT and UT of N10 nozzle to safe-end, no indications identified.
	2002	PT	Extended dwell time Liquid Penetrant examination of entire safe end. No indications identified.
	2006	PT	Extended dwell time Liquid Penetrant examination of entire safe end. No indications identified.

	2008	UT	SLC Nozzle to safe end weld. No indications identified.
Jet Pump Assembly	1976–1996	VT-3	Visual VT-3 of all jet pump components performed every other refueling outage.
	1981	VT & UT	VT and UT examination performed on all 20 hold down beams. No indications identified.
	1994	VT	Restrainer bracket wedge misalignment and wear identified on several wedges. Evaluations found condition acceptable without repair. One restrainer bracket set screw tack weld found cracked. Evaluations found condition acceptable without repair.
	1996	VT	Restrainer bracket wedge conditions and set screw tack welds remain unchanged, condition acceptable without repair.
	1998	MVT-1	MVT-1 of: RS-1 weld on all 10 risers, RS-2 & RS-3 welds on 6 of 10 risers. No indications identified.
		UT	UT of all 20 hold down beams. No indications identified.
	2000	EVT-1	EVT-1 of adjusting screw tack weld (jet pump 7) and RS-2 & RS-3 on 5 of 10 risers. No indications identified.
	2002	EVT-1	EVT-1 of fifty (50) Medium priority weld locations. EVT-1 of transition region of two (2) hold down beams. No indications identified
	2004	EVT-1	EVT-1 of forty one (41) medium priority welds, to complete 50% baseline inspections. No indications identified.
	UT	UT performed on all twenty (20) hold down beams (3 zones, BB-1, BB-2, and BB-3). No	

			indications identified.
		VT-1	VT-1 on all twenty (20) Inlet Mixer main wedges. Thirteen (13) jet pumps exhibited additional wear at main wedge-to-restrainer bracket interface. Performed expanded scope of inspections on these jet pumps. Set screw gaps identified at five (5) jet pumps. No additional problems identified. Installed eight (8) slip joint clamps and three (3) set screw auxiliary spring wedges, to mitigate wear believed to be caused by vibration.
	2006	VT-1, EVT-1, VT-3	VT-1 of twenty (20) WD-1 locations. EVT-1 of five (5) IN-4 welds, and two (2) riser braces-to-vessel attachment welds. VT-3 of eight (8) Slip Joint Clamps and three (3) Auxiliary Spring Wedges. Expanded EVT-1 scope on three (3) jet pumps due to WD-1 findings.
	2008	UT	UT exams performed on all 20 jet pump hold down beams. No indications identified.
		VT-3	Visual inspections performed on 5 auxiliary spring wedges installed. No indications identified.
		EVT-1	EVT-1 of 50 medium and high priority welds including; riser brace leaf to yoke welds, riser pipe to riser brace welds, riser elbow to thermal sleeve, and riser elbow to riser pipe welds. No indications identified. Expanded EVT-1 scope on one jet pump due to WD-1 findings.
		VT-1	VT-1 of twenty (20) WD-1 locations. Re-examined previously identified wedge wear with no apparent changes noted on 19 of 20 inspections. One main wedge had additional wear into the restrainer

			<p>bracket. BWRVIP 41 expanded scope inspections were performed with no additional indications identified. One Slip joint clamp was installed on the affected Jet Pump.</p>
Jet Pump Diffuser	1998	MVT-1	<p>MVT-1 of: AD-1 & AD-2 welds on 12 of 20 pumps, AD-3A & B welds on 11 of 20 pumps, and DF-2 weld on 10 of 20 pumps. No indications identified.</p>
	2000	EVT-1	<p>EVT-1 of AD-1, -2, -3a, -3b, and DF-2 on jet pumps 1 through 10. No indications identified.</p>
	2002	EVT-1	<p>EVT-1 of ten (10) High priority weld locations. No indications identified.</p>
	2004	EVT-1	<p>EVT-1 of eleven (11) medium priority weld locations, to complete 50% baseline inspections. No indications identified</p>
	2006	UT	<p>UT of ninety eight (98) Diffuser / Adapter welds and six (6) Inlet Mixer welds. One 2" indication found on DF-2 weld, JP 17. Structural and leakage evaluations found indication acceptable for continued service. -</p>
CRD Guide Tube	1992	VT-3	<p>VT-3 examination of housings accessible from fuel cells 26-31 and 30-27. No indications identified</p>
	2002	EVT-1, VT-3	<p>EVT-1 of three (3) welds on each of ten (10) Guide Tubes (locations 50-31, 42-11, 42-23, 42-51, 38-27, 38-35, 38-51, 34-23, 34-39, and 30-31). Some flow interference with examinations. VT-3 equivalent of anti-rotation pin on ten (10) Guide Tube locations. No indications identified</p>
	2006	EVT-1, VT-3	<p>EVT-1 of fifteen (15) CRGT welds, VT-3 of five (5) CRGT welds, verification of</p>

	2008	EVT-1	<p>seventeen (17) CRGT alignment pins. One slightly bent pin identified. Pin remains functional. Condition found acceptable. No other indications identified.</p> <p>EVT-1 of nine (9) CRGT welds. No indication identified. Also, verification of eight (8) CRGT welds and (8) CRGT alignment pins.</p>
CRD Stub Tube	1992	VT-3	<p>VT-3 examination of stub tube welds accessible from fuel cells 26-31 and 30-27.</p> <p>No indications identified.</p>
In-Core Housing	1992	VT-3	<p>VT-3 examination of housings accessible from fuel cells 26-31 and 30-27.</p> <p>No indications identified.</p>
Dry Tube	1984		All Dry Tubes replaced in 1984
	1994	VT-1	VT-1 examination of IRM Dry Tube 2D, at core location 37-32.
	1997	N/A	All IRM and SRM tubes replaced w/ Wide Range Monitoring tubes in 1997. No inspections required.
Instrument Penetrations	1976 to present	PT	<p>PT examination performed on all instrument nozzle to safe end welds once per interval, per Section XI.</p> <p>No indications identified.</p>
LPCI Coupling			N/A for this plant
Vessel ID Brackets	1976 to present	VT-1 or VT-3	VT-1 and VT-3 of all ID bracket welds performed once per interval per ASME Section XI. No indications identified.
	2000	EVT-1	EVT-1 of six (6) Core Spray piping brackets. No indications identified.
	2002	EVT-1	<p>EVT-1 of two (2) Core Spray piping brackets, two (2) Steam Dryer support brackets, and five (5) Jet Pump Riser brackets attachment welds.</p> <p>No indications identified.</p>

	2004	EVT-1	EVT-1 of two (2) Steam Dryer support brackets and three (3) Jet Pump riser brace attachment welds.
		VT-3	VT-3 of four (4) Steam Dryer hold down brackets and three (3) lower surveillance brackets. No indications identified.
	2006	EVT-1, VT-3, VT-1	EVT-1 / VT-3 of twelve (12) Feedwater Sparger attachment bracket welds. EVT-1 / VT-1 of two (2) Jet Pump riser brace-to-vessel welds. No indications identified. Minor anomalies incidentally identified on several FW Sparger bracket pins.
	2008	VT-3	VT-3 of 5 Feedwater Sparger end brackets and attachment pins
		EVT-1	EVT-1 of 2 Core Spray bracket attachment welds
Steam Dryer	2002	VT-1, VT-3	VT-1 of all drain channel welds. VT-1 of upper and lower dryer bank tie bar welds and baffle plate welds. VT-3 of dryer bank end and top covers, and instrument tubing and supports. One (1) central bank upper tie bar severed, and one (1) instrument tube support-to-baffle plate broken. Broken tie bar and instrument tube removed from dryer. New, stiffer tie bars welded to central dryer banks.
	2004	VT-1	VT-1 of five (5) replaced central bank upper tie bars, ten (10) original bank upper tie bars, and outer bank hoods @ internal reinforcing plates and end plate welds, per SIL 644, Supp.1. No indications identified.
	2006	VT-1	Completed all remaining BWRVIP-139 recommended inspections on seventy four (74) locations. One small indication

	2008	VT-1	<p>(7/16") identified at base of drain channel vertical weld. No other indications identified.</p> <p>Re-examined small indication (7/16") identified at base of drain channel vertical weld. No change noted. No other indications identified.</p>
Steam Separator	2006	VT-1	<p>VT-1 examinations performed on a sample of upper and lower shroud head bolt support ring gussets. 12 of 24 lower ring gussets revealed degradation. No indications on upper support ring gussets. Indications acceptable for continued service.</p>
	2008	VT-1	<p>VT-1 examinations performed on a sample of upper and re-examination of all lower shroud head bolt support ring gussets. 5 of 12 lower ring gussets with previously identified degradation had further crack growth and 4 lower gussets had new indications not previously identified. No indications were observed on the upper support ring gussets. All Indications are acceptable for continued service.</p>
Dissimilar Metal Welds (BWRVIP-75-A)	2008	UT	<p>Performed Manual UT on three (3) IGSCC Category D, dissimilar metal welds, all containing alloy 82/182 material. One indication identified on weld 2-AS-1 (Recirc Suction, N1A, Nozzle to Safe-end). Indication was not ID connected and determined to be a fabrication flaw after comparison to construction radiographs. Indication was found acceptable, no further analysis or repairs required.</p>

Reactor Internals Inspection History

Plant: Vermont Yankee

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Re-inspections
CRD Guide Tube	'95	N/A	None.
	'96	N/A	None.
	'98	N/A	None.
	'99	N/A	None.
	'01	EVT-1	Circumferential welds (CRGT-2 and CRGT-3) on four of 89 guide tubes. No indications.
		VT-3	Lugs and pin assemblies on four guide tubes. No indications.
	'02	N/A	None.
	'04	EVT-1	Circumferential welds (CRGT-2 and CRGT-3) on guide tube 10-19. No indications.
		VT-3	Lugs and pin assemblies guide tube 10-19. No indications.
	'08	EVT-1	Circumferential welds (CRGT-2 and CRGT-3) on eight guide tubes. (14-15, 14-23, 14-31, 22-15, 26-15, 30-15, 30-23 & 30-31). No indications.
		VT-3	Lugs and pin assemblies on all eight guide tubes listed above. No indications.
CRD Stub Tube	'83	VT-3	2 of 89. No indications.
Core Plate	'95	VT-3	10 fuel support castings. No indications.
	'96	VT-3	Seven fuel support castings. No indications.

		VT-3	All 30 rim hold-down bolts from above. No indications.
	'98	VT-3	Four fuel support castings. No indications.
	'99	VT-3	16 rim hold-down bolts from above. No indications.
	'01	VT-3	15 rim hold-down bolts from above. No indications.
	'02	VT-3	15 rim hold-down bolts from above. No indications.
	'04	VT-3	15 rim hold-down bolts from above. No indications.
	'07	VT-3	8 rim hold-down bolts, view from above, no indications.
	'08	VT-3	24 Core Plate Plugs. RI – Plugs unseated at 16-33S, 16-33E & 16-25N.
Core Shroud	'95	UT	Seven circumferential welds. Significant indications found in H5 and H6, less extensive in H4. Very minor indications in H1, H2, and H3.
	'96	UT, ET	Six vertical welds (all welds between H3 and H7). No indications.
		EVT-1	Two vertical welds (both welds between H1 and H2) – OD only. No indications.
		UT, ET	Six ring-segment welds (all three at top guide and all three at core plate). No indications.
		VT-3	Four tie-rods (repair) installed. Baseline inspection performed.
	'98	VT-3	Retorqued, reinspected all four tie-rods.
	'99	VT-3	Reinspected all four tie-rods.

	'01	N/A	None.
	'02	VT-3	Ten-year (3 rd Interval) Category B-N-2 core support structure inspection. No indications.
	'04	EVT-1	2' sections in four quadrants of H1, H2, and H3. All six vertical welds between H3 and H7. All three ring-segment welds at core plate. No indications. EVT-1 exams were from the shroud OD.
		VT-3	Two tie-rods. No indications.
	'05	EVT-1	Top Guide ring segment welds (3 welds) (NRI)
	'07	UT & EVT1	Design Reliant portions of H1, H2, H3 RI, evaluated no repair required
		UT	100% accessible of Vertical Welds S4V1&V2, S5V1&V2,S7V1&V2 NRI
Core Shroud Support	'95	VT-1	Both access hole covers. No indications.
	'96	UT, ET	H8 (25%) & H9 (22%). No indications.
		VT-1	Both access hole covers. No indications.
	'98	MVT-1	Both access hole covers. No indications.
	'99	EVT-1	Both access hole covers. No indications.
	'01	N/A	None.
	'02	EVT-1	Both access hole covers. No indications.
		VT-3	Ten-year (3 rd Interval) Category B-N-2 core support structure inspection. No indications.
	'04	N/A	None.
	'05	EVT-1	10 % of H8 & H9 at 0 and 180 Degree locations. (NRI)

		EVT-1	Access hole Cover at 180 degree location (NRI)
		EVT-1	Core Shroud vertical welds SC-V1 and SC-V2 (from outside the shroud) (NRI)
		VT-3	Annulus FOSAR (NRI)
	'07	EVT1	SSC-V1 & V2 (Shroud support cylinder vertical welds) NRI
		VT-3	Annulus FOSAR (NRI)
		EVT-1	Access hole Cover at 0 degree location (NRI)
	'08	VT-3	Annulus FOSAR (NRI)
Core Spray Piping	'95	CSVT-1	All piping and brackets. No indications.
	'96	UT	39 circumferential welds. Two collar-to-shroud welds (P8b) with indications.
		EVT-1	Five circumferential welds not accessible for UT. No indications.
		CSVT-1	All brackets. No indications.
	'98	EVT-1	Re-inspected eleven circumferential welds: two with previous indications, nine that were inaccessible for full UT in '96. No indications.
	'99	EVT-1	Re-inspected 30 circumferential target welds. No indications.
	'01	EVT-1	Re-inspected 32 circumferential target welds. No indications.
		UT	Four P9 welds. These UT inspections were invalidated by further BWRVIP qualification work performed May 2002.
	'02	EVT-1	Re-inspected 34 circumferential target welds. No indications.
		EVT-1	Inspected all four piping brackets and

			attachment welds. No indications.
	'04	EVT-1	Reinspected 34 circumferential target welds. No indications.
	'05	EVT-1	Reinspected 34 circumferential target welds (NRI)
	'07	EVT-1	Reinspected 34 circumferential target welds (NRI)
		UT	1P8b weld No change in flaw size acceptable without repair
			Pre-Emptive Clamp Repair installed on 3P8b weld.
	'08	EVT-1	Re-inspected 30 circumferential target welds. No indications.
		EVT-1	Re-inspected 4 piping brackets and attachment welds. No indications.
		VT-1	Core Spray 3P8b weld clamp repair. No indications.
Core Spray Sparger	'95	CSV T-1	100% IEB 80-13 inspections performed. No indications.
		VT-3	Repair clamp over tee-box plug (cracked weld) installed in 1980. No indications.
	'96	CSV T-1	100% IEB 80-13 inspections performed. No indications.
		VT-3	Sparger tee-box repair. No indications.
	'98	MVT-1	17 of 20 large (tee-box to header, tee-box cover plate, and header to end cap) circumferential welds (3 inaccessible). No indications.
		VT-3	Sparger nozzles. No indications.
		VT-3	All twelve brackets. No indications.

		VT-3	Sparger Tee-box repair. No indications.
	'99	VT-3	Sparger Tee-box repair. No indications.
	'01	EVT-1	17 of 20 large circumferential welds mostly limited exams (3 inaccessible). No indications.
		VT-1	50% of nozzles. No indications.
	'02	VT-1	Inspected all 12 core spray sparger brackets. No indications.
	'04	EVT-1	17 of 20 large (tee-box to header, tee-box cover plate, and header to end cap) circumferential welds. . No relevant indications.
		VT-1	Nozzles on two of four spargers. Sparger tee-box repair. No relevant indications.
	'05	VT-1	Re-Inspected all 12 Core Spray Sparger Brackets. (NRI)
	'07	EVT-1	20 of 20 large (tee-box to header, tee-box cover plate, and header to end cap) circumferential welds and drain holes. NRI
		VT-1	Nozzles on two of four spargers. Sparger tee-box repair. NRI
	'08	VT-1	Re-Inspected all 12 Core Spray Sparger Brackets. (NRI)
Feedwater Spargers	'95	MVT-1	Tee-box welds and end bracket attachment welds. No indications.
	'96	N/A	No FW sparger inspections performed.
	'98	VT-3	Piping and brackets. No indications.
		MVT-1	Tee-box welds and end bracket attachment welds. No indications.
	'99	N/A	No FW sparger inspections performed.

	'01	VT-3	Piping and brackets. No indications.
		VT-1	Tee-box welds and end bracket attachment welds. No indications.
	'02	EVT-1	End bracket attachment welds. No indications.
	'04	VT-3	Piping and brackets. No indications.
		VT-1	Tee-box welds and end bracket attachment welds. No indications.
	'07	VT-3	Piping and brackets. Minor thermal fatigue cracks at sparger flow holes.
		VT-1	End bracket attachment welds. Bent keepers and minor pin wear on A, B & D spargers.
	'08	VT-3	End brackets and keepers with indications from 2007. Recordable indications on FW-A-EB1, FW-B-EB1 & FW-D-EB2
In-Core Housing	'83	VT-3	2 of 89. No indications.
In-Core Dry Tubes	'86		9 Dry tubes replaced due to cracking
	'95	VT-1, -3	Four dry tubes. 08-13, 16-21, 24-29 inspected VT-3; 32-21 replaced. No indications.
	'96	N/A	None.
	'98	N/A	None.
	'99	VT-1, -3	32-13, 32-37. No indications.
	'01	N/A	None.
	'02	N/A	None.
	'04	VT-1, -3	08-29, 16-13. No indications.
	'07	VT-1, -3	08-37, 24-37 NRI

	'08	VT-1, -3	08-13, 16-21 & 24-29. RI - Evidence of movement on 08-13 plunger.
Instrument Penetrations	Every RFO	VT-2	Nuclear Boiler system pressure test during startup meets BWRVIP-49-A.
Jet Pump Assembly	'95	VT-3	Restrainer wedges and set screws, inlet bolted connections, sensing lines on five assemblies (50%). No indications.
		VT-1	Welds on five riser braces (50%). No indications.
	'96	VT-3	Restrainer wedges and set screws, inlet bolted connections, sensing lines on five assemblies (50%). No indications.
		VT-1	Welds on five riser braces (50%). No indications.
	'98	UT	26 of 30 Riser RS-1, RS-2, RS-3, circumferential welds. Four welds with indications – maximum approx. 3”.
		EVT-1	Remaining four riser RS-1 circumferential welds. No indications.
		MVT-1	Riser-to-restrainer RS-4, RS-5 welds on five assemblies (50%). No indications.
		MVT-1	Welds on five riser braces (50%). No indications.
		VT-1	Restrainer wedges on five assemblies (50%). No indications.
		VT-3	Restrainer set screws, inlet bolted connections, sensing lines on five assemblies (50%). No indications.
'99	UT	20 hold-down beams. One beam with UT indication on bolt hole replaced.	
	UT	160 mixer, diffuser, and adapter circumferential welds. Indications found on four diffuser welds, all less than 2”.	

		EVT-1	20 mixer (MX-1) welds. No indications.
		UT	Ten hold-down beams. No indications.
	'01	UT	Four RS-1 welds with indications from 1998. Two 1998 indications determined to be lift-off. No growth on others.
		VT-1	Restrainer wedges on five assemblies (one loop). No indications.
		VT-3	Restrainer set screws, sensing lines on five assemblies (50%). No indications.
	'02	UT, VT-1	Beams. No indications.
		UT	Four diffuser welds with indications. Indications matched '99 indications within NDE uncertainty.
	'04	EVT-1	Two RS-1 welds with UT indications. Not seen visually.
		EVT-1	50% of RS-4, RS-5, RS-8, and RS-9 welds. 50% of riser brace welds. No indications.
		VT-3	50% of inlet bolted connections. No indications.
		VT-1	50% of restrainer wedges. No indications.
		VT-3	One loop (50%) of jet pump instrumentation lines. No indications.
	'05	EVT-1	Two RS-1 welds (H & K jet pumps) with UT indications. Not seen visually.
	'07	UT	20 Beams NRI
		UT	Six (6) welds on H and K risers, 2 welds with previous indications-no changes. No new relevant indications.
		UT	112 welds on 16 jet pump diffusers. 4 previous relevant indications. No change in previous indications and no new relevant

			indications.
		VT-1	Jet pump wedges 1-10. NRI
		VT-1	Jet pump sensing lines 1-10 - NRI
	'08	EVT-1	RS-1, RS-2 & RS-3 of F, G & J - NRI
		VT-1	Jet pump wedges 11-20. NRI
		VT-1	Jet pump sensing lines 11-20 – NRI
		UT	Remaining Jet Pump Diffuser Welds - NRI
LPCI Coupling	N/A	N/A	N/A
Miscellaneous Vessel ID Brackets	'95	VT-3	Reinspected one dryer support bracket with indication from 1992. No change.
	'96	UT	Reinspected same dryer support bracket from vessel OD. No change.
	'98	VT-3	Reinspected same dryer support bracket. No change.
	'99	N/A	None.
	'01	VT-3, UT	Reinspected same dryer support bracket. No change.
	'02	VT-3	Both guide rod bracket attachments. No indications.
		VT-3	All four steam dryer support brackets. Indication on one bracket unchanged.
		VT-3	All four steam dryer hold-down brackets. No indications.
		VT-1	Six surveillance specimen holder brackets. No indications.
	'04	VT-1	Upper surface of steam dryer support brackets. RI
	'07	VT-1	4 Steam Dryer Support Attachment Welds.

	'08	VT-1	Burnishing wear on top surface. Re-inspected Steam Dryer Attachment Welds and wear patterns on top surface. One wear pattern slightly different. RI
SLC	'95	N/A	No SLC BWRVIP inspections.
	'96	N/A	No SLC BWRVIP inspections.
	'98	EVT-2	Nozzle-to-safe-end weld. No indications.
	'99	EVT-2	Nozzle-to-safe-end weld. No indications.
	'01	EVT-2	Nozzle-to-safe-end weld. No indications.
	'02	PT	Nozzle-to-safe-end weld. No indications.
	'04	PT	Nozzle-to-safe-end weld and safe-end. No indications.
	'07	PT	Nozzle-to-safe-end weld and safe-end. NRI
Steam Dryer and Separator	'95	UT	All shroud head hold-down bolts. Nine bolts with indications.
	'96	N/A	Replaced all steam separator / shroud head hold-down bolts.
	'98	VT-3	Steam dryer and separator. Indications on five tack welds on three jacking bolt (lifting eye) assemblies on the steam dryer.
	'99	VT-3	Reinspected cracked tack welds on steam dryer. No change.
	'01	N/A	None.
	'02	VT-1/3	Inspected dryer cover plates and welds and start-up instrumentation remnant. No indications.
	'04	VT-1/3	Baseline inspection of entire steam dryer, OD and ID (all accessible welds: VT-1 and plates: VT-3). Two fatigue cracks in steam dam welds repaired. 16 horizontal cracks

			in interior vertical end plates evaluated as acceptable for service. Two IGSCC cracks in interior vertical weld and drainpipe weld evaluated as acceptable for service. Pre-emptive repair (strengthening plates and gussets) installed on cover plates and upper hood.
		VT-3	Steam separator – full top and periphery inspection. No indications.
	'05	VT-1	Re-inspection of two repaired cracks in the steam dam welds repaired in 04. (NRI)
		VT-1	Drain channel weld and drain pipe weld evaluated acceptable for service in '04.(no discernable changes)
		VT-1	Re-inspection of pre-emptive repair on the strengthening plates and gussets. (NRI)
		VT-1	High stressed vertical welds interior and exterior surfaces per SIL-644 R/1 and BWRVIP-139. (NRI)
		VT-1	High stressed horizontal welds interior and exterior surfaces per SIL-644 R/1 and BWRVIP-139. (NRI)
		VT-1	Tie bars, steam dam gussets. (NRI)
		VT-1	Lifting Support hardware. (NRI)
		VT-1	Dryer leveling screw tack welds. (NRI)
		VT-1	All internal vertical weld steam dryer vane end unit to plate welds. 62 indications total found. 16 indication in '04 and 44 indications in '05. Evaluated acceptable for service.
			6 internal strut welds. (NRI)
	'07	VT-1	Steam Separator – All 36 Shroud Hold Down Bolts, 7 Standpipe welds. NRI

		VT-1	Steam Dryer - 1 st post EPU inspection per NRC commitment. 100% interior and exterior susceptible and accessible
		VT-1	locations. Re-inspection of all pre-existing flaws and repaired areas. No discernable changes in existing flaws. One relevant indication noted at the 35 degree welded dryer bank support. This indication was evaluated as not needing repair by GE.
			New indications identified on the 14 4 and 324 degree lifting rod-to-support ring stitch welds. Evaluated no repair.
			The 144 degree leveling screw tack weld had one indication. Evaluated no repair.
			Indications on the vertical guides at locations 175 and 215 degrees. Evaluated no repair.
			One new relevant indication on the dryer unit end panel to plate weld HB-V04 and several faint indications on HB-V01 weld. Evaluated no repair.
	'08	VT-1/VT-3	Steam Dryer - 2 nd post EPU inspection per NRC commitment. 100% interior and exterior susceptible and accessible locations, re-inspection of all pre-existing flaws and modified/repaired areas. No discernable changes in existing flaws. 18 new RI's.
			The new indications include separate indications at the top of DC-V-4C, new indications on leveling screws & lifting rod tack welds, vertical guides, interior vane end panels and new indications on interior drain piping DC-H-27 and DC-V-05.
Surveillance Specimen Holders	'02	VT-3	Both remaining surveillance specimen holders. No indications.
	'08	VT-1	Both remaining surveillance specimen holders. No indications.

Top Guide	'95	VT-1	Ten locations in top guide grid IAW SIL-554. No indications.
	'96	VT-1	Seven locations in top guide grid IAW SIL-554. No indications.
	'98	MVT-1	Four locations in top guide grid IAW SIL-554. No indications.
	'99	VT-1	Two aligner assemblies. No indications.
		VT-1	Two hold-down assemblies. No indications.
		VT-1	Four locations in top guide grid. No indications.
	'01	VT-3	25% of rim and cover sheet bolts (NNS). No indications.
	'02	VT-1	Two hold-down assemblies. No indications.
	'04	N/A	None.
	'05	VT-1	Two hold-down assemblies at 18 and 198 degree locations. (NRI)
'08	EVT-1	Two hold-down assemblies at 108 and 288 degree locations. (NRI)	
	EVT-1	Grid Beams inspected at locations 14-15, 14-23, 14-31, 22-15 and 25-15. (NRI)	
Dissimilar Metal Weld Exams (VIP 75-A)	'08	Automated UT	NIA, N2K (Cat. D) – No Flaws