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2011-060 BWR Vessel & Internals Project (BWRVIP)

March 24, 2011

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

Attention: Jonathan Rowley

Subject: Project No. 704 – BWR Vessel and Internals Inspection Summaries for Spring 2010 Outages

Enclosed are five (5) copies of the document entitled "BWR Vessel and Internals Project, Vessel Internals Inspection Summaries for Spring 2010 Outages, March 2011."

The information provided in the enclosed document identifies the BWR internal components inspected and generally includes the date or frequency of inspection, the inspection method used and a summary of results including repair or replacement activities. Please note that the inspection summaries now include the results of the BWRVIP-75-A Dissimilar Metal Weld examinations. This information is being used by the BWRVIP to track the material performance of the associated vessel internal components. The enclosed document is being provided to the NRC for information only.

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

Representatives of the BWRVIP would be pleased to meet with the NRC staff to discuss any comments or questions related to the enclosed document. If you have any questions on the enclosed document or the general subject of inspection results, please call Chuck Wirtz, BWRVIP Integration Committee Technical Chairman, FirstEnergy, at 440.280.7665.

Sincerely,

Dave Czufin
Exelon
Chairman, BWR Vessel and Internals Project

c: Andrew Hon, NRC

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NRR

Additional copies
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BWR Vessel and Internals Project

Vessel Internals Inspection Summaries for Spring 2010 Outages

March 2011

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Reactor Internals Inspection History

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

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

	2006	UT	Reinspection (2006) per BWRVIP-76: H-6 and H-7 were at the end of their inspection interval. UT examination of H-6 (24.41% coverage (one-sided), 0.0% flawed per examined weld length) and H-7 (19.44% coverage (one-sided), 3.27% flawed per examined weld length) was less than the BWRVIP-76 mandated 50% minimum due to mechanical and physical accessibility problems (e.g., RPV surveillance capsules, sensing lines, etc.) with the UT inspection equipment. Plant-specific evaluations demonstrated adequate structural margin exists for continued operation for one fuel cycle. Both Welds H-6 and H-7 will require reinspection using a two-sided UT technique during the U3C13 Refueling Outage in 2008. Attempts were made to examine Horizontal Welds H1 through H5 and Vertical Welds V6 and V7 one cycle before their inspection interval will expire. UT examinations (one-sided) of H-1 (75.62 % coverage, 5.65% flawed per examined weld length), H-2 (86.1% coverage, 1.28% flawed per examined weld length), and H-4 (15.92% examined, 3.24% flawed per examined weld length) were performed. Inspections of H-3, H-5, V-6, and V-7 were not performed. Plans are to reinspect Welds H1 through H5 using a two-sided UT technique during the U3C13 Refueling Outage in 2008. Welds V6 and V7 will be inspected using a one-sided UT technique during the U3C13 Refueling Outage in 2008.
	2008	UT	Reinspection (2008): UT examination of H1 (single-sided) and H2, H3, H4, H5, H6, H7, V5, and V6 (two-sided) performed per BWRVIP-76. The length of the weld inspected was at least 50 percent of the weld circumference in all

			cases. Flaws observed in five (H1, H2, H3, H4, & H7) horizontal welds and one vertical weld (V5) were less than 20 percent of examined length. Flaws observed in the H5 horizontal weld were less than 30 percent of examined length. Barring license renewal impacts, all horizontal welds with the exception of H5 will not be reinspected until 2018. The H5 weld (and associated vertical welds) will require reinspection in 2014.
Shroud Support	1994 1998 2000 2004	EVT-1, UT, VT-1	Manway cover (access hole cover) UT inspected during U3C6 Refueling Outage (1994) per the requirements of GE SIL No. 462. No reportable indications were found. Reinspection (1998): Both access hole cover exams (UT) performed with no reportable indications. Baseline (2000) EVT-1 inspection per BWRVIP-38 for Shroud Support Welds H-8 and H-9 at 0° and 180° locations. No reportable indications. Reinspection (2004) of access hole cover locations at 0° and 180° per GE SIL No. 462 R1 (EVT-1). No reportable indications were found. Reinspection (2004) of Shroud Support welds H-8 (EVT-1) and H-9 (manual UT) per BWRVIP-38, -104. No reportable indications were found.
	2008	EVT-1	Reinspection (2008) of Shroud Support weld H-8 (EVT-1) at 0° and 180° per BWRVIP-38. No reportable indications were found. Reinspection (2008) of access hole cover locations at 0° and 180° per GE SIL No. 462 R1 (EVT-1). No reportable indications were found.

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

	2006	EVT-1, UT, VT-1	Reinspection (2006) per BWRVIP-18-A: EVT-1 visual inspections (T-Box welds). No change in reportable indication on left side of T-Box at Azimuth 240°. No other reportable indications. UT examination of Downcomer "B" elbow welds and Downcomer "A", "B", "D" sleeve welds, no indications. Supplemental EVT-1 for Welds P4d, P8a, and P8b; no reportable indications. EVT-1 visual inspection of T-Box repair brackets, no indications.
	2008	EVT-1, VT-1	Reinspection (2008) per BWRVIP-18-A: EVT-1 visual inspections (T-Box welds, piping bracket welds), no reportable indications. No change in arc strike at 117°. No change in reportable indication on left side of T-Box at Azimuth 240°. EVT-1 visual inspection of T-box repair brackets at 120° and 240°; no reportable indications. VT-1 visual inspection of "C" Downcomer lower section replacement, no reportable indications.
	2010	UT, EVT-1	Reinspection (2010) per BWRVIP-18-A: EVT-1 visual inspections performed of T-Box welds; no reportable indications. No change in arc strike at 117°. No change in reportable indication on left side of T-Box at Azimuth 240°. EVT-1 visual inspection performed of T-box repair brackets at 120° and 240°; no reportable indications. UT examination performed of Downcomer "C" elbow welds and Downcomer "A", "B", "D" sleeve welds; no reportable indications. Supplemental EVT-1 performed for Welds P4a, P4b, P8a, and P8b; no reportable indications.
Core Spray Sparger	1981-1997 1998 2000 2004	EVT-1, VT-1	IEB 80-13/GE SIL No. 289 R1S1R1 of welds on sparger. Minor surface indications found.

	2008		Reinspection performed in 1997 showed no change in indications. Reinspection (1998) performed; no new reportable indications. Reinspected (2000) per BWRVIP-18 with no reportable indications. Reinspection (2004) per BWRVIP-18: EVT-1 and VT-1 inspections of sparger welds, no reportable indications. Reinspection (2008) per BWRVIP-18-A: EVT-1 and VT-1 inspections of sparger welds and sparger bracket welds, no reportable indications.
Top Guide (Rim, etc.)	1994 1998 2000 2004 2008	EVT-1, VT-1	VT-1 performed per the recommendations of GE SIL No. 554. No indications found. Reinspection (1998) at accessible beams and alignment pins. No reportable indications. Baseline EVT-1/VT-1 inspection (2000) per BWRVIP-26 with no reportable indications. Reinspection (2004) per BWRVIP-26: Locations 2 and 3 (VT-1) and Location 11 (EVT-1) inspected with no reportable indications. Reinspection (2008) per BWRVIP-26-A: Locations 2 and 3 (VT-1) and Location 11 (EVT-1) inspected with no reportable indications.
	2010	EVT-1	Baseline (2010) per BWRVIP-183: Location 1 (Grid Beam and Beam-to-Beam Crevice Slot) inspected for five grid beam cells; no reportable indications.
Core Plate (Rim, etc.)	1994	VT-1,	VT-1 (1994) performed per the

	1998 2000 2002 2004 2006	VT-3	recommendations of GE SIL No. 588. No indications found. Reinspection (1998) at accessible beams and alignment pins. No reportable indications. Reinspection (2000) per BWRVIP-25: Eighteen (18) of thirty-four holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Reinspection (2002) per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Reinspection (2004) per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Reinspection (2006) per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Seventeen (17) plugs were VT-3 inspected with no reportable indications.
	2008	VT-3	Reinspection (2008) per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Twenty-two (22) plugs were VT-3 inspected with no reportable indications.
	2010	VT-3	Reinspection (2010) per BWRVIP-25: All thirty-four (34) holddown bolts (Location 10) were VT-3 inspected from above with no reportable indications. Fifteen (15) plugs (Location 13) were replaced with newer, more IGSCC-resistant plugs.
SLC	Prior to 2006	VT-2	(Prior to 2006): Nozzle is leak checked

			every outage and volumetric exams are conducted per code requirement. No indications noted.
	2006	EVT-2	(2006): 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 reportable indications found.
	2010	UT, EVT-2	(2010): UT performed on SLC Nozzle N10 (stainless steel safe end-to-pipe weld). Bare metal examination (EVT-2) performed during each refueling outage for Nozzle N10 per BWRVIP-03, -27. No reportable indications found.
Jet Pump Assembly	1991-1997 1998	EVT-1, VT-1, VT-3	1994: VT-3 inspection of sensing lines per GE SIL No. 420, reinspection in 1997 - no indications in either inspection. All riser braces inspected in 1994 per SIL No. 551 - cracks found between riser and riser brace on Jet Pumps 5 and 6. Repair was conducted with installation of Jet Pump Riser Brace Clamp. 1997 reinspection for Jet Pumps 1-10 - no indications found. Jet pump adjusting screws inspected in 1991 per SIL No. 574 - no indications found. Reinspection in 1997 identified a minor indication on Jet Pump No. 6, shroud side, set screw tack weld. Set screw contact verified to be acceptable per GE RICSIL No. 078. Jet pump riser elbow circumferential welds (upper and lower) inspected in 1997 per GE SIL No. 605 R1 - no indications found. Jet pump beams replaced with beams manufactured from a modified heat treatment material in 1994. No inspection has been performed since the replacement. Baseline (1998) per BWRVIP-41: EVT-1 of Medium Priority Locations RB-1a-d,

			RB-2a-d, RS-6, RS-7, RS-8, RS-9, IN-4, MX-2, DF-1 (Jet Pumps 5 & 6), VT-1 of Medium Priority Location WD-1 (Jet Pumps 5 & 6), EVT-1 of High Priority Locations RS-3, DF-2, AD-1, AD-2, AD-3a, AD-3b (Jet Pumps 5, 6, 14, 15, 16); no reportable indications. VT-3 of Riser Brace Clamp repair (Jet Pumps 5 & 6), no reportable indications.
	2000 2002	EVT-1, VT-1, VT-3	Baseline (2000) per BWRVIP-41: VT-3 of holddown beam locations BB-1 and BB-2 to verify proper function of beam (all 20 jet pumps) - no indications. EVT-1 of High Priority Locations RS-1, RS-2, RS-3, DF-2, AD-1, AD-2, AD-3a, AD-3b (all jet pumps not examined in 1998); no reportable indications. Baseline (2002) per BWRVIP-41: EVT-1 of Medium Priority Locations RB-1a-d, RB-2a-d, RS-6, RS-7, RS-8, RS-9, IN-4, MX-2, DF-1 (Jet Pumps 3, 4, 7, 8, 9, 10, 15, 16); no reportable indications. VT-1 of Medium Priority Location WD-1 (Jet Pumps 3, 4, 7, 8, 9, 10, 15, 16); inlet-mixer wedge off-center on Jet Pump No. 4, no other reportable indications. EVT-1 of Set Screw Locations AS-1 and AS-2 performed for Jet Pump No. 4, indication observed on shroud-side set screw tack weld. Justification for continued operation (JCO) issued for continued operation of Jet Pump No. 4. VT-3 of Riser Brace Clamp repair (Jet Pumps 5 & 6), no reportable indications.
	2004	EVT-1, VT-1, VT-3	Baseline (2004) per BWRVIP-41: EVT-1 of Medium Priority Locations RB-1a-d, RB-2a-d, RS-6, RS-7, RS-8, RS-9, IN-4, MX-2, DF-1 (remaining 10 jet pumps - 1, 2, 11, 12, 13, 14, 17, 18, 19, 20); no reportable indications. VT-1 of Medium Priority Location WD-1 (remaining 10 jet pumps plus Jet Pump No. 4); inlet-mixer wedge off-center on Jet Pumps 4,

			19, and 20, no other reportable indications. VT-1 of Set Screw Locations AS-1 and AS-2 performed for same 11 jet pumps where WD-1 was examined per GE SIL No. 629; indication on shroud-side set screw for Jet Pump No. 4 not observed, 0.009-inch gap observed between vessel-side set screws and inlet-mixer bellyband for Jet Pump No. 20. JCO issued for continued operation of Jet Pumps 4, 19, and 20.
	2006	UT, EVT-1, VT-1, VT-3	Baseline (2006) per BWRVIP-41 R1, - 138: UT of holddown beam locations BB-1, BB-2, and BB-3 (Jet Pumps 1 thru 20) - no reportable indications. Reinspection (2006) per BWRVIP-41 R1: EVT-1 of High Priority Locations RS-1, RS-2, RS-3, DF-2, AD-1, AD-2, AD-3a, AD-3b (Jet Pumps 11 thru 20) - no reportable indications. New baseline (2006) per BWRVIP-41 R1: EVT-1 of Medium Priority Locations RS-8 and RS-9 (Jet Pumps 1 and 2) - no reportable indications. VT-3 of Riser Brace Clamp repair (Jet Pumps 5 & 6), no reportable indications. Reinspection (2006) per BWRVIP-41 R1: VT-1 of Medium Priority Location WD-1 (Jet Pumps 1 thru 20) - No wear noted; inlet-mixer wedge off-center but contact observed between wedge and restrainer bracket pad on Jet Pumps 2, 4, 5, 7, 8, 12, 13, 17, 19, and 20. VT-1 of Set Screw Locations AS-1 and AS-2 performed for Jet Pumps 1 thru 20. Backlighting identified six (6) set screw gaps greater ranging from 16 to 33 mils in width. Six (6) auxiliary wedges installed on Jet Pumps 4, 7, 10, 16, 18, and 20.
	2008	VT-1	Reinspection (2008) per BWRVIP-41

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

			VT-3 performed of sensing line clamps installed during U3R13 (2008) on Jet Pumps 1-5 and 11-15 performed to confirm that all of the repair hardware is in place and that the hardware has not shifted or changed from the as-installed condition. No relevant indications were observed.
Jet Pump Diffuser	N/A	N/A	N/A
CRD Guide Tube	1994 2004 2006 2008 2010	EVT-1, VT-3	Guide tubes vacuumed and inspected during U3C6 Refueling Outage - no reportable indications noted. Baseline (2004) per BWRVIP-47: 10 control rod guide tubes examined. VT-3 visual examination of Locations CRGT-1 and FS/GT-ARPIN-1, MVT-1 visual examination of Locations CRGT-2 and CRGT-3; no reportable indications. New baseline (2006) per BWRVIP-47: 13 control rod guide tubes examined. VT-3 visual examination of Locations CRGT-1 and FS/GT-ARPIN-1, EVT-1 visual examination of Locations CRGT-2 and CRGT-3; no reportable indications. Baseline (2008) per BWRVIP-47-A: 3 control rod guide tubes examined. VT-3 visual examination of Locations CRGT-1 and FS/GT-ARPIN-1, EVT-1 visual examination of Locations CRGT-2 and CRGT-3; no reportable indications. Baseline (2010) per BWRVIP-47-A: 3 control rod guide tubes examined. VT-3 visual examination of Locations CRGT-1 and FS/GT-ARPIN-1, EVT-1 visual examination of Locations CRGT-2 and CRGT-3; no reportable indications.
CRD Stub Tube	N/A	N/A	N/A
In-Core Housing	N/A	N/A	N/A
Dry Tube	1994	VT	Dry tubes replaced with modified design

			which is resistant to cracking. Inspections will be scheduled after dry tubes have reached the expected 20-year life (2014).
Instrument Penetrations	2008	VT-2	Visual leak check is performed during each refueling outage. Bare-metal examination (enhanced VT-2) performed for DM welds (nozzle-to-safe end) associated with nozzles N11A&B, N12A&B, and N16A&B. No reportable indications.
	2010	UT, VT-2	UT performed on RPV Instrument Nozzles N11A&B, N12A&B, and N16A&B (stainless steel safe end-to-pipe weld). Visual leak check (VT-2) performed during each refueling outage for Nozzles N11A&B, N12A&B, and N16A&B. No reportable indications.
Vessel ID Brackets	1997 1998 2000 2004 2006	VT-1 and VT-3	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 3-SI-4.6.G. No indications were recorded. Reinspection (1998): No reportable indications. Reinspection (2000): No reportable indications. Reinspection (2004): VT-3 visual examinations performed. Abnormal wear and a lap of smeared metal noted on lead-in to Steam Dryer Bracket at Azimuth 275°. Main bracket also shows some missing material on the right side. JCO issued to support return to service. Additionally, a retaining pin has dropped into the top plate on Feedwater Sparger End Bracket at Azimuth 185°. Disposition performed to leave as-is. No other reportable indications were noted.

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

			approximately 10° counter-clockwise from the as-left condition from U3R13; bracket was rotated to original position. No additional wear was noted on bracket-to-repair clamp interface.
LPCI Coupling	N/A	N/A	Not applicable to this plant.
Steam Dryer	1998 2002	VT-3	(1991): During Unit 3 Restart, cracking was found in 3 of 8 Unit 3 Steam Dryer Drain Channel to Skirt Attachment Welds. Repair of the cracked welds and reinforcement of all 8 welds for future mitigation performed. (1998): Welds associated with Drain Channel #1 (Azimuth 50°) were visually inspected (VT-3) in accordance with vendor requirements. No reportable indications were noted. (2002): Welds associated with Drain Channel #2 (Azimuth 130°) were visually inspected (VT-3) in accordance with vendor requirements. No reportable indications were noted.
	2004	VT-1, VT-3	(2004): The following locations were visually inspected (VT-1) in accordance with BWRVIP-139 and GE SIL 644 R1: • Horizontal and vertical welds which outline the steam dryer outer bank • Cover plate between the outer hood vertical plate and the support ring • Dryer manway @ 90° No reportable indications were noted. • Stabilizer/Tie Bars (original) - Visually inspected (VT-1) for damage; no deformation noted. • Stabilizer/Tie Bar repairs - Repairs made during U3C11 Mid-Cycle Outage in 2003 were visually inspected (VT-1) to verify that replacement tie bars and attachment welds were intact. No reportable indications were noted.

			The following locations were inspected in accordance with INPO OE: • Leveling screw tack welds @ 5° & 185° visually inspected (VT-1) - No reportable indications were noted. • Dryer surfaces visually inspected (VT-3) - Light Noble Metal coating observed in many areas, some with flaking of crud deposits (NRI). Welds associated with Drain Channel #3 (Azimuth 230°) visually inspected (VT-1) in accordance with BWRVIP-139. No reportable indications were noted.
	2006	VT-1, VT-3	(2006): The following locations were visually inspected (VT-1) in accordance with BWRVIP-139 and GE SIL 644 R1: • Weld seams associated with the outer side of the inner banks - No reportable indications. • Stabilizer/Tie Bars (original) - Visually inspected (VT-1) for damage; no deformation noted. • Stabilizer/Tie Bar repairs - Repairs made during U3C11 Mid-Cycle Outage in 2003 were visually inspected (VT-1) to verify that replacement tie bars and attachment welds were intact. No reportable indications were noted.
	2008	VT-1, VT-3	(2008): The following locations were visually inspected (VT-1) in accordance with BWRVIP-139 and GE SIL 644 R1: • Stabilizer/Tie Bars - No apparent change to deformation noted on tie bars between Banks 2 & 3 and 4 & 5: All 3 locations (0°, center, 180°). Evaluation performed to accept-as-is until Extended Power Uprate (EPU) implementation in 2010. Replacement tie bars between Banks 3 & 4 examined; no reportable indications.

			• Welds associated with Drain Channel #1, #2, #3, and #4 (Azimuths 50°, 130°, 230°, and 310°) visually inspected (VT-1) in accordance with BWRVIP-139. No reportable indications were noted. VT-3 visual examination performed of accessible steam dryer surfaces to look for potential damage as indicated by increased moisture carryover. No reportable indications were noted.
		VT-1	Pre-EPU inspection of Steam Separator Standpipe Welds performed to look for fatigue cracking. Linear indication identified on the top of the Lower Gusset between Shroud Head Bolts #14 and #15. Engineering Evaluation allows operation for one cycle as-is with no repair required. Reinspection during the U3C14 Refueling Outage in 2010 will be scheduled to determine if the indication has changed.
		VT-1	Pre-EPU inspection of all 48 Shroud Head Bolts performed to look for wear in locking pin window and on mid-span and top support ring gussets. Material deformation noted on the indicator window of Shroud Head Bolt #42. Engineering Evaluation allows operation for one cycle as-is with no repair required. Reinspection during the U3C14 Refueling Outage in 2010 will be scheduled to determine if the indication has changed.
	2010	VT-1	(2010): The following locations were visually inspected (VT-1) in accordance with BWRVIP-139 and GE SIL 644 R1: • Stabilizer/Tie Bars - Four tie bars (TB-2/3-01, -02, TB-4/5-01, -02) exceeded acceptance criteria as regards to horizontal and vertical deflection and were replaced with

			EPU-qualified replacements. Two additional tie bars (TB-2/3-03 and TB-4/5-03 were also replaced with EPU-qualified replacements to maintain dryer symmetry. • Drain Channel Welds • Vertical Bank Welds • Lower Horizontal Bank Welds • Upper Horizontal Bank Welds • Lifting Rods • Upper Support Ring With the exception of the tie bars, no reportable indications were noted.
		VT-1	The following locations were inspected in accordance with INPO OE: • Leveling screw tack welds at 5 and 185 degrees were VT-1 inspected; no relevant indications were noted. • Dryer hood exterior surfaces above the support ring were VT-1 inspected; light to heavy scale deposits were observed.
		VT-1	Linear indication observed during U3R13 (2008) on the top of the Lower (Mid-Span) Gusset between Shroud Head Bolts #14 and #15 was re-examined; no change was noted in the previous indication. Reinspection during U3R15 in 2012 will be scheduled to determine if the indication has changed.
		VT-1	Material deformation noted on the indicator window of Shroud Head Bolt #42 during U3R13 (2008) was re-examined; a slight increase noted in the distortion of the window. Reinspection during U3R15 in 2012 will be scheduled to determine if the indication has changed.
DM Welds - BWRVIP-75-A Cat. C	2010	N/A	No Cat. C DM Welds were inspected during Unit 3 Refueling Outage 14 (U3R14).

DM Welds - BWRVIP-75-A Cat. D	2010	N/A	No Cat. D DM Welds were inspected during Unit 3 Refueling Outage 14 (U3R14).

Reactor Internals Inspection History

Plant: **Brunswick Unit 1**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Re-inspections
Core Shroud	1993	EVT-1 and UT	EVT-1 baseline. Indications in several circumferential welds and ring segment welds. No indications on vertical welds. UT selected areas on H1 and H5. Installed clamp repair on H2/H3. Full structural margins on non-repaired welds.
	1995	UT	Re-inspected H1 & H5 with no indication growth. 2 repair brackets inspected with no indications.
	1996	UT	Re-inspected H1 and H5 with no indication growth. UT baseline of H4, H6A, H6B and H7. No indications on H7. Minor indications on H4, H6A and H6B with no impact to structural margins. VT-1 and VT-3 inspected 3 repair brackets with no indications.
	1998	VT-1/VT-3	No inspections of welds was performed. Inspected 7 of 12 total shroud clamps with no indications. This completed the initial inspection of all 12 clamps installed in 1993.
	2000	UT/EVT-1/ VT-1/VT-3	Re-inspected H1 and H5 (UT) with no indication growth. Re-inspected (EVT-1) OD side of V1 and V2 with no indications. VT-1 and VT-3 inspected 3 repair brackets with no indications.
	2002	VT-1/VT-3	No shroud weld inspections were performed. Inspected 4 of 12 total shroud repair clamps with no indications noted.
	2004	VT-1/VT-3	Visually examined 2 shroud vertical welds and 4 of 12 total shroud repair

			brackets with no indications noted.
	2006	VT-1/VT-3	Visually examined 2 shroud vertical welds (V1 & V2) and 4 of 12 total shroud repair brackets with no indications/degradation noted.
		UT	Performed UT of Core shroud horiz. Welds H4, H6a, H6b, & H7 all of which are <10% cracked.
	2008	EVT-1	Core Shroud Vertical Welds V3, V4, V7, and V8 ID & OD. (NRI)
		VT-1/VT-3	Shroud repair clamps, 4 of 12 (NRI)
	2010	VT-1/VT-3 UT	Shroud Repair clamps 4 of 12 (NRI) H1 upper & lower, H5, V1, V2 Flaw found in V1 outside HAZ potentially IASCC ~ 2.9" long. V2 – (NRI) H1 upper 100% coverage, 75.5% flawed H1 lower 83% coverage, 10.3% flawed H5 100% coverage, 17.49% flawed During H1 lower inspection, flaws noted on the ID of the core shroud in the HAZ of the sparger support brackets at 30,60,90,120,150,240,270, &300 degree Azimuths. (RI) Not all were seen visually due to access restriction.
Shroud Support	1993	VT	VT of accessible areas on H8, H9, and access hole covers with no indications.
	1995	UT	UT baseline of H9 and VT reinspection of portions of H8 with no indications noted. VT-1 inspection of shroud support Access Hole Covers with no indications noted.
	1996	EVT-1	EVT-1 examination of Access Hole Covers with no indications noted.
	1998	EVT-1	Inspected Access Hole covers with no indications noted
	2002	EVT-1	Inspected both Access Hole Cover welds

			with no indications noted. Visually inspected approximately 18% of top side of H8 with no indications noted.
	2004	UT	UT 50% of H9 with no relevant indications noted.
	2006	EVT-1	Both Access Hole Covers – No indications noted.
	2008	EVT-1	H8 at 0 & 180 degrees (NRI)
	2010	EVT-1	Both access hole covers (NRI)
Core Spray Piping	1980's to Present	MVT-1 and EVT-1	IEB 80-13 of piping and welds in annulus. One indication on the header piping. Full structural margins. Inspected per BWRVIP-18 in Spring 1996 with no new indications.
	1998	EVT-1	Performed re-inspection of Core Spray piping and spargers per BWRVIP-18. No new cracking noted. Previous cracking had no significant length changes.
	2000	EVT-1	Performed re-inspection of Core Spray piping and spargers per BWRVIP-18. No new cracking noted. Previous cracking had no significant length changes.
	2002	EVT-1	Inspected 100% of the Core Spray piping creviced welds and 25% of the elbow welds per BWRVIP-18. No new cracking noted. Re-inspection of a previously identified crack showed some small increase in length.
	2004	EVT-1	Inspected 100% of the Core Spray piping creviced welds and 25% of the elbow welds per BWRVIP-18. No new cracking noted. Re-inspection of a previously identified crack showed no discernible change in length.
	2006	EVT-1 & UT	Inspected 100% of the Core Spray piping creviced welds and 25% of the elbow

			welds per BWRVIP-18-A. No new cracking noted except for the P3c-270 piping butt weld (unique to BNP-1). Additional cracking on the lower side of the weld prompted emergent UT to interrogate the entire circumference. Cracking extent estimated to be 80% of the Circ. Repair installed IAW BWRVIP-19-A and BWRVIP-84 requirements.
	2008	EVT-1	All P1, P2, P3, P5, P6, P7, P8 & 9 P4's 1 PB (NRI)
	2010	EVT-1/VT-3 EVT-1	PB @30 deg (NRI) 2-P1& P2's, 4-P3,P4,P5,P6,P7, 8-P8's (NRI) one repair clamp P3c-RC (NRI) except for RI on P5-350, 0.45" long
Core Spray Sparger	1980's to Present	MVT-1, EVT-1, and VT-3	IEB 80-13 of welds on piping and spargers. One indication on sparger T-Box. Inspected per BWRVIP-18 in Fall, 1996 with no growth in old indication and no new indications.
	1998	MVT-1, EVT-1, and VT-3	Re-inspected per BWRVIP-18 with no new indications. Previously identified crack had no significant length changes.
	2000	MVT-1, EVT-1, and VT-3	Re-inspected per BWRVIP-18 with no new indications. Previously identified crack had no significant length changes.
	2002	EVT-1, VT-1	Inspected sparger tee welds, sparger drain welds, sparger end cap welds and 25% of the sparger nozzle welds and support brackets in accordance with BWRVIP-18. No new indications were reported and no change was noted in a previously reported indication.
	2004	EVT-1, VT-1	Inspected 100% of sparger tee welds, 100% of the sparger end cap welds, 50% of the sparger drain welds, and 25% of the sparger nozzle welds and support brackets in accordance with BWRVIP-18. No new indications were reported

			and no change was noted in a previously reported indication.
	2006	EVT-1, VT-1	Inspected 100% of sparger tee welds. Existing crack on S2a-350 determined to be same length. Crack in a tack weld on a sparger nozzle was found and 100% sample expansion to all nozzle welds were performed per BWRVIP-18-A. Two additional cracked tack welds were identified.
	2008	VT-1	2 S1, 4 S2, 4 S4, 2 Noz tack welds 5 SB, Sparger Nozzles SN170-02c-53c, 1 SD (NRI)
		VT-1/VT-3	Newly installed repair clamp replacing S2a-350 and S2b-350 welds.
	2010	EVT-1	2-S1, 4-S2, 52-S3, 4-S4, 5-SB, 1-SD (NRI) 3 cracked tack welds, 45a, 24c, 30d previously discovered. Flaws noted on the ID of the core shroud in the HAZ of the sparger support brackets at 30,60,90,120,150,240,270, &300 degree Azimuths. (RI) Not all were seen visually due to access restriction.
Top Guide (Rim, etc.)	1993-96	VT-1	VT-1 of 14 cells in 1993; no indications. 1996 re-inspected with no indications. VT-3 of wedges, holddown clamps, eccentric aligners, and general surface areas in 1993. One minor indication on eccentric aligner & dowel pin hole.
	2000	VT-1	VT-1 of 2 Hold Down assemblies with no indications noted.
	2004	VT-1	VT-1 of 2 Hold Down assemblies with no indications noted.
	2006	EVT-1	Inspected three (3) top guide grid beam intersections in conjunction with dry tube inspections at the same intersections. No indications noted.

	2008	VT-1 EVT-1	All 4 hold down latches 3 Grid Beam Intersections from 2 cells each (NRI)
	2010	VT-1 EVT-1 VT-1/VT-3	2 hold-down latches (NRI) 3 grid cells (NRI) 3 in-core dry tubes (NRI)
Core Plate (Rim, etc.)	1993	VT-1	Holddown bolts from topside and partial surface areas. No indications.
	2004	N/A	No inspections performed in 2004.
	2006	UT	Inspected 100% of the core plate bolts using a plant specific methodology that determines bolt existence through the core plate support ring.
	2008	N/A	No inspection in 2008
	2010	N/A	No inspection in 2010
SLC	1988	LP	No examinations performed on internal piping. Section XI LP performed on nozzle to safe end welds. No indications.
	2000	LP	Section XI LP performed on nozzle to safe end weld. No indications noted.
	2004	VT-2	Direct VT-2 examination of nozzle to safe end weld during system pressure test. No leakage noted.
	2006	VT-2	Direct VT-2 examination of nozzle to safe end weld during system pressure test. No leakage noted.
	2008	VT-2	Direct VT-2 examination of nozzle to safe end weld during system pressure test. No leakage noted.
	2010	VT-2	Direct VT-2 examination of nozzle to safe end weld during system pressure test. No leakage noted.
Jet Pump Assembly	1993-96	VT-1	Riser brace brackets done once per period. Wedges, set screws, tack welds, sensing lines and sensing line supports

			VT per various SILs. Jet pump beams replaced in Fall, 1993. No indications noted, as well as in old jet pump beams. Transition areas inspected in 1995 with no indications.
	1998	EVT-1	Inspected all RS-1, RS-2 and RS-3 welds and associated draw beads. Cracks found on 3 risers with lengths ranging from 1-1/8" to 5-3/4". Analysis concluded structural margin acceptable for one cycle of operation. Inspected all 10 TS-3 welds (safe end transition piece to safe end extension) with no indications.
	2000	EVT-1	Inspected previously identified cracking on 3 RS-1 welds with no change in cracking.
	2002	EVT-1	Inspected 100% of hold-down beams, 25% of the IN-4 welds, 20% of the MX-2 welds, 20% of the WD-1 areas, 30% of the riser brace welds and re-examined the previously identified indications on the RS-1 welds of risers "D", "G" and "K". No new indications were noted and no significant changes were noted in the previously identified indications.
	2004	EVT-1	Inspected 25% of the IN-4 welds, 30% of the MX-2 welds, 80% of the WD-1 areas, 15% of the riser brace welds, 50% of the adapters welds AD-1 & AD-2, 35% of the restrainer RS-6 and RS-7 welds, 30% of the riser brace to riser pipe RS-8 & RS-9 welds, 60% of the riser elbow RS-1 welds and re-examined the previously identified indications on the RS-1 welds of risers "D", "G" and "K". No new indications were noted and no significant changes were noted in the previously identified indications.
	2006	UT & EVT-1	UT all Beams for BB-1 region. EVT-1 for all Beams for BB-2 & BB-3 regions for additional cycle due to tooling issues.

		& VT-1	No growth noted of cracking located in the Riser Elbows RS-1 welds D, G, & K. Also inspected RS-1, RS-1A, RS-2 & RS-3 on 2 Risers. Two RS-6, one RS-7, RS-8, & RS-9, three IN-4, three MX-2, , two riser braces, and VT-1 of all wedges WD-1. No additional indications noted
	2008	EVT-1	4 IN-4, 3 MX-2, 2 RB-2a,b,c,d 4 RS-1a, 2 RS-2, 2 RS-3, 2 RS-6, 3 RS-7,8,9 10 RS-1 **New RI's found on A & F risers.** No growth found on K riser.
		VT-1	2 WD-1 (NRI)
		UT	ALL Beams BB-1, 2a, 2b, 3a, 3b (NRI)
		VT-1/VT-3	2 newly installed repair clamps on JP Risers D & G (thermal sleeve to elbow welds)
	2010	EVT-1	3-IN4, 4-MX2, 7-RS1&1a, 2RS1 repair clamps, 1-RS2, 1-RS3, 1-RS6, 1-RS7, 7-RS8, 7-RS9, 3-RB1a-d, 1RB2a-d, 18-WD1 (NRI) JPSL1,10,11,20 (NRI)
		VT-1/VT-3	RS-1 on JPA, F, K have previous flaws with no growth noted this outage.
Jet Pump Diffuser	start-up to present	VT-3	Adapter and diffuser welds inspected once per period. Last inspected in 1995 with no indications.
	1998	MVT-1	Inspected 20 of 40 DF-1 and DF-2 welds with no indications.
	2000	EVT-1	Inspected 10 AD-1 and AD-2 welds with no indications.
	2004	EVT-1	Inspected 50% of the DF-2 diffuser welds. No indications noted.
	2006	EVT-1	Inspected three AD-1 & AD-2, and three DF-1 & DF-2 welds
	2008	EVT-1	4 AD-1, 4 AD-2, 3 DF-1, 3 DF-2 (NRI)

	2010	EVT-1	4-DF1, 4-DF2, 4-AD1, 4-AD2 (NRI)
CRD Guide Tube	1993	VT-3	Inspected accessible surfaces of approximately 75% of total population with no indications.
	2002	VT-1, VT-3	Inspected the CRGT-1, -2, -3 and FS/GT-ARPIN-1 components on seven guide tubes. No indications noted.
	2004	N/A	No inspections performed in 2004.
	2006	N/A	No inspection performed in 2006
	2008	EVT-1, VT-1, VT-3	Inspected the CRGT-1, -2, -3 and FS/GT-ARPIN-1 components on seven guide tubes. No indications noted.
	2010	N/A	Baseline was complete last outage. No additional inspection currently required.
CRD Stub Tube	1993	VT-3	Inspected accessible surfaces of approximately 75% of total population with no indications.
	2004	N/A	No inspections performed in 2004.
	2006	N/A	No inspections performed in 2006.
	2008	VT-3	9 stub tube to vessel welds (NRI)
	2010	N/A	No inspections performed in 2010
In-Core Housing	Fall, 1993	VT	No indications noted.
	2004	N/A	No inspections performed in 2004.
	2006	N/A	No inspections performed in 2006
	2008	VT-3	9 stub tube to CRD housing welds (NRI)
	2010	N/A	No inspections performed in 2010
Dry Tube	Fall, 1993	VT	No indications. Replaced in 1988. Scheduled for inspection in 2008.
	2004	N/A	No inspections performed in 2004.

	2006	VT-1	Inspected three dry tubes per SIL 409 in conjunction with top guide grid beam intersections. No indications noted.
	2008	VT-1	Inspected three dry tubes per SIL 409 in conjunction with top guide grid beam intersections. No indications noted.
	2010	VT-1/VT-3	3 dry tubes inspected per SIL 409 (NRI)
Instrument Penetrations	1988 and 1995	LP	Inspections of external piping performed once per interval in accordance with ASME Section XI. No indications.
	2004	VT-2	Instrument nozzles were VT-2 examined as part of the RPV pressure test. No leakage noted. EVT-1/VT-3 exam performed on inner radius of Jet Pump instrumentation nozzles N8A & N8B.
	2006	VT-3	Inspected Inner nozzle radius. No degradation noted.
	2008	EVT-1/VT-3	Inner radius of N11a,b & N16a,b (NRI)
	2010	EVT-1/VT-3	Inner radius of N11a,b & N12a,b (NRI)
Vessel ID Brackets	1993-1996	VT-1 in beltline area; VT-3 other areas	Section XI inspections of core spray, feedwater sparger, dryer and surveillance capsule holder brackets performed once per interval. Last inspection Fall, 1996. No indications.
	2002	EVT-1/VT-1	Inspected 6 of 20 jet pump brace arm pad to RPV welds and 4 of 8 core spray header bracket to RPV welds. No indications were noted.
	2004	EVT-1/VT-1	Inspected 4 steam dryer hold down lugs, 2 of 8 Core Spray header bracket to RPV welds, 8 Feedwater End Bracket to RPV welds, 8 Jet Pump Riser Brace Arm to RPV welds, and 2 Surveillance Specimen Holder Bracket to RPV welds. No

			indications were noted.
	2006	EVT-1/VT-1	Inspected both guide rod brackets, two steam dryer support brackets, two surveillance specimen holder brackets, two jet pump riser braces, and one core spray piping support bracket (upper and lower). No indications were noted.
	2008	EVT-1	Core Spray Bracket @ 330 deg JP Riser Braces for H, J, & K risers (NRI)
		VT-1	Lower Surv. Spec. bracket @ 300 deg. (NRI)
		VT-3	Two (2) Steam Dryer Support Brackets Upper Surv. Spec. bracket @ 300 deg. (NRI)
	2010	EVT-1	Core Spray Bracket @ 30 deg JP Riser Braces for B, C, & D (NRI) Lower Specimen brkt @ 30 deg (NRI) Two Dryer Support Brackets (NRI) Two Dryer Hold-down Brackets (NRI) Upper Specimen brkt @ 300 deg. (NRI)
Steam Dryer	3/2002	EVT-1/VT-3	Inspected two known cracks at SW-V4 & SW-V8. Inspected Guide Rod assy dryer bank 1 H4 and all four lifting eye rod supports. Also inspected upper support ring.
	9/2002	VT-3	Inspected overall condition of the steam dryer during B114M1 outage (partial uprate). No significant degradation noted.
	2004	VT-1	Baseline inspection of 100% exterior weld HAZ's. Repaired/replaced all upper tie bars. Added gusset plates to exterior banks 1 and 5. Reinforced welds of cover plates to upper support ring. Weld repaired most of the existing cracks.
	2005	VT-1	Mid-cycle outage inspected repairs and modifications.
	2006	VT-1	Inspected welds in accordance with

			BWRVIP-139, repairs, modifications, and outer bank areas.
	2008	VT-1	52 of 143 steam dryer welds. Numerous small cracking found on upper support ring- not significant. One previously repaired fatigue crack is cracked again- not significant at this time. Major crack found in lifting eye at 35 degrees. Installed repair this outage.
	2010	VT-1	30 components on the steam dryer inspected. No growth of existing flaws. 2 new flaws on the modified man hole cover (small). One new flaw in the skirt next to the NW drain pipe elbow (NWDP-1)
LPCI Coupling	NA	NA	Not applicable to Brunswick.
Dissimlar Metal Welds			
CAT A	2008	UT	N9 CRD Nozzle (1)
CAT B	-	-	None
CAT C	-	-	None
CAT D	-	-	Feedwater: N4C (3), N4D (3) Recirc: 28-A (3) , 28-B (4) Inst. Nozzle N8B (1)
Dissimilar Metal Welds			
CAT A	2010	-	4 (N12A, N2B, N2D, N2F Nozzle to safe end weld)
CAT B	-	-	None
CAT C	-	UT	1 (N1A Nozzle to safe end weld)
CAT D	-	-	None

Reactor Internals Inspection History

Plant: **Clinton Power Station Unit 1**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Shroud Horizontal Welds H1, H2, H3, H4, H5, H6A, H6B, and H7. Vertical Welds V11, V12, V13, and V14	4/2002 (C1R08)	UT	Performed UT of all Horizontal Welds. Coverage: Weld Number — % of Examined Length H1 — 59.7% H2 — 67.4% H3 — 66.7% H4 upper side — 100% H4 lower side — 97.1% H5 upper side — 19.0% H5 lower side — 18.7% H6A — 16.4% H6B — 25.6% H7 — 26.5% V11 — 95.2% V12 — 95.0% V13 — 87.0% V14 — 87.0% The following identify Flaws: Weld Number — % of Examined length Flawed H1 — 0% H2 — 0% H3 — 19.1% H4Upp — 97.2% H4Low — 74.0% H5Upp — 15.3% H5Low — 0% H6A — 0% H6B — 5.4% H7 — 0% V11 — 0% V12 — 0% V13 — 0% V14 — 0%

Horizontal Welds H1, H2, H3, H4, H5, H6A, H6B, And H7 Vertical Welds V11, V12, V13 And V14	4/2002 (C1R08)	UT	Prior to startup an Engineering Evaluation was performed to justify continued operation for one cycle. Later on several other analysis performed as identified in VIP documents to document 2 cycles operation. This plan was presented to the NRC. Planning to implement a repair modification in 2/2006 (C1R010).
4 Tie Rods	2/2006 (C1R10)	Visual	4 Tie Rods installed in 2/2006(C1R10). Inspection performed as required by VIP-76.
Vertical Welds: V4, V5, V15, V16, V20, V21, V22, and V23	01/2008 (C1R11)	Visual	Performed Visual Examination of the following Vertical Welds. Coverage: <u>Weld Number</u> <u>% of Examined Length</u> V4 (OD only) 100 - Acceptable V5 (OD only) 10, (Inspected 100% accessible area, but because of out of correct angle due to this weld is right behind the LPCI line, except for the top area of the weld). Acceptable V15 (OD only) 10, Tie Rod limits access to the weld, changed 25% to 10%. V16 (OD only) 50, Top portion of the weld is hidden by Tie Rod. Acceptable V20 (OD only) 100 Acceptable V21 (OD only) 95 Acceptable V22 (OD only) 100 Acceptable V23 (OD only) 100 Acceptable
Detail inspection of 2 Tie Rods at 65 deg. and 245 deg	01/2008 (C1R11)	Detail Visual including	Tie Rod at 65 degrees Acceptable Tie Rod at 245 degrees Acceptable

		tightness verification	
General inspection of the remaining 2 Tie Rods at 155 and 335 deg	01/2008 (C1R11)	Visual inspection	Tie Rod at 155 degrees Acceptable Tie Rod at 335 degrees Acceptable
Detail inspection of 2 Tie Rods at 155 deg. and 335 deg.	01/2010 (C1R12)	Detail Visual including tightness verification	Tie Rod at 335 deg. - Acceptable Inspection required by BWRVIP-76 & Tie Rod Design.
General inspection of the remaining 2 Tie Rods at 65 and 245 deg.	01/2010 (C1R12)	Visual Inspection	Tie Rod at 65 deg. – Acceptable Tie Rod at 245 deg. - Acceptable Inspection required by BWRVIP-76 & Tie Rod Design.
<u>Shroud Support</u>			
H8 and H9 Welds	10/2000 (C1R07)	EVT-1	EVT-1 of H8 and H9 welds for >10% length per VIP-38. No indications identified.
H9 Weld	2/2004 (C1R09)	UT	UT of H9 weld for 100% length from outside the Reactor wall. No indications were identified.
H8 Weld	2/2006 (C1R10)	EVT-1	No indications were identified.
Access Hole Cover	2/2004 (C1R09)	VT-1	VT-1 of Access Hole Cover assembly per GE SIL 462. No indications identified.
	1/2010 (C1R12)	EVT-1	EVT-1 of Access Hole Cover and Heat Affected Zone (HAZ). No indications were identified. Inspection required by BWRVIP-180.
<u>Core Spray Baseline Inspection</u> Core Spray Piping P2, P3A, P3B, P4A, P4B, P5, and P6.	10/2000 (C1R07)	UT	Performed UT on the identified piping welds on both High Pressure Core Spray and low Pressure core Spray piping systems. Two flaw indications, one on

			each BP2 and CP2 welds, were identified. Evaluated for 2 cycles operation per Core Spray Flaw Evaluation Handbook.
P4C and P4D.	10/2000 (C1R07)	EVT-1	No indications identified.
P8	10/2000 (C1R07)	VT-1	No indications identified.
Core Spray Spargers	10/2000 (C1R07)	EVT-1/VT-1 (as required)	No indications identified.
Re-Inspection Core Spray Piping P2's-all 4, P3A's-all 4, P3B-only 1, P4A-only 1, P4B-only 1, P5's-all 4, and P6-only 1.	2/2004 (C1R09)	UT	Performed UT on the identified piping welds on both High Pressure Core Spray and low Pressure core Spray piping systems. The two existing flaw indications, one on each BP2 and CP2 welds, were identified. These two flaws grew in length. Evaluated for 2 additional cycles of operation per Core Spray Flaw Evaluation Handbook. In addition, one more flaw indication on weld DP2 was identified. This flaw indication was also evaluated for two (2) cycles of operation. No other indications were identified.
P4c-only 1 weld P4d-only 1 weld P8-only 1	2/2004 (C1R09)	EVT-1	No indication was identified.
A-PR, A-ADR, A-BDR, B-PR, B-CDR, and B-DDR	2/2004 (C1R09)	EVT-1	No indication was identified.
Core Spray Spargers	2/2004 (C1R09)	EVT-1/VT-1 (as required) Auto UT and EVT-1	No indication was identified.

Re-inspection A-PR, A-ADR, A-BDR, B-PR, B-CDR, B-DDR	2/2006 (C1R10)	EVT-1	No indication was identified.
A-BP4c, A-BP4d, A-APB(PB1), A-BPB(PB2)	2/2006 (C1R10)	EVT-1	No indication was identified.
A-BP8	2/2006 (C1R10)	VT-1	No indication was identified.
<u>Re-Inspection</u> Core Spray Piping P2's-all 4, P3A's-all 4, P3B-only 1, P4A-only 1, P4B-only 1, P5's-all 4, and P6-only 1.	01/2008 (C1R11)	UT	Performed UT on the identified piping welds on both High Pressure Core Spray and low Pressure core Spray piping systems. The three (3) existing flaw indications, one on each BP2, CP2, and DP2 were identified. These three (3) flaws did not grow in last two (2) cycles. The previous evaluation for 2 additional cycles of operation is still valid per Core Spray Flaw Evaluation Handbook. No other relevant indications were identified.
A-PR, A-ADR, A-BDR, B-PR, B-CDR, and B-DDR	01/2008 (C1R11)	EVT-1	No indication was identified.
A-AP2, A-AP5, A-BP2, A-BP3B, A-BP6, B-CP2, and B-DP2	01/2008 (C1R11)	EVT-1	No indication was identified.
A-APB(PB1), A-BPB(PB2), B-CPB(PB3), and B-DPB(PB4)	01/2008 (C1R11)	EVT-1	No indication was identified.
B-CP8 – 187 deg	01/2008 (C1R11)	VT-1	No indication was identified.
Core Spray Spargers	01/2008 (C1R11)	EVT-1/VT-	No indication was identified.

Grinding marks and evidence of cold work (except for P3a and P5)	01/2008 (2008)	1 (as required) VT-1	No specific grinding marks or evidence of cold work identified.
<u>Core Spray Reinspection</u> Core Spray Piping: P2's-all 4, P3A's-all 4, P3B-only 1, P4A-only 1, P4B-only 1, P5's-all 4, and P6-only 1.	2/2004 (C1R09)	UT	Performed UT on the identified piping welds on both High Pressure Core Spray and Low Pressure Core Spray piping systems. The two (2) existing flaw indications, one on each BP2, CP2 welds, were identified. These two (2) flaws grew in length. Evaluated for 2 additional cycles of operation per Core Spray Flaw Evaluation Handbook. In addition, one more flaw indication on weld DP2 was identified. This flaw indication was also evaluated for two (2) cycles of operation. No other indications were identified.
P4c only 1 weld P4d only 1 weld P8 only 1	2/2004 (C1R09)	EVT-1	No indications were identified.
A-PR, A-ADR, A-BDR, B-PR, B-CDR, and B-DDR	2/2004 (C1R09)		No indications were identified.
Core Spray Spargers	2/2004 (C1R09)		No indications were identified.
A-PR, A-ADR, A-BDR, B-PR, B-CDR, B-DDR	2/2006 (C1R10)		No indications were identified.
A-BP4c, A-BP4d, A-APB (PB1) BPB (PB2)	2/2006 (C1R10)		No indications were identified.
	2/2006		No indications were identified.

BP8	(C1R10)		
Core Spray Piping: P2's-all 4, P3A's-all 4, P3B-only 1, P4A-only 1, P4B-only 1, P5's-all 4, and P6-only 1.	2/2008 (C1R11)	UT	Performed UT on the identified piping welds on both High Pressure Core Spray and Low Pressure Core Spray piping systems. The two (2) existing flaw indications, one on each BP2, CP2 welds, were identified. These two (2) flaws grew in length. Evaluated for 2 additional cycles of operation per Core Spray Flaw Evaluation Handbook. In addition, one more flaw indication on weld DP2 was identified. This flaw indication was also evaluated for two (2) cycles of operation. No other indications were identified.
A-PR, A-AP5, A-BDR, B-PR, B-CDR and B-DDR	2/2008 (C1R11)		No indications were identified.
A-AP2, A-AP5, A-BP2, A-BP3B, A-BP6, B-CP2, And B-DP2	2/2008 (C1R11)	EVT-1	No indications were identified.
A-APB (PB1) A-BPB (PB2) B-CPB (PB3) B-DPB (PB4)	2/2008 (C1R11)	EVT-1	No indications were identified.
B-CP8 – 187 deg.	2/2008 (C1R11)	VT-1	No indications were identified.
Core Spray Spargers	2/2008 (C1R11)	EVT-1/VT-1 (as required)	No indications were identified.
Grinding Marks and evidence of cold work (except for P3a and P5)	2/2008 (C1R11)	VT-1	No specific grinding marks or evidence of cold work identified.
	1/2010 (C1R12)	EVT-1	No indications were identified. Inspection performed per BWRVIP-18

A-AP2, A-PR A-ADR, A-BP2 A-BDR, B-PR B-CP2, B-CDR B-CP3b, B-CP4a B-CP4d, B-CP6 B-DP2, B-DDR B-DP8			
Top Guide (Hold Down Assembly including Bolts and Nuts)	2/2004 (C1R09)	VT-3	Performed VT-3 of the Top Guide including Bolts and Nuts. No indication was identified.
Top Guide Cell	2/2004 (C1R09)	EVT-1	Two cells visually inspected per VIP-183. No indications were identified.
Top Guide Rim Weld	2/2010 (C1R12)	EVT-1	Inspected at 0 and 180 degrees. No indications were identified.
Top Guide Core Plate (Rim, etc.)	N/A	N/A	N/A
Standby Liquid Control (SLC) SLC	N/A	N/A	N/A
Jet Pumps High Priority welds RS-3 welds (50%).	10/2000 (C1R07)	EVT-1	Performed EVT-1 of High Priority welds. No indications identified.
	2/2004 (C1R09)	EVT-1	Performed EVT-1 of remaining High Priority welds. No indications identified.
	1/2010 (C1R12)	EVT-1	Performed EVT-1 of reinspection of High Priority welds. No indications were identified
Medium Priority welds RS-1 welds (50%).	4/2002 (C1R08)	EVT-1	Performed EVT-1 of Medium Priority welds. No indications identified.
	01/2008 (C1R11)	EVT-1	A gouge was identified outside the exam area of RS-1 JP#8.

Riser Welds RS-2, RS-6, RS-7, RS-8, and RS-9 (50%)	2/2004 (C1R09)	EVT-1	No indications identified.
	01/2008 (C1R11)	EVT-1	No indications identified.
Riser Welds RS-8, and RS-9 (50%)	01/2010 (C1R12)	EVT-1	Ten RS-8 and ten RS-9 welds were inspected. No indications were identified.
Riser Brace RB-1a,b,c,d and RB-2a,b,c,d (50%)	2/2004 (C1R09)	EVT-1	No indications identified.
	01/2008 (C1R11)	EVT-1 & VT-1	No indications identified.
	02/2010 (C1R12)	EVT-1	No indications identified.
Inlet Mixer IN-1 and IN-2 welds (50%)	2/2004 (C1R09)		No indications identified.
	01/2008 (C1R11)		No indications identified.
Sensing Lines (50%)	2/2004 (C1R09)	VT-1	No indications identified.
	01/2008 (C1R11)	VT-1	No indications identified.
Wedge Bearing Surface WD-1	2/2004 (C1R09)	VT-1	50 % were inspected. No indications were identified.
	2/2006 (C1R10)	VT-1	Four (4) were inspected. No indications were identified.
	01/2008 (C1R11)	VT-1	Six (7) were inspected. No indications were identified.
	02/2010	VT-1	Thirteen (13) were inspected. No

	(C1R12)		indications were identified.
Jet Pump Diffuser Welds AD-1, AD-2, DF-1, DF-2, and DF-3	2/2004 (C1R09)	UT VT-1	UT was performed on all welds of 100% diffusers
Jet Pump Beams Baseline	01/2008 (C1R11)	UT	No indications identified.
CRD Guide Tube	4/2002 (C1R08)	EVT-1/VT-3 (as applicable)	11% examined (17) per VIP-47, CRDGT-1,2,3 and pin. No indications were identified.
Dry Tubes			
4 IRM	4/2002 (C1R08)	VT-3	No indications were identified.
	2/2004 (C1R09)	VT-1	No indications were identified.
	2/2006 (C1R10)	VT-3	No indications were identified.
	1/2008)C1R11)	VT-3	No indications were identified.
	1/2010 (C1R12)	VT-1	No indications were identified. Inspection performed per GESIL-409.
SRM	2/2004 (C1R09)	VT-1	Four (4) SRM's were inspected. One indication identified on SRM 'D'. Evaluated for operating one cycle.
	2/2006 (C1R10)	VT-3	One (1) SRM was inspected. No indications were identified.
	2/2006 (C!1R10)	VT-3	SRM 'D' dry tube was replaced in C1R10.
	1/2008 (C1R11)	VT-3	Two (2) SRM's were inspected. One indication identified on SRM 'A'.
	1/2010 (C1R12)	VT-1	Two (2) SRM's were inspected. No indications were identified. Inspection performed per GESIL-409

4 LPRM	2/2006 (C!1R10)		No indications were identified.
	1/2008 (C1R11)		No indications were identified.
	1/2010 (C1R12)		No indications were identified. Inspection performed per GE SIL 409.
Instrument Penetrations	N/A	N/A	N/A
Vessel Interior			
Interior	10/2000 (C1R07)	VT-3	Section XI inspection. No indications were identified.
	2/2004 (C1R09)	VT-3	Section XI inspection. No were indications identified.
	01/2008 (C1R11)	VT-3	Section XI inspection. No indications were identified.
Steam Dryer Hold Down Brackets	10/2000 (C1R07)	VT-3	Section XI inspection. No indications were identified.
Steam Dryer Support Brackets	10/2000 (C1R07)	VT-3	Section XI inspection. No indications were identified.
	2/2004 (C1R09)	EVT-1	Several Brackets have contact marks and several Brackets do not. Clinton will be monitoring this condition.
	2/2006 (C1R10)	EVT-1	No change in contact mark.
	1/2008 (C1R11)	EVT-1/VT-1/VT-3	No change in contact mark.
	1/2010 (C1R12)	EVT-1	No change in contact mark.
Guide Rod Support Brackets	10/2000 (C1R07)	VT-3	Section XI inspection. No indications identified.
	2/2006	VT-1	No indications identified. Guide rods and

	(C1R10)		brackets were inspected to look for any damage caused by steam separator lower bracket.
Surveillance Sample Brackets	2/2004 (C1R09)	VT-1	Section XI inspection is SAT. However, both lower tack welds on 2 of the brackets found to be cracked. Evaluated for continued operation. Clinton will inspect these brackets in next refueling outage.
	2/2006 (C1R10)	VT-1	Inspected brackets at 3 deg. and 177 deg. and previously identified cracks. No change was observed.
	1/2008 (C1R11)	VT-1	Inspected brackets at 3 deg. and 177 deg. and previously identified cracks. No change was observed. Also inspected the third one located at 183 deg both upper and lower. No indications identified.
	1/2010 (C1R12)	VT-1	Inspected brackets at 3 deg. and 177 deg. and previously identified cracks. No change was observed.
Steam Separator (1/2)	10/2000 (C1R07)	VT-3	One minor dent identified.
Steam Separator (1/2)	2/2004 (C1R09)	VT-3	Inspected previously identified dent/deformation. No change identified.
Steam Dryer Tie Rods	4/2002 (C1R08)	VT-3	Performed VT-3 of Steam Dryer Tie Rods. No indications identified.
Drain Channel #8 to the Skirt (V16)	4/2002 (C1R08)	VT-3	The existing crack on drain channel #8 to the skirt was measured 7 5/8". No change from the previous outages. This crack was identified in 1/1989 (C1R01). Clinton has been monitoring this crack since C1R01. C1R08 is the baseline for this crack since Clinton has been operating at higher power after C1R08.
	4/2004 (C1R09)	VT-3	The existing crack on drain channel #8 to the skirt was measured 8 3/4". It grew

			11/8" in one cycle. In C1R08 (4/2002) it was measured 7 5/8". This crack was repaired in C1R09 (2/2004) using under water welding.
All Banks, Coverplates, End Panels, Hoods, Drain Channels, Skirt, Top and Tie Bars etc. from outside.	2/2004 (C1R09)	Best Effort VT-1/VT-3	All welds were examined from outside. One minor dent was recorded. No other indications were identified.
	2/2006 (C1R10)	VT-1	All welds examined from outside. 1) An indication was observed in the drain channel base material, away from the weld. The indication appears to be a minor mechanical deformation. This indication was evaluated for continued operation. 2) Two (2) indications were observed in the dryer bank 5 horizontal weld H3. These indications are located under tie rods 28 and 30. They are 12.75" and 2.25" long. These indications were repaired by stop drill method. 3) A linear indication was observed in the dryer upper guide at 0 deg. This indication is 1.6" long. This indication was evaluated for continued operation. 4) Several linear indications were observed in the dryer upper support ring face. They are located at various locations and degrees. These were evaluated for continued operation.
	1/2008 (C1R11)	VT-1	1) Examination was performed from the outside of the dryer. A base metal crack was observed adjacent to drain channel 7, weld V-14. Another crack like indication was observed in the skirt adjacent to the V-6 weld, in the area of an access hole patch. Scope was expanded to perform examination from the inside of the dryer. 2) Examination was performed from the inside of the dryer using Firefly. The steam dryer inside area of the access hole patches were examined. The inspections observed several linear indications in the base material at all 6 access hole patches.

			Evaluated for continued operation. 3) The upper support ring was examined. Cracking was observed in the upper support ring at the location of 210 inside access hole patch. Evaluated for continued operation.
	1/2010 (C1R12)	VT-1	1) Performed VT-1 of 32 Steam Dryer Tie Rods. Indication on Tie Rod 28 from C1R11, has no new growth or new indications. 2) Steam Dryer Lower Support Ring Contact area has an indication from a past outage, with no change in C1R12. 3) Drain Channels 3, 5, and 7 have indications from previous outages, but have no changes. Inspection was satisfactory. 4) The six Steam Dryer Access Holes from C1R11 were reinspected, there is no change. 5) Banks 1-5 were visually inspected. Bank 5 had an indication found in C1R10, there was no change to the indication. A series of small non-connecting indications running from Bank 4 NW-V06 weld to Bank 4 NW-V05 weld was identified in previous outage. These indications were inspected in C1R12 and no change was identified. A second linear indication (app. 2 1/4") below dryer Bank 4 NW-V10 weld was identified during C1R12. This linear indication was observed during C1R10 (2006) and C1R11 (2008) but not identified as a relevent indication.
Drain Channel Welds	2/2006 (C1R10)	N/A	Drain Channel welds were re-inforced from 1/8" to 1/4"
<u>LPCI Coupling</u> Loops 'A' and 'B' Except weld 6-6b.	10/2000 (C1R07)	EVT-1	Performed EVT-1 of LPCI Couplings, both Loops 'A' and 'B'. No indications were identified.
Loop 'C' except weld	4/2002	EVT-1	Performed EVT-1 of LPCI Coupling 'C'.

6-6b.	(C1R08)		No indications were identified.
Weld 6-6b's (all 3 loops)	2/2004 (C1R09)	EVT-1	Performed EVT-1 on all 3 loops. No indications were identified.
Re-inspection LPCI Coupling Loop 'A'	2/2006 (C1R10)	EVT-1	No indications were identified.
Reinspection LPCI Coupling Loop 'B'	1/2010 (C1R12)	EVT-1	No indications were identified.
Feedwater Spargers			
FW Welded Attachments	4/2002 (C1R08)	EVT-1	Performed EVT-1 on Feedwater Sparger End Brackets. No indications were identified.
FW End Brackets	1/2008 (C1R11)	VT-1	Performed VT-1 of End Bracket Bolt Stops only. Evidence of movement and wear were observed on four (4) out of eight (8) End Bracket Bolts. This condition was evaluated and accepted for continued operation.
	1/2010 (C1R12)	VT-1	Performed VT-1 of End Bracket Bolt Stops only. Four out of eight, had evidence of movement and wear from C1R11, there was no change in indication sizes.
FW Sparger	4/2002 (C1R08)	VT-3	Performed visual inspection of feedwater spargers per NUREG-0619. No indications were identified.
	1/2010 (C1R12)	VT-3	Performed visual inspection of feedwater spargers per NUREG-0619. Spargers were VT-3 inspected at 45, 135, 225, and 315 degrees. No indications were identified.
BWRVIP-75-A Cat "D" Dissimilar Welds			
Dissimilar Welds, Cat "D"	1/2006 (C1R10)	UT	Performed UT on 26 DM welds (23 of these contain Inconel 182 buttering). No

			indications identified.
Dissimilar Welds, Cat "D"	1/2008 (C1R11)	UT	Performed UT on 5 DM welds (all 5 welds contain Inconel buttering. No indications identified.
Dissimilar Welds, Cat "D"	1/2010 (C1R12)		No examinations required or performed.

Reactor Internals Inspection History

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

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Shroud	Fall 2005	UT	44% of H3 Lower Side, 56.6% H4 Both Sides, 17.3% H6A Both Sides and @ 20% H7 Both Sides. One indication with characteristics associated with IGSCC/IASCC was detected on the lower side of the H4 weld. Indication is 1.11" in length. Due to disassembly of the JP11 mixer, a VT-3 examination was performed on accessible areas of H10, H11 and H12. No indications.
	Spring 2004	UT	15.1% of H3 Lower Side and 34.6% of H4. Due to equipment failures this examination was deferred to next outage.
	Spring 1998	UT	All accessible areas of H3, H4, H6A, H7. No indications.
	Spring 1995	UT	Baseline per BWRVIP-01. All accessible areas of H3, H4, H6A and H7. No indications.
Shroud Support	Fall 2008	VT-1	SSAHC @ 0°. No indications noted.
	Spring 2007	EVT-1	15% of the top of H8 and 18.5% of the top of H9. No indications were noted
	Fall 2005	VT-1	SSAHC @ 0°. No indications
	Fall 2002	VT-1	SSAHC @ 0°. No indications
	Spring 1998	UT	10.7% of total circumference of H8 (shroud support plate to shroud weld) and 15.4% of H9 (shroud support plate to vessel weld). No indications.
	Fall 1996	VT-1	Sect XI. Period 3 of 10yr interval.

			RF05/6 Attachment welds to vessel and shroud plate to shroud weld. No indications.
	Spring 1995	VT-3	SSHAC @ 180°. No indications.
	Spring 1992	VT-1	Shroud shelf weld. No indications (SIL 572)
Core Spray Piping	Spring 2010	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications
	Fall 2008	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications
	Spring 2007	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications
	Fall 2005	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications.
	Spring 2004	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications.
	Fall 2002	EVT-1	All target welds (P3a and P5) with 25% of remaining piping locations. No indications.
	Spring 2001	EVT-1	All accessible P2, P2a, P3a, P5. 25% of remaining piping locations. No indications.
	Fall 1999	EVT-1	All accessible P2, P2a, P3a, P5. 25% of remaining piping locations. No indications.
	Spring, 1998	EVT-1	All accessible piping locations. No indications.
Core Spray Sparger	Spring 2010	VT-1	Performed examinations of previous indications at Cap Screw 7A and 15C. No changes noted.

	Fall 2008	EVT-1/ VT-1	All core spray sparger target welds and all accessible areas of the lower sparger welds. Accessible areas of Core Spray Sparger Brackets (SB). No indications noted. Broken tack welds @ Cap Screw 7A and 15C previously reported.
	Fall 2005	VT-1/ EVT-1	All core spray sparger target welds and all accessible areas of the upper sparger welds. Accessible areas of Core Spray Sparger Brackets (SB). No indications noted. Broken tack welds @ Cap Screw 7A previously reported. Additional broken tack weld identified at Cap Screw 15C.
	Fall 2002	VT-1/ VT-3	All core spray sparger target welds and all accessible areas of the lower sparger welds. No indications noted. All accessible areas of Core Spray Brackets (SB). Broken tack welds @ Cap Screw 7A previously reported.
	Fall 1999	VT-1/ VT-3	Upper Sparger- Accessible areas of spargers, tee boxes, brackets and supports. No indications noted.
	Spring 1998	EVT-1/ CS-VT-1	Accessible areas of spargers, tee boxes, brackets and supports. Broken tack welds @ Cap Screw 7A
	Fall 1996	VT-3	Augmented exam per IE 80-13. No indications noted.
Top Guide (Rim, etc.)	Spring 2007	VT-3	Accessible surfaces and fasteners. No indications noted.
	Spring 2001	VT-3	Accessible surfaces and fasteners. No indications noted.
	Fall 1996	VT-3	Accessible surfaces and fasteners. No indications noted.
Core Plate (Rim, etc.)	Spring 2007	VT-3	Accessible surfaces of the shroud support

			structure. No indications were noted.
	Fall 1996	VT-3	Sect. XI, under core plate. Where access was provided in RF08, camera work was performed. No indications noted.
SLC	N/A	N/A	N/A
Jet Pump Assembly	Spring 2010	EVT-1	Completed baseline examinations (148 locations). Performed additional inspections of Jet Pump Wedges (12) and Riser Braces (12) due to Laguna Verde OE. No indications were noted.
	Fall 2008	EVT-1	Performed examinations on Jet Pump wedges 1 thru 12. No wear was identified; however slight wear was noted on wedge rods JP 01, JP 02, JP 05, JP 06, JP 07 and JP 09. No additional exams were performed.
	Spring 2007	EVT-1/ UT	Wedge examination performed on 4 wedges due to disassembly of Jet Pumps in previous outages. EVT-1 was performed on the Riser Brace to vessel weld (5 locations). UT performed on 21 of 24 Jet Pump beams. Three beams have been replaced with new beams and do not require UT at this time.
	Fall 2005	EVT-1	Wedge examinations were completed on 12 jet pumps. Wedge exams have been completed on all jet pumps with no indications. Examined one IN-1 and IN-2 location with no indications noted.
	Spring 2004	EVT-1/ VT-1	Completed remaining examinations on JP 0304 and 0910. Completed baseline on 50% of low and medium priority locations and 100% of high priority (RS-3) locations. Identified and inspected an additional RS-1 weld at JP 0910 and inspected additional weld at the DF-3 location. The additional weld at the DF-3 location was identified in the Fall 2002 outage (DF-3a). No indications noted.

	Fall 2002	EVT-1	All required locations for JP 0304 and JP 0910. Examination exceptions are RB-1b, RB-1d, RB2a-d for JP0304; welds DF-1 for JP03 and JP04; DF-3 for JP03 and JP10; IN-1 and IN-2 for JP04; IN-2 for JP10. No indications noted.
	Spring 2001	EVT-1	Accessible areas of RS-1 and RS-2 welds on JP01/02. No indications noted.
	Fall 1999	EVT-1	Accessible areas of RS-3 weld at JP07/08, JP09/10 and JP11/12. No indications noted.
	Spring 1998	MVT-1/ VT-3	Accessible areas of RS-3 weld on JP 0102, JP 0304 and JP 0506. VT-3 on flow restriction on JP 09, 10, 11 and 24. No indications noted.
	Fall 1996	UT	UT performed on JP beams. Two beams cracked in RF06 and all were replaced with Unit 2 spares. No UT exams were done in RF07. RF08 changed out all beams with the new GE design.
CRD Guide Tube	Spring 2008	EVT-1	Completed baseline exams on 10 CRD Guide Tubes. No indications were noted.
	Fall 2002	EVT-1	CRGT-2 & 3 (10 places). FS/GT-ARPIN-1 (2 places). No indications noted.
	Spring 2001	VT-3	12 guide tubes. 12 FS/GT-ARPIN-1 and CRGT-1. Accessible portions of CRGT-2 (2 places). No indications noted.
	Spring 1998	VT-3	34 CRGT-1 exams completed with no indications noted.
	Fall 1996	VT-3	8 guide tubes. When accessibility permits. No indications noted.
Dry Tubes	Spring 2010	VT-1	Performed exams on 14 SRM/IRM dry tubes. Four dry tubes had indications.
	Fall 2008	VT-1	Performed inspections on 24 LPRM dry

			tubes. No indications noted.
	Spring 2007	VT-1	Accessible areas of 14 SRM/IRM and 7 LPRMS. No indications noted.
	Fall 2002	VT-1	Accessible areas of 6 LPRM dry tubes. No indications noted.
	Spring 1998	VT-3	11 guide tubes. No indications noted.
Instrument Penetrations	Fall 1996	VT-3	No indications.
Vessel ID Brackets	Spring 2007	VT-1/3	Section XI Jet Pump attachment welds at 5 locations. VT-3 of accessible areas of H9. No indications noted.
	Fall 2005	VT-1/3	Section XI CS Piping Brackets, FW Sparger End Brackets, Guide Rod Brackets (upper), Steam Dryer Brackets, Surveillance Sample Brackets and attachment welds at JP1112. Due to disassembly of the JP11 mixer an examination was performed at one Shroud Support Stub weld. No indications.
	Spring 2004	VT-1	Section XI Jet Pump attachment welds at two locations was inspected. No indications.
	Fall 1996	VT-1/3	Section XI every 10 years on Attachment welds. Other parts of brackets on general VT-3 exam. No indications.
LPCI Coupling	Spring 2010	EVT-1	Exams were performed on LPCI @ 219°. No indications were noted.
	Fall 2008	EVT-1	EVT-1 performed on the extra welds (6-4a) that were noted during RF15 at each LPCI strut. No indications were noted.
	Spring 2007	EVT-1	VT-1 on all accessible areas of LPCI @ 141°. Extra weld was located on the strut assembly at all LPCI locations. No indications noted.

	Fall 2005	VT-1	VT-1 on LPCI @ Az. 141° due to a previous loose parts impact concern. No indications.
	Fall 2002	EVT-1	All accessible areas @ Az 39°. No indications. VT-1 on LPCI @ Az. 141° due to a previous loose parts impact concern. No indications.
	Spring 2001	VT-1	VT-1 on LPCI @ Az. 141° due to a previous loose parts impact concern. No indications.
	Fall 1999	VT-1	All accessible areas @ 219°. VT-1 on LPCI @ Az. 141° due to a previous loose parts impact concern. No indications.
	Spring 1998	EVT-1	All chosen welds on LPCI couplings @ Az 39° and 141°. No indications.
	Spring 1996	VT-1	VT-1 on LPCI @ Az. 141° due to a previous loose parts impact concern. No indications.
Steam Dryer	Spring 2010	VT-1	Examined previous indications (cracked tack welds at lifting lugs and IGSCC cracking on the upper support ring). No changes were noted.
	Fall 2008	VT-1	Examined areas identified during RF15. Additional crack was noted on a lifting lug and addition linear indication (1" lg.) was identified on the Upper Support Ring.
	Spring 2007	VT-1	Completed BWRVIP-139 examination. Cracked tack welds were noted on all (4) lifting lugs. No movement was noted. Eleven indications (IGSCC) were identified on the dryer upper support ring. No indications were longer than 3 ½".
Dissimilar Metal Welds on Reactor Nozzles	Spring 2010	UT	N02B-KB Nozzle to Safe End Weld N02C-KB Nozzle to Safe End Weld N02D-KB Nozzle to Safe End Weld

(All Grand Gulf dissimilar metal welds are Category C)			N02E-KB Nozzle to Safe End Weld N06A-KB Nozzle to Safe End Weld N06A-KC Safe End to Extension N09B-KB Nozzle to Safe End Weld No recordable indications
	Fall 2008	UT	N5B-KB Nozzle to Safe End Weld N5B-KC Safe End to Safe End Ext. N4A-KB Nozzle to Safe End Weld N4F-KB Nozzle to Safe End Weld N4B-KB Nozzle to Safe End Weld No recordable indications
	Spring 2007	UT	N1A-KB Nozzle to Safe End Weld N2A-KB Nozzle to Safe End Weld N2K-KB Nozzle to Safe End Weld K2M-KB Nozzle to Safe End Weld K2N-KB Nozzle to Safe End Weld K9A-KB Nozzle to Safe End Weld N9A-KC Safe End to Safe End Ext No recordable indications noted

Reactor Internals Inspection History

Plant: **Hatch Unit 1**

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

	2006/1R22	EVT-1/VT-3	was again found to be less than desirable load and was corrected. 2 cracked upper supports at 135° & 225°, one at 135° was replaced. Additional repairs and/or modifications to be performed next outage.
	Spring 2008/1R23	Tightness, EVT-1/VT-3	Replaced two tie rod upper supports at 135° and 315°. Unsuccessful in detensioning the Tie Rod nuts at 45° and 225°. 45° and 225° tie rod assemblies were restored to a condition acceptable for another cycle. Tie rod at 225° contains a flaw which grew at a rate less than predicted for the previous fuel cycle.
	Spring 2010/1R24	Tightness, EVT-1/VT-3	Successfully replaced the remaining two tie rod assemblies 45° and 225°. Tightness checks performed at all 4 tie rods.
Core Shroud Vertical Welds (BWRVIP-07, 1996) (BWRVIP-63, 2000) (BWRVIP-76)	Fall 1994 / 1R15	EVT-1	EVT-1, 6" ID & OD at Horizontal Weld Intersection of H-4 & H-5. V-3, V-4, V-5, & V-6. Acceptable indications found on ID of V-4, and OD of V-5.
	Spring 1996 / 1R16	EVT-1	Baseline per BWRVIP-07 in 1996. EVT-1 Outside Surface of V-1 thru V-11, & Inside Surface of V-5 & V-6. Acceptable Indications in V-5, V-6.
	Fall 1997 / 1R17	UT	UT of 6 verticals in 1997, indications in V-5 & V-6, acceptable.
	Spring 1999 / 1R18	EVT-1	EVT-1, V-1 & V-2 from OD due to access. And V-3 through V-8 from ID & OD. Indications reported on V-4, V-5, V-6, & V-8. Acceptable. Future scheduling to be determined.
	Spring 2002 / 1R20	EVT-1	EVT-1, V-1, V-2 , V-9, V-10, & V-11 from OD. No Reportables. Schedule not to exceed 6 years.
	Spring 2004 / 1R21	UT/EVT-1	UT, V-5 & V-6 previous indications. No significant changes. Schedule not to exceed 10 years. EVT-1 of V-9, V-12, V-13, & V-14 from OD. No Reportables. Schedule not to exceed 6 years.

	Spring 2008/1R23	EVT-1	Examined V1, V2, V3, V4, V7, V8 V9, V10, and V11. Short indications recorded on the ID at the intersections of H4 with V4 and at the intersections of H5 with V7 and V8.
	Spring 2010/1R24	EVT-1	Examined 12" on either side of high fluence intersections from the ID, including V7/H5, V8/H5, V4/H4, V5/H5, V5/H4 V6/H4, and V6/H5 intersections. One new indication reported at V5/H5, one less indication at V4/H4 compared to 2008 outage results. Also examined V12, V13, and V14 from the shroud OD with no indications reported.
Core Shroud Ring Segment Welds (BWRVIP-07, 1996) (BWRVIP-63, 2000) (BWRVIP-76)	Spring 1996 / 1R16	EVT-1	EVT-1 from outside surface of 2 Ring welds. Satisfactory.
	Fall 1997 / 1R17	EVT-1	EVT-1 from outside surface of 4 Ring welds. 1- acceptable indication.
	Spring 1999 / 1R18	EVT-1	EVT-1 from outside surface of 5 Ring welds. No indications. Previous indication determined to be non-relevant. Future scheduling to be determined.
	Spring 2002	EVT-1	EVT-1 from OD of Top Guide RSW at 60 degrees. No Reportables. 1 of 4 Top Guide RSW every 2 cycles, or 4 years.
	Spring 2004	EVT-1	EVT-1 from OD of Top Guide RSW at 60 degrees, re-exam. No Reportables. 1 of 4 Top Guide RSW every 2 cycles, or 4 years.
	Spring 2006	EVT-1	EVT-1 from OD of Top Guide RSW at 120°. No Reportables. 1 of 4 Top Guide RSW every 2 cycles, or 4 years.
	Spring 2010/1R24	EVT-1	EVT-1 from OD to Top Guide RSW at 240°. No reportables. 1 of 4 Top Guide RSW every 2 cycles, or 4 years.
Core Shroud Support Ledge (H-9) (BWRVIP-38, 2000)	Fall 1994 / 1R15	VT-1/3	0-360° where accessible, from top once/interval. No indications. Future BWRVIP-38 scheduling to be determined. Very limited for EVT-1. 1R20?

	Spring 2004	EVT-1	4 Shroud Support Plate Gusset Welds at 12, 105, 195, & 285 degrees. No Reportables. Future scheduling to be determined.
	Spring 2006	EVT-1	EVT-1 of >10% of H-8 in order to establish redundancy to the degraded shroud repair (2 cracked upper supports at 135° & 225°). No reportables.
	Spring 2006	UT	UT of approximately 20% of H-9 per BWRVIP-104. No reportables
	Spring 2010/1R24	EVT-1	EVT-1 of Shroud Support Plate Gusset Welds at 30°, 45°, 90°, 135°, 210°, 225°, 300°, 315°, 345° per BWRVIP-38 requirements and recommendations for tie rod anchorages.
		VT-3	VT-3 of 30°, 90°, 210°, 300°, 345° for ASME requirements.
Core Shroud Support Ledge Access Hole Covers (2) 0° & 180°. (Augmented)	Fall 1992	UT	UT Indications. Acceptable for one cycle.
	Spring 1993 / 1R14	VT-1/3	Replaced with mechanical design in 1993. Typical for 2 at 0° & 180°. Examine one every outage / or 2 each period, VT-1 bolting tack welds/VT-3 remaining. No reportable indications.
	Fall 1994 / 1R15	VT-1/3	Examine each period. Examined 0°. No reportable indications.
	Spring 1996 / 1R16	VT-1/3	Examine each period. Examined 180°. No reportable indications.
	Fall 1997 / 1R17	VT-1/3	Examine each period. Examined 0°. No reportable indications.
	Spring 1999 / 1R18	VT-1/3	Examine each period. Examined 180°. No reportable indications.
	Fall 2000 / 1R19	VT-1/3	Examine each period. Examined 0° where evidence of leakage on the shroud side was observed. Examined 180° and found similar evidence of leakage. Determined that leakage is expected.

	Spring 2002 / 1R20	VT-1/3	Examine each period. Examined 180° evidence of expected leakage.
	Spring 2004 / 1R21	VT-1/3	Examine each period. Examined 180°. No reportable indications. Leakage not reported.
	Spring 2006/1R22	VT-1/3	Examine each period. Examined 180° evidence of expected leakage.
Core Spray Internal Piping (BWRVIP-18, 1997)	1980's to Spring 1996 / 1R16	VT-1 / .001mil resolution	IEB 80-13/NUREG CR-4523. Examine each outage.
	Fall 1997 / 1R17	EVT-1	BWRVIP-18 implemented 1997. No indications.
	Spring 1999 / 1R18	EVT-1	No indications.
	Fall 2000 / 1R19	EVT-1	No indications.
	Spring 2002 / 1R20	EVT-1	No indications.
	Spring 2004 / 1R21	EVT-1	No indications.
	Spring 2006/1R22	EVT-1	No indications
	Spring 2008/1R23	EVT-1	No indications
	Spring 2010/1R24	EVT-1	No indications
Core Spray Sparger (BWRVIP-18, 1997)	1980's to Spring 1996 / 1R16	VT-1 / .001mil resolution	IEB 80-13/NUREG CR-4523. Examine each outage. Mechanical Repair Clamp on T-Box Cover Plate in 1984.
	Fall 1997 / 1R17	CSVT-1	BWRVIP-18 implemented 1997. No reportable indications.
	Spring 1999 / 1R18	EVT-1/VT-3	Began Sparger inspections as Geometry Critical. No reportable indications.

	Fall 2000 / 1R19	EVT-1/VT-3	No reportable indications.
	Spring 2002 / 1R20	EVT-1/VT-3	No reportable indications.
	Spring 2004/1R21	EVT-1/VT-3	No reportable indications.
	Spring 2006/1R22	EVT-1/VT-3	No reportable indications.
	Spring 2008/1R23	EVT-1	No reportable indictions.
	Spring 2010/1R24	EVT-1/VT-1(89)/VT-3	No reportable indications
Top Guide (BWRVIP-26, 1997)	Fall 1994 / 1R15	VT-1	VT-1 (.001) of Beams at 10 Cell Locations. & 4 - hold down bolts. EVT-1.
	Spring 1996 / 1R16	VT-1	4 Aligner Pins & Brackets, 4 Hold-down Brackets. No Indications.
	Fall 1997 / 1R17	VT-1	BWRVIP-26, 2 adjacent aligner pins. No indications. Accessible Rim Weld, VT-1. (EVT-1 required, no credit taken due to the in-ability to brush). No indications.
	Spring 1999 / 1R18	VT-1	2 adjacent aligner pins. No indications. Hold-downs no longer required due to GE evaluation.
	Fall 2000 / 1R19	VT-3	7 – grid areas (VT-3 ASME) during (CRB) Control Rod Blade replacement.
	Spring 2002 / 1R20	VT-1	VT-1, 2 of 4 Top Guide Hold-downs, 180 degrees apart, every other outage beginning 1R20.
	Spring 2004 / 1R21	VT-3	35 cell locations during CRB shuffle/exchange. No Reportables. Examinations scheduled when CRB's are shuffled/exchanged.
	Spring	VT-1	

	2006/1R22		VT-1, 2 of 4 Top Guide Hold-downs, 180 degrees apart every other outage. No indications. Also performed VT-1 of 2 cells from the underside. No indications.
	Spring 2008/1R23	EVT-1	Grid beams in 14 cells per BWRVIP-183. No indications.
	Spring 2010/1R24	EVT-1/VT-1	EVT-1 of grid beams in 21 cells per BWRVIP-183. No indications. VT-1 on 2 of 4 top guide hold-downs, 180 degrees apart, every other outage. No indications.
Core Plate (BWRVIP-25)	Fall 1990 / 1R12	VT-1/3	VT-1 of Alignment Assembly (4). VT-1 Accessible Bolts from top surface. No reportable indications.
	Fall 1994 / 1R15	VT-1	VT-1 of Alignment Assembly (4). VT-1 Accessible Bolts from top surface. No reportable indications.
	None	N/R	BWRVIP-25 examinations not required per Hatch configuration since installation of wedges during shroud repair in 1994. No future scheduling.
	Fall 2000 / 1R19	VT-3	7 – top surface areas during (CRB) Control Rod Blade replacement. Also, 8 – Core Plate By-Pass Flow Hole Plug. No reportable indications.
	Spring 2002 / 1R20	VT-3	14 – core plate top surface areas during Guide Tube Inspections. Also, 14 – Core Plate by-pass Flow Hole Plugs. No reportable indications.
	Spring 2004 / 1R21	VT-3	35 cell locations during CRB shuffle/exchange. Also 32 Core Plate By-pass Flow Hole Plugs. No Reportables. Examinations scheduled when CRB's are shuffled/exchanged.
	Spring 2006/1R22	VT-3	2 cell locations during CRB exchange. Also 4 Core Plate By-pass Flow Hole Plugs. No Reportables. Examinations scheduled when CRB's are exchanged.

	Spring 2008/1R23	VT-3	Examined 3 Core Plate Bypass Plugs
	Spring 2010/1R24	VT-3	Examined 21 Core Plate Bypass Plugs. No indications reported.
Standby Liquid Control (BWRVIP-27)	Fall 2000 / 1R19	Direct VT-2 or UT	Performed direct VT-2 during leakage test. No indications.
	Fall 2004 / 1R21	Direct VT-2 or UT	Performed direct VT-2 during leakage test. Access not suitable for UT. No indications.
	Spring 2006/1R22	Direct VT-2 or UT	Performed direct VT-2 during leakage test. Access not suitable for UT. No indications.
	Spring 2008/1R23	Direct VT-2 or UT	Performed direct VT-2 during leakage test. Access not suitable for UT. No indications.
	Spring 2010/1R24	UT	Obtained new calibration block and transducers and performed manual UT. No indications.
Jet Pump Assembly (BWRVIP-41, 1999)	Through 1996 / 1R16	VT-1/3	ASME Riser Brace Arm Attachments. No Indications. Augmented SIL's/RICSIL's for Restrainer Adjusting Screw Tack Welds & Gap's. Riser Brace Arm to Riser Welds. Hold-Down Beams, Inlet mixers, Sensing Lines. Hold down beams replaced in 1990 due to UT indications.
	Fall 1997 / 1R17	VT-1/3 & EVT-1	All Thermal Sleeve to Risers welds, and some transition piece, diffuser, adapter examined 1997. Two indications that where reported in 1997 on the thermal sleeve to elbow welds HAZ's. Acceptable.
	Spring 1999 / 1R18	VT-1/3 & EVT-1	BWRVIP-41, intended to perform visual examination of all high priority welds, but could not perform EVT-1 examination of lower diffuser welds due to mainly gusset interference's. May perform UT on those welds next outage. UT examination of all Jet Pump Beam Bolts, no indications. Examined adjusting screw tack welds & gaps, 1 broken

			tack weld, and 4 set-screw gaps, worst one was .019" (no corrective action required). Additionally examined the restrainer wedge assemblies with the associated set-screw gaps (no reportable indications). Two indications that where reported in 1997 on the thermal sleeve to elbow welds had no significant change (took better measurements).
	Fall 2000 / 1R19	VT-1 & EVT-1	BWRVIP-41, made another attempt to perform EVT-1 examination of lower diffuser welds due to mainly gusset interference's. Re-examined adjusting screw tack welds & gaps, 1 broken tack weld, and 4 set-screw gaps reported during 1R18. No significant changes. One gap went away. Indications on the two thermal sleeve to elbow welds (EVT-1) that where first reported in 1997 and re-examined in 1999 had no significant changes. Nine of ten Riser brace arm to pad, and pad to vessel welds (EVT-1). No reportable indications.
	Spring 2002	EVT-1, VT-1	50% of the population of the medium priority items. Augmented 50% of the sensing line support brackets. No Reportables.
	Spring 2004 / 1R21	UT	UT was performed on 100% (20) AD-1, AD-2, & DF-2 welds due to inaccessibility for suitable visual inspection due to support plate gussets. No reportables.
		EVT-1	Indications on the two thermal sleeve to elbow welds (EVT-1) that were first reported in 1997 and re-examined in 1999 and 2000 had no significant changes.
		UT	UT was performed on 20 Jet Pump Hold-down Beams - No indications.
	Spring 2006/1R22	EVT-1	EVT-1 was performed on 50% of the RS-1, RS-2, RS-3 welds. Indications on the two thermal sleeve to elbow welds (RS-1's) that

			were first reported in 1997 and re-examined in 1999, 2000 and 2004 had no significant changes since 1997.
		VT-1	Re-baseline all 20 restrainer wedge bearing surfaces (WD-1) - No indications.
		EVT-1/VT-1	Re-examined all wedges. Completed baseline of medium priority locations. Re-examined 50% of RB-1 locations. No reportable indications
	Spring 2008/1R23	EVT-1	Re-examined RS-1 indications on JP 3/4 and 7/8 with no change in length.
		VT-1	Examined sensing lines on JPs 7 and 17. No indications.
		UT	UT was performed on 50% (10 Jet Pumps) of AD-1, AD-2, & DF-2 in accordance with BWRVIP-41 Rev. 2. No reportables.
	Spring 2010/1R24	EVT-1	Re-examined RS-1 indications on JP 3/4 and 7/8 with no change in length. Examined RS-8 and RS-9 welds for Jet Pumps 1-10. No reportable indications.
		EVT-1/VT-1	Examined RB-1, riser braced to vessel welds, for Jet Pumps 5/6 and Jet Pumps 9 through 18. No reportable indications.
CRD Guide Tubes (BWRVIP-47)	Fall 2000 / 1R19	EVT-1 / VT-3	Tenative plans for inspections during 1R20 /Spring 2002. A FSC/GT Anti-Rotation Pin at 18-03 was reported as being loose in 1996. Was examined from the top side during 1R19, Fall 2000. Is welded from bottom.
	Spring 2002 / 1R20	EVT-1 / VT-3	EVT-1, 10% of the population (14) Guide Tubes CRGT-1, CRGT-2, & CRGT-3 welds, and VT-3 of FSC/GT Anti-Rotation Pins. Also examined applicable fuel support castings.
CRD Stub Tubes	None Required	VT-2	None scheduled (VT-2 during class 1 pressure test).

In-Core Housing	None Required		None scheduled
Dry Tubes	1987/1R10	N/A	Replaced with non-creviced design.
	Spring 2006/1R22	N/A	Replaced 6 (50%) dry tubes
	Spring 2008/1R23	N/A	Replaced remaining 6 (50%) dry tubes
Instrument Penetrations (BWRVIP-49)	Spring 1993 / 1R14	VT-2	Pin hole leak in 1993 was repaired.
	Fall 1994 / 1R15	PT/VT-2	No reportable indications.
	Fall 1997 / 1R17	PT/I/UT/VT-2	N10, N16A/B nozzles direct visual 1997. N10, N11A/B, N12A/B UT & PT in 1997. Examined during leakage test. No reportable indications.
	Spring 1999 / 1R18	VT-2	Future PT/UT may be exempt due to size/safety function/ and make-up capacity.
	Every Outage	VT-2	Future PT/UT exempt due to size/safety function/ and make-up capacity per Engineering. VT-2 every outage during class 1 leakage test.
*RPV Interior Attachments (BWRVIP-48) *Other Attachments examined by other BWRVIP documents.	Spring 1996 / 1R16	VT-1/3	Surveillance Specimen Brackets (3) No reportable indications.
	Fall 1997 / 1R17	VT-1/3	Guide Rod Brackets (2). No reportable indications.
	Spring 1999 / 1R18	VT-1/3	Steam Dryer Support Brackets (4). No reportable indications.
	Fall 1997 / 1R17	VT-1	Steam Dryer Support Hold Down Brackets (4). No reportable indications.
	Spring 1993 / 1R14 Fall 1997 / 1R17	VT-1/3	FW Sparger Brackets (4) every fourth outage per NUREG-0619 commitments. No reportable indications. Future scheduling to be determined.

	Fall 1994 / 1R15	VT-1, VT-3, EVT-1	VT-3, 2 - Guide Rod Brackets. VT-1, 1 - Upper Surveillance Specimen Bracket. VT-3, 1 - Lower Surveillance Specimen Bracket. EVT-1, 4 - Steam Dryer Support Brackets. EVT-1, 4 - Feedwater Brackets. No reportable indications.
	Spring 1999 / 1R18	VT-1	VT-1, 4 Steam Dryer Hold-down Brackets. No reportable indications. Each Interval.
	Spring 2002 / 1R20	EVT-1	EVT-1, 4 Feedwater Brackets to RPV. No reportable indications.
	Spring 2004 / 1R21	VT-3	1 Upper guide rod bracket to RPV, 3 upper surveillance specimen brackets to RPV.
	Spring 2006/1R22	EVT-1	3 lower surveillance specimen brackets to RPV.
	Spring 2008/1R23	EVT-1/VT-3	4 FW Sparger Bracket Welds to RPV
	Spring 2010/1R24	EVT-1/VT-3	1 Core Spray Bracket to RPV weld at 330 degrees.
LPCI Coupling (BWRVIP-42)	Not Applicable to Hatch	N/A	N/A
Feedwater Spargers (NUREG-0619)	Fall 1994 / 1R15 Spring 1996 / 1R16 Fall 1997 / 1R17 Spring 1999 / 1R18	VT-1/3	1994 through 1999 inspections: Sparger Arms, Flow Holes, Brackets, Tees, Welds, Nozzle Blend Area. No reportable indications. Schedule 2 of 4 every outage per NUREG-0619 commitments. Future scheduling to be determined.
	Spring 2004/1R20 Spring 2006/1R22	VT-1/3	Sparger Arms, Flow Holes, Brackets, Tees, Welds. Unusual wear on end brackets to pins. Probable repair next outage. Schedule 2 of 4 every other outage beginning 1R20.
	Spring 2008/1R23	VT-3	FW Sparger end pins repair completed at four locations(185°, 265°, 275°, & 355°). Repaired due to wear.

	Spring 2010/1R24	VT-3	FW Sparger end pins/brackets at 5°, 85°, 95°, 175° inspected. Minor wear discovered on locations at 95° and 175°. Scope expanded to examine repaired locations at 185°, 265°, 275°, 355°. No further wear noted from additional exams. Re-examine locations at 5°, 85°, 95°, and 175° next outage with contingency planning in place.
		VT-3	Sparger Arms, Flow Holes, Brackets, Tees, Welds, Nozzle Blend Area. No reportable indications
Steam Dryer	Spring 2006 / 1R22	VT-1/3	Upper support ring @ 0^0-360^0 top and vertical surfaces VT-3. Lower & Upper Guide at 180^0 (10) Tie Bars TB1 – TB10, Vertical welds - Various Hood (8) Drain Channels DC1 – DC8 (5) Lower horizontal welds (2) Upper horizontal welds. One tie bar was cracked on one side on the middle span and was repaired (re-welded). Minor indications on DC-1 & Upper Support Ring. BWRVIP examinations are performed every other cycle until the BWRVIP determines an examination frequency. Other owner designated examinations are performed every 6 years.
	Spring 2008/1R23	VT-1 (89)	Upper support ring top and vertical surfaces 0-360°. Monitoring previously identified small indications. Flaws exhibited little discernable change. Lower support ring and guide 24" on either side of lower guide at 0°. Drain channel #1. Monitoring previously identified small indications. Flaws exhibited little discernable change. Tie Bar #6. Reinspection weld repaired tie bar during 2006.
	Spring 2010/1R24	VT-1 (89)	Upper support ring top and vertical surfaces 0-360°. Previously identified indications were determined to be non-relevant during 1R24.

			Flaws exhibited little discernable change.
DM Welds	Spring 2008/1R23	UT	Performed manual UT of N9 nozzle cap weld and the "N8A" jet pump instrument nozzle-to-safe end weld. Both examinations met Appendix VIII criteria. The N8A nozzle-to-safe end weld examination detected no indications. Manual UT plots in the N9 cap weld indicated a potential flaw that appeared to extend upward from the root area along the interface of the replacement weld and the original nickel alloy butter fusion line. Phased array UT (Appendix VIII qualified) was then used to fully interrogate the weld and characterize the indication. The indication was evaluated to be a circumferentially oriented defect that was 2.3 inches long on the inside diameter and 60% through wall in a pipe thickness of 0.74 inches. A SWOL was successfully applied. Scope was expanded to the "N8B" jet pump instrument nozzle-to-safe end weld with no indications detected.
	Spring 2010/1R24	UT	Performed automated phased array UT of Recirc nozzle N2D, N2F, N2G, N2H, and N2K nozzle-to-safe end welds, which are all Category C welds according to BWRVIP-75-A criteria. All examinations met Appendix VIII criteria. The N2D and N2H examinations required some weld conditioning prior to UT. The examinations resulted in no reportable indications.

Reactor Internals Inspection History

Plant: **LaSalle 1**

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Spray Piping	L1R13 (2010)	EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated. No indications. Visual examination of four piping brackets. No indications.
	L1R12 (2008)	UT	Ultrasonic examination of 38 welds for which the UT technique is now demonstrated. Re-sized flaws on BP4a, DP5, and DP6 and due to new Demonstration, the flaws on DP5 and DP6 have been re-characterized as geometry-related; no flaws exist. Flaw evaluation performed on BP4a and weld scheduled for examination again in L1R14.
		EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated or where access is limited. No indications. Visual examination of five piping brackets. No indications.
	L1R11 (2006)	UT	Re-sized flaws on BP4a, DP5, and DP6. Flaw evaluation performed and welds scheduled for examination in L1R12.
		EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated. No indications.
	L1R10 (2004)	UT	Ultrasonic examination of 34 welds for which the UT technique is demonstrated. Re-sized flaws on BP4a, DP5, and DP6. Flaw evaluation performed and welds scheduled for examination in L1R11.

		EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated. No indications.
	L1R09 (2002)	EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated. No indications.
	L1R08 (1999)	UT	Ultrasonic examination of the welds for which the UT technique is demonstrated. Re-sized flaws on BP4a, DP5, and DP6. Flaw evaluation performed and welds scheduled for examination in L1R10.
		EVT-1	Visual examination of those core spray piping welds for which UT technique is not demonstrated. No indications. Visual examination of 50% of the core spray sparger welds. No indications.
Core Spray Sparger	L1R13 (2010)	EVT-1/VT-1	Visual examination of 50% of the core spray sparger welds. No indications. Visual examination of eight sparger brackets. No indications.
	L1R12 (2008)	EVT-1	Visual examination of 25% of the core spray sparger welds. No indications. Visual examination of four sparger brackets. No indications.
	L1R11 (2006)	EVT-1	Visual examination of 50% of the core spray sparger welds. No indications.
	L1R10 (2004)	EVT-1	Visual examination of 50% of the core spray sparger welds. No indications.
	L1R09 (2002)	EVT-1	Visual examination of 50% of the core spray sparger welds. No indications.
	L1R08 (1999)	EVT-1	Visual examination of 50% of the core spray sparger welds. No indications.
Attachment Welds	L1R13 (2010)	EVT-1	(See core spray sections for those attachment welds.) Visual examination of one steam dryer support lug attachment weld (185°). No change in the wear.

		VT-1/VT-3	Visual examination of the upper and lower surveillance capsule attachment welds. No indications.
	L1R12 (2008)	EVT-1	Visual examination of 12 feedwater sparger attachment welds, both the upper and lower surveillance capsule welds at three locations. No indications.
		EVT-1	Visual examination of four steam dryer support lug attachment welds. No change in the wear on the steam dryer support lugs at 5° and 185° where previous wear was observed.
	L1R11 (2006)	EVT-1/VT-1/VT-3	(See jet pump and core spray sections for those attachment welds.) Visual examination of 2 guide rod attachment welds, 12 feedwater sparger attachment welds, and both the upper and lower surveillance capsule welds at three locations. No indications.
		EVT-1	Visual examination of the steam dryer support lug at 185° where wear was observed last outage. No change in the wear.
	L1R10 (2004)	EVT-1/VT-1/VT-3	(See jet pump and core spray sections for those attachment welds.) Visual examination of 4-steam dryer support lug welds, 2 feed water sparger attachment welds, and both the upper and lower surveillance capsule welds at three locations. The steam dryer support lug at 185° showed signs of wear and was accepted for one cycle.
	L1R08 (1999)	EVT-1/VT-1	(See jet pump and core spray sections for those attachment welds.) Visual examination of 4 steam dryer support lug welds. No indications.
Core Shroud	L1R11 (2006) L1R07	UT	UT of welds H3, H4, H6, and H8 (LaSalle-specific numbering). Coverage on H6 and H8 was less than 50%, and a

	(1996)		site-specific flaw evaluation was performed and re-inspection is in 6 years. Note that 100% of the accessible areas were not examined, and a Deviation Disposition was submitted. Indications were less than 10% on each weld.
		UT	UT of welds H3, H4, H5, H6, and H8 (LaSalle-specific numbering). No indications noted except on H4, where indications were 3.0%. Next inspection in 2006.
Shroud Support	L1R13 (2010)	EVT-1	Visual examination of 7shroud support plate gusset welds. No indications.
		EVT-1	Visual examination of approximately 12.5% of H8a. No indications.
	L1R12 (2008)	EVT-1	Visual examination of both access hole covers. No indications.
		EVT-1	Visual examination of 8 shroud support plate gusset welds. No indications.
	L1R11 (2006)	EVT-1	Visual examination of 8 shroud support plate gusset welds. No indications.
		VT-3	Visual exam of 100% of the accessible portion of the top of H9 and both access hole covers. No indications.
	L1R10 (2004)	EVT-1	Visual examination of 11shroud support plate gusset welds. No indications.
		EVT-1	Visual examination of approximately 20% of H8a. No indications.
	L1R09 (2002)	UT	Ultrasonic examination of 100% of the H9 weld from the vessel outside diameter. No indications.
	L1R08 (1999)	EVT-1	Visual examination of 6 shroud support plate gusset welds. No indications.
		EVT-1	Visual examination of approximately 2%

			of H8a, 23% of the top of H9, and both access hole covers. No indications.
	L1R07 (1996)	VT-1	Visual examination of both access hole covers. No indications.
SLC	L1R13 (2010)	VT-2	Visual examination during the system leak test. No indications.
	L1R12 (2008)	VT-2	Visual examination during the system leak test. No indications.
		PT	Surface examination. No indications.
	L1R11 (2006)	VT-2	Visual examination during the system leak test. No indications.
	L1R10 (2004)	VT-2	Visual examination during the system leak test. No indications.
		PT	Surface examination. No indications.
	L1R09 (2002)	VT-2	Visual examination during the system leak test. No indications.
	L1R08 (1999)	VT-2	Visual examination during the system leak test. No indications.
Jet Pump Assembly	L1R13 (2010)		Performed an access study on 4 pumps to assist in tooling development for UT examination of unique welds AD-1, AD-2, and DF-3.
		EVT-1	Visual examination of RS-1 on 4 pumps. No indications.
		EVT-1	Visual examination of RS-3 on 5 pumps. No indications.
		EVT-1	Visual examination of RS-8 on 10 pumps. No indications. (Due to Laguna Verde)
		EVT-1	Visual examination of RS-9 on 10 pumps. No new indications, no apparent change in three existing indications. (Due to Laguna Verde)

		EVT-1	Visual examination of IN-1 on 5 pumps. No indications.
		VT-1	Visual examination of WD-1 on 20 pumps. No new indications, no apparent change in wear on 14 wedges. (Due to Laguna Verde)
		VT-1	Visual examination of vessel side auxiliary wedges on 9 pumps. No new indications, no apparent change in wear on 1 wedge. (Due to Laguna Verde)
		VT-1	Visual examination of shroud side auxiliary wedges on 8 pumps. No new indications. (Due to Laguna Verde)
		EVT-1	Visual examination of strain relief welds RS-RW on the 9 risers that contain the welds. No indications. (Due to Laguna Verde)
		VT-3	Visual examination of 20 jet pump sensing lines due to SIL 420 Revision 1. No indications.
	L1R12 (2008)	UT	UT of 14 hold down beams at BB-1, BB-2 and BB-3. Indication found at BB-3 on Jet Pump 18 and beam replaced.
		VT-1	Visual examination of 9 auxiliary wedges. One indication on Jet Pump 16; accepted as is. No other indications.
		VT-1	Visual examination of WD-1 on 10 pumps. New indications noted on jet pumps 8 (an auxiliary wedge was installed) and on jet pump 11 (accepted as-is).
		EVT-1	Visual examination of 8 DF-2 welds. No indications.
		VT-3	Visual examination of 5 slip joint clamps. No indications.

		VT-1/VT-3	Visual examination of 2 riser brace clamps installed in L1R11. No indications.
		VT-3	Visual examination of the inside of the diffuser on jet pumps 19 and 20. No indications.
	L1R11 (2006)		The hold-down beams on jet pumps 5, 6, 9 and 10 were proactively replaced with low stress beams.
		EVT-1	Visual examination of RB-2 welds on 6 pumps. NRI.
			Installation of riser brace clamps on the risers for jet pumps 5/6 and 9/10 to repair the RS-9 flaws identified in L1R10.
			The slip joint clamps on jet pumps 5, 6, 9 and 10 were upgraded to a new style.
		VT-3	Visual examination of the 16 old style slip joint clamps installed in the previous outage. No indications.
		EVT-1	Visual examination of RB-1 on 12 jet pumps and RB-2 on 6 jet pumps. No indications.
		VT-1	Visual examination of WD-1 on 20 jet pumps. No change in the wear identified in L1R10.
		EVT-1	Visual examination of RS-3 on 5 pumps. No indications.
	L1R10 (2004)	UT	BB-1, BB-2, and BB-3 areas of all 20 hold-down beams. Indications at BB-1 on Jet Pump 15 resulted in replacement of this beam with a low stress beam. When the inlet mixer for Jet Pump 19 was replaced, the beam was proactively replaced.
		EVT-1	Visual examination of RS-3 on 5 risers.

			No indications.
		VT-3	Best effort examination of the inaccessible welds AD-1, AD-2, and DF-3 on all 20 jet pumps. No indications.
		EVT-1	Visual examination of DC-3 on 8 pumps. No indications.
		EVT-1	Visual examination of DF-1 on 11 Jet Pumps. No indications.
		EVT-1	Visual examinations of DF-2 on 2 Jet Pumps. No indications.
		EVT-1	Visual examination of RS-1 welds on all 10 risers. No indications.
		EVT-1	Visual examination of RS-2 welds on 5 risers. No indications.
		EVT-1	Visual examination of RS-3 on 5 risers. No indications.
		EVT-1	Visual examination of RS-6 and RS-7 on 10 jet pumps. No indications.
		EVT-1	Visual examination of RS-8 on all 20 jet pumps. No indications.
		EVT-1	Visual examination of RS-9 on all 20 jet pumps. Indications found on 3 jet pumps (5, 6 and 9). Flaw evaluation performed and required the installation of a repair in L1R11.
		EVT-1	Visual examination of IN-1 on 11 jet pumps. No indications.
		EVT-1	Visual examination of IN-2 on 11 jet pumps. No indications.
		EVT-1	Visual examination of MX-2 on 11 jet pumps. No indications.
		EVT-1	Visual examination of RB-1 on 19 of the

			jet pumps. No indications.
		EVT-1	Visual examination of RB-2 on 18 jet pumps. No indications.
		VT-1	Visual examination of WD-1 on 20 jet pumps. Wear identified on 10 jet pumps. Wear accepted as-is on 9 jet pumps; inlet mixer for jet pump 19 replaced with a different inlet mixer.
		VT-1	Visual examinations of 10 auxiliary wedges installed in previous outages. No indications. Installed auxiliary wedges at the following vessel side locations: jet pumps 4, 12, 13, 14, 15, 16, and 19. Installed auxiliary wedges at the following shroud side locations: jet pumps 1, 3, 4, 12, 14, and 16.
		EVT-1	Visual examination of the strain relief welds on the 10 risers. No indications. Slip joint clamps were installed on all 20 jet pump inlet mixers.
	L1R09 (2002)	VT-3	Visual examination of WD-1 on 4 jet pumps. No indications. Installed auxiliary wedges at the following vessel side location: jet pump 6. Installed auxiliary wedges at the following shroud side location: 11.
		VT-1	Visual examination of 2 auxiliary wedges installed in previous outages. No indications.
	L1R08 (1999)	UT	UT of 10 jet pump beams at the BB-1 and BB-2 locations. No indications.
		EVT-1	Visual examination of DF-1 on 10 Jet Pumps. No indications.

		EVT-1	Visual examinations of DF-2 on 10 Jet Pumps. No indications.
		EVT-1	Visual examination of RS-1 welds on 5 risers. No indications.
		EVT-1	Visual examination of RS-2 welds on 5 risers. No indications.
		EVT-1	Visual examination of RS-3 on 5 risers. No indications.
		EVT-1	Visual examination of RS-6 and RS-7 on 10 jet pumps. No indications.
		EVT-1	Visual examination of RS-8 on 10 jet pumps. No indications.
		EVT-1	Visual examination of RS-9 on 10 jet pumps. No indications.
		EVT-1	Visual examination of IN-1 on 10 jet pumps. No indications.
		EVT-1	Visual examination of IN-2 on 10 jet pumps. No indications.
		EVT-1	Visual examination of MX-2 on 10 jet pumps. No indications.
		EVT-1	Visual examination of RB-1 on 10 of the jet pumps. No indications.
		EVT-1	Visual examination of RB-2 on 10 of the jet pumps. No indications.
		VT-3	Visual examination of WD-1 on 20 jet pumps. Due to wear observed in L1R07, the inlet mixer on jet pump 9 was replaced and the wedge was oversized, and the restrainer bracket was machined to accommodate the larger wedge. To prevent flow imbalance, the inlet mixer on jet pump 10 was proactively replaced. Auxiliary wedges installed at the

			following vessel side locations: jet pumps 1, 5, 7, 8, and 10. Auxiliary wedges installed at the following shroud side location; jet pumps 6.
		VT-1	Gaps at the vessel side set screw were identified on 1 pump and accepted without installation of an auxiliary wedge for one cycle. Gaps at the shroud side set screw were identified on 1 pump and accepted without installation of an auxiliary wedge for one cycle.
			The temporary auxiliary wedges installed on the vessel and shroud side of jet pump 9 were replaced with permanent auxiliary wedges. The wear on WD-1 was accepted for another cycle.
	L1R07 (1996)	VT-3	Visual examination of WD-1 on 2 jet pumps with wear observed on jet pump 9. Flaw evaluation determined acceptable for one cycle.
		UT	UT of all 20 jet pump holddown beams at BB-1; one indication on #9 beam; beam replaced.
		VT-1	A gap was identified on the vessel side set screw of jet pump 9, and temporary wedges were installed at both setscrews on jet pump 9.
LPCI Couplings	L1R13 (2010)	EVT-1	Visual examination of one location (45-12) on one coupling (135°). No indications.
	L1R12 (2008)	EVT-1/VT-3/VT-1	Visual examination of four locations on one coupling (135°). No indications.
	L1R10 (2004)	EVT-1/VT-3/VT-1	Visual examination of four locations on all three couplings. No indications.
	L1R08 (1999)	EVT-1/VT-3/VT-1	Visual examination of four locations on all three couplings. No indications.
Lower Plenum	L1R11	VT-3	Areas below the core plate made

	(2006)		accessible due to the removal of the inlet mixers for jet pumps 5, 6, 9 and 10. Areas include CRD/ST-1, bottom of H9, and ICH/RPV-1. No indications.
	L1R10 (2004)	VT-3	Areas below the core plate made accessible due to the removal of the inlet mixer for jet pump 19. Areas include CRD/ST-1, bottom of H9, and ICH/RPV-1. No indications.
	L1R09 (2002)	VT-3/EVT-1	Visual examination of the fuel support guide tube pins (FS/GT-ARPIN-1) at 20 locations, CRGT-1 at 20 locations, CRGT-2 at 21 locations, and CRGT-3 at 21 locations. No indications.
	L1R08 (1999)	VT-3	Visual examination of the fuel support guide tube pins (FS/GT-ARPIN-1) at 19 locations, the CRGT-1 at 19 locations. No indications.
Steam Dryer	L1R13 (2010)	VT-1	Examination of the dryer included 21 tie bars, 23 vertical welds, 5 horizontal welds, and 5 tie rods. The upper support ring was examined for 360°. The lug and four brackets on two lifting assemblies (225° and 315°) were examined. Indications identified previously were examined and there were no changes in any indications. New indications were noted on the lifting lug #2, #3 and #4 brackets at 315°, tie rod 17-90°, V01-270°, and the USR from 180-360°. All indications were evaluated and accepted without repair.
	L1R12 (2008)	VT-1	All welds on the half of the dryer between 0° and 180°, including drain channels, tie bars, vertical welds, horizontal welds, and tie rods on both sides of the dryer. New indications were identified on TB-03, TB-08, TR-05-270, TR-05-90, TR-06-270, TR-06-90, TR-09-270, TR-09-90, TR-10-270, TR-10-90, TR-13-270, TR-13-90, TR-14-270, TR-14-90, TR-16-90, TR-17-

			270, TR-17-90, TR-18-270, TR-18-90, V04a-90, V04c-90, V05-90, V06-90, V09-90, V10-90, V13-90, V14-90, V15-90, V17-90, and upper support ring between 90-180. All were evaluated and accepted without repair.
		VT-3	General inspection of the half of the dryer between 180° and 360° above the waterline. No indications.
	L1R11 (2006)	EVT-1	Re-inspection of lower guide bracket at 180° and hood A plate 5 where previous indications existed and were stop drilled. No new indications.
		VT-1	All welds on the half of the dryer between 180° and 360°: access hole cover, drain channels, vertical welds and horizontal welds. No new indications. Indications at V13-270 and V14-170 were re-examined and there was no growth.
	L1R10 (2004)	VT-3	Visual exams on the end panels and welds; one indication on bank B, bank 2 which was stop drilled, and one previous indication on bank D bank 4 and there was no growth. All four lifting lugs and their brackets (previous indications at five locations with no growth), 100% of tie rods (10 previous indications unchanged), 100% of tie bars
		VT-1	Visual examination of upper and lower guide brackets with an indication on the lower guide at 180° which was stop drilled, all horizontal welds, all horizontal plates (hood A plate 5 indication was stop drilled), hood F plate 1 (previous indication did not grow), 100% of the tie bars
Top Guide	L1R13 (2010)	EVT-1	Visual examination of two grid cells; no indications.
	L1R13	VT-3	Visual examination of one c-clamp; no

	(2010)		indications.
	L1R12 (2008)	VT-3	Visual examination of two c-clamps; no indications.
	L1R10 (2004)	VT-3	Visual examination of two c-clamps; no indications.
	L1R08 (1999)	VT-3	Visual examination of four c-clamps; no indications.
Vessel	L1R12 (2008)	VT-3	Inspection of the general condition of the RPV interior surface from the RPV closure flange elevation to the Steam Dam, 360° around the RPV interior. NRI. Inspection of the general condition of the RPV interior surface at the shroud support plate elevation above the gussets, 360° around the RPV interior. NRI.
	L1R10 (2004)	VT-3	Inspection of the general condition of the RPV interior surface from the RPV closure flange elevation to the Steam Dam, 360° around the RPV interior. NRI. Inspection of the general condition of the cladding at the Steam Dam elevation, 360° around the RPV interior. NRI. Inspection of the general condition of the RPV interior surface from below the core plate to the shroud support plate. NRI.
	L1R09 (2002)	VT-3	Inspection of the general condition of the RPV interior surface from the RPV closure flange elevation to the Steam Dam, 360° around the RPV interior. NRI. Inspection of the general condition of the cladding at the Steam Dam elevation, 360° around the RPV interior. NRI.
DM Welds-BWRVIP-75-A	L1R13 (2010)	UT	Inspection of 16 Category C DM welds; 10 automated and 6 manual. No indications.

	L1R12 (2008)	UT	Two Category D DM welds were identified on a flow venturi in the drywell in 2009, and the flow venturi was removed and replaced with a venturi that does not contain any welds. Details will be provided to the BWRVIP and NRC under a separate letter. There were no dissimilar metal welds examined this outage.
Integrated Surveillance Program	L1R13 (2010)		Removed the surveillance capsule at 120° to support analysis of the contents under the ISP.

Reactor Internals Inspection History

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

Components in BWRVIP Scope	Date or Frequency of Inspection	Inspection Method Used	Summarize the Following Information: Inspection Results, Repairs, Replacements, Reinspections
Core Shroud	1994 (1R05)	VT-3	VT-3 examination of OD of welds H-1, H-2, H-3, H-4, H-5, H-6, and H-7. No indications identified.
	1996 (1R06)	UT	Baseline Category "B" UT examinations of welds H-3, H-4, H-5 and H-7 per BWRVIP-01, Rev. 1. Minor indications identified on H-3. No indications identified on H-4, H-5 and H-7.
	2006 (1R11)	UT & EVT-1	Category "B" welds were re-examined by UT. Due to the identification of cracking, the scope was expanded and the shroud reclassified as a Category "C". All horizontal welds except H1 were UT examined from two sides using Phased-Array on most ring (H2 LKUP, H3 LKDN and H6 LKDN) locations. Recently demonstrated H1 emersion technique looking down was not successful. Vertical welds V-15, 16, 17 and 18 in the beltline screened-in and were UT examined from ID. Vertical welds V-7 and 8 at the top guide and V-25 and 26 below the core plate also screened-in and were visually (EVT-1) examined from the shroud OD.
Shroud Support	1987 (1R01), 1990 (1R03), 1994(1R05)	VT-3	VT-3 examination of H-8 and H-9 welds from annulus. No indications identified.
	1998 (1R07)	VT-3	50% of shroud legs @ 10°, 30°, 60° Azimuths and 50% of annulus floor. No indications identified.
	2000 (1R08)	EVT-1	Visual examination of H-8 and H-9

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

			indications were identified on P8aC as weld discontinuities that were likely opened up from construction. No other indications were identified.
	2008 (1R12)	EVT-1	EVT-1 of previous P3bA indication. No change in identified length. EVT-1 of un-demonstrated welds P4dC, P8aA, P8aB, P8aC, and P8aD. No change in previous discontinuities. No new indications identified. Due to UT failure in 2006, the following 13 welds were visually inspected in 2008 - P3aB, P3bB, P4aB, P4aC, P4aD, P5B, P6B, P6D, P7B, P8bA, P8bB, P8bC, and P8bD. These welds are expected to return to a UT reinspection frequency of 2R after the next UT in 2010. No indications identified.
	2010 (1R13)	UT	One-sided UT examination of P1, P2, P3a, P3b, and P8b welds was performed. Two-sided UT examination of P4b, P5, P6, and P7 welds was performed. UT of previous P3bA indication indicated no change in flaw length. No other indications were identified.
		EVT-1	EVT-1 of the far-side of the P1, P2, P3a, P3b, and P8b welds was performed. EVT-1 of the un-demonstrated P4dD and P8a welds was also performed. No change in previous discontinuities noted in P8aC weld. No indications were identified.
Core Spray Piping Brackets	1987 (1R01) to 1996 (1R06)	VT-1	VT-1 examination performed every refueling outage on piping and welds per IEB 80-13. No indications identified.
	1998 (1R07)	CSVT-1	Examined all eight brackets (PB1 through PB8). No indications identified.

	2000 (1R08)	EVT-1	Examined brackets PB1 and PB2. No indications identified.
	2002 (1R09)	EVT-1	Examined brackets PB3 and PB4. No indications identified.
	2004 (1R10)	EVT-1	Examined brackets PB5 and PB6. No indications identified.
	2006 (1R11)	EVT-1	Examined brackets PB7 and PB8. PB7 was identified with indications on the two upper bolts. In each case, one of two tack welds was found to be cracked. No
	2008 (1R12)	EVT-1	Examined brackets PB1 and PB2. No indications identified. PB7 indication was re-inspected with no change in condition noted.
	2010 (1R13)	EVT-1	Examined bracket PB3 and PB4. No indications identified. PB7 indication was re-inspected with no change in condition noted.
Core Spray Sparger	1987 (1R01) to 1996 (1R06)	VT-1	Enhanced VT-1 (1 mil resolution) examination performed every refueling outage on piping and welds per IEB 80-13. No indications identified.
	1998 (1R07)	EVT-1 & CSVT-1	EVT-1/CSVT-1 all spargers. No indications identified.
	2000 (1R08)	EVT-1	EVT-1 examined welds S1A, S1B, S2aA, S2aB, S2bA, S2bB, S4aA, S4aB, S4bA, and S4bB. No indications identified.
		VT-1	VT-1 examined welds S3aXXA, S3bXXA, and S3dXXA on nozzles 1A through 65A. No indications identified.
	2002 (1R09)	EVT-1	EVT-1 examined welds S1C, S1D, S2aC, S2aD, S2bC, S2bD, S4aC, S4aD, S4bC, and S4bD. No indications identified.

		VT-1	VT-1 examined welds S3aXXB, S3bXXB, and S3dXXB on nozzles 1B through 65B. VT-1 examined welds S3c4B, S3d4B, S3c62B, and S3d62B. No indications identified.
	2004 (1R10)	EVT-1	EVT-1 examined welds S1A, S1B, S2aA, S2aB, S2aD, S2bA, S2bB, S4aA, S4aB, S4bA, and S4bB. No indications identified.
		VT-1	VT-1 examined welds S3aXXC, S3bXXC, and S3dXXC on nozzles 1C through 65C. No indications identified.
	2006 (1R11)	EVT-1	EVT-1 examined welds S1C, S1D, S2aC, S2aD, S2bC, S2bD, S4aC, S4aD, S4bC, and S4bD. No indications identified.
		VT-1	VT-1 examined welds S3aXXD, S3bXXD, and S3dXXD on nozzles 1D through 65D. VT-1 examined welds S3c4D, S3d4D, S3c62D, and S3d62D. No indications identified.
	2008 (1R12)	EVT-1	EVT-1 examined welds S1A, S1B, S2aA, S2aB, S2bA, S2bB, S4aA, S4aB, S4bA, and S4bB. No indications identified.
		VT-1	VT-1 examined welds S3aXXA, S3bXXA, and S3dXXA on nozzles 1A through 65A. Re-examined welds S3aXXD, S3bXXD, and S3dXXD on nozzles 1D through 65D due to camera quality issues from 2006. No indications identified.
	2010 (1R13)	EVT-1	EVT-1 examined welds S1C, S1D, S2aC, S2aD, S2bC, S2bD, S4aC, S4aD, S4bC, and S4bD. No indications identified.
		VT-1	VT-1 examined welds S3aXXB, S3bXXB, and S3dXXB on nozzles 1B through 65B. VT-1 examined welds S3c4B, S3d4B, S3c62B, and S3d62B. No

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

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

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

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

			and JP 16. EVT-1 examined IN-4, MX-2, DF-2, and AD-1 welds on JP 9. EVT-1 examined DF-2 on JP 10. EVT-1 examined DF-2, AD-1, and AD-2 welds on JP 6 and JP 7. EVT-1 examined previous indication at JP13/14 RS-9. No change in flaw length. No other indications were identified.
		VT-1	VT-1 examined all twenty WD-1, AS-1 and AS-2 locations in response to wear identified on Li2R08 during 2005. Gaps were identified on vessel side setscrews of JP4, JP7, JP9, JP13, JP15, JP19, and JP20. Cracked tack welds were identified on shroud side setscrews of JP8, JP12, JP14, JP17, JP18, and JP19. Slip Joint Clamps were proactively installed on all twenty Jet Pumps. Five auxiliary wedges installed: two at JP13 (pre-emptive due to RS-9 flaw), two at JP14 (pre-emptive due to RS-9 flaw), and one at JP15 (vessel side only due to 23 mil gap). No other indications identified. Visually examined auxiliary wedge previously installed at JP18 shroud side setscrew. No indications identified.
	2008 (1R12)	EVT-1	EVT-1 examined RS-3, RS-7, RS-8, and RS-9 weld on JP17/18 riser. No indications identified. EVT-1 examined IN-4, MX-2, DF-1, DF-2, AD-1, AD-2, RS-3, RS-6, RS-7, RS-8, and RS-9 welds, as well as all RB-1 and RB-2 welds on JP 19 and JP 20. No indications identified.

			EVT-1 examined previous indication at JP13/14 RS-9. No change in flaw length. No other indications were identified.
		VT-1	VT-1 examined all twenty main wedges (WD-1). Minor wedge wear was identified on JP 18, JP 19, and JP 20. WD-2a, WD-2b, MX-7, welds were also examined on JP 18, JP 19, and JP 20 as part of the expanded scope required from identifying main wedge wear. Minor wedge rod wear was identified on JP 4, JP 18, JP 19, and JP 20. Since slip joint clamps (installed in 2006) mitigate slip joint bypass leakage vibrations, this main wedge damage and rod wear was determined to be caused by turbulent flow. Two auxiliary wedges were installed around both the shroud and vessel side set screws on JP 19 and JP 20. JP 18 has one previously installed auxiliary wedge around the shroud side set screw. The main wedge wear and rod wear were found to be acceptable for continued service without repair. Set screw gaps (AS-1) and tack welds (AS-2) were inspected at all locations not blocked by an auxiliary wedge. Gaps were identified on vessel side setscrews of JP 2 (20 mils), JP 3 (5 mils), JP 9 (14 mils), and JP 20 (8 mils). One auxiliary wedge was installed to repair the gap on the vessel side set screw of JP 2. The remaining gaps were evaluated as acceptable without repair. Previously identified gaps at JP 4, JP 7, and JP 19 are no longer visible. Cracked tack welds were re-inspected on the shroud side setscrews of JP 8, JP 12, JP 14, JP 17, and JP 19 with no change in condition noted. All 20 Slip Joint Clamps were examined after one cycle of operation. No

			indications were identified.
		VT-3	Five auxiliary wedges were inspected after one cycle of operation: two at JP13, two at JP14, and one at JP15 (vessel side). No indications were identified.
	2010 (1R13)	EVT-1	EVT-1 performed on RS-1, RS-2, RS-8, and RS-9 of both JP01-02 and JP05-06 risers. EVT-1 performed on RS-8 and RS-9 of six jet pump risers (JP03-04, JP07-08, JP09-10, JP11-12, JP13-14, and JP15-16). One previously identified indication on JP13-14 RS-9 weld was unchanged. No other indications identified.
		VT-1	VT-1 examined all twenty main wedges (WD-1). Previous wedge wear identified on JP18, JP19, and JP20 had no change in condition reported. Minor wedge rod wear was identified on JP08, and previously identified rod wear on JP04, JP18, JP19, and JP20 had no change in condition reported. No indications were identified on the wedge rod tack welds of JP04, JP08, JP18, JP19, and JP20. Set screw gaps (AS-1) and tack welds (AS-2) were inspected at all locations with previously identified indications. Gaps were identified on vessel side setscrews of JP03 (4 mils) and JP09 (13 mils). These gaps were acceptable without repair. Cracked tack welds were re-inspected on the shroud side setscrews of JP08, JP12, JP14, JP17, and JP19 with no change in condition noted, except that the second tack weld of JP17 now has a small indication identified. All were evaluated as acceptable. All 20 Slip Joint Clamps were inspected. The mid-support of two clamps (JP11

		VT-3	and JP19) was identified as having minor wear into the top ledge of the diffuser. One clamp (JP17) was identified as having slight movement from its original installed position. Indications were evaluated as acceptable with no repairs or re-work performed. No other indications were identified. Five auxiliary wedges were inspected after one cycle of operation: JP02 VS, JP19 SS, JP19 VS, JP20 SS, and JP20 VS. No indications were identified.
Jet Pump Beams	1994 (1R05)	UT	UT baseline of replacement hold-down beams. No indications identified.
	2004 (1R10)	UT	UT examined BB-1, BB-2, and BB-3 of all 20 jet pump hold down beams. One indication identified in BB-2 region of JP 4. This beam was changed out during the same refuel outage with a Group 3 style beam. No other indications identified.
	2006 (1R11)	VT-3	VT-3 examined BB-1, BB-2, and BB-3 on replacement beam for JP 4. No indications identified.
	2008 (1R12)	UT & EVT-1	UT examined BB-1, BB-2, and BB-3 of all jet pump hold down beams with the exception of JP 4 (Group 3) beam that was installed in 2004. One indication was identified in the BB-3 region of JP 1 beam. A supplemental visual exam (EVT-1) was performed and surface discontinuities were noted that could explain the UT indication. The UT indication was determined to be non-relevant and the beam was not replaced. One indication was identified in the BB-2 region of the JP 8 beam. A

	2010 (1R13)	EVT-1 VT-1 & VT-3	supplemental visual exam (EVT-1) could not confirm the presence of any surface discontinuities that would explain the indication; therefore, this beam was replaced during the same refuel outage with a Group 3 style beam. Re-inspected indication on JP 1 BB-3 region. Re-confirmed surface discontinuity. No change in condition. Visually examined JP 8 beam after one cycle of service. No indications were identified.
Jet Pump Diffuser			See Jet Pump Assembly
CRD Guide Tube	1990 (1R03)	VT-3	VT-3 examination of replacement CRDs at core locations 10-23, 14-19, 14-23, 14-31, 18-43, 18-55, 22-11, 22-39, 22-47, 26-03, 26-11, 26-27, 30-23, 30-3530-55, 34-23, 34-37, 34-31, 34-39, 38-07, 38-23, 38-31, 38-35, 38-39, 42-19, 46-11, 46-39, and 54-31. No indications identified.
	1992 (1R04)	VT-3	VT-3 examination of control rod assembly at core locations 30-11,22-55, 54-23, 38-07, 38-55, and 22-07. No indications identified.
	1994 (1R05)	VT-3	VT-3 examination of replacement CRDs at core locations 02-43, 10-19, 10-39, 14-39, 18-23, 18-39, 20-35, 26-27, 26-31, 30-47, 34-31, 34-47, 38-19, 38-35, 38-41, 42-15, 42-55, 50-43, 54-19, and 58-31. No indications identified.
	1998 (1R07)	VT-3	VT-3 of CRDs at core loc. 54-49, 48-55,50-51, 42-59, 30-31, 30-34, 34-35, 26-31, 34-31, 26-27, 30-27, and 34-27. No indications identified.
	2000 (1R08)	EVT-1 & VT-3	Examined CRGT-1,2,3 and FS/GT-ARPIN-1 at core locations 30-55, 38-31

			and 38-39. No indications identified.
	2004 (1R10)	EVT-1 & VT-3	Examined CRGT-1,2,3 and FS/GT-ARPIN-1 at 10-39, 18-27, 18-35, 26-43, 30-15, 30-47, 34-15, 34-19, 34-43, and 46-11. No indications identified.
	2008 (1R12)	EVT-1 & VT-3	Examined CRGT-2 and CRGT-3 at 14-15, 14-51, 18-43, 18-55, 30-31, 34-35, 38-19, 42-23, and 42-27. The integrity of the CRGT-1 and FS/GT-ARPIN-1 at each core location identified above was verified via the cell disassembly / reassembly procedure (M-C-741-301) as allowed by BWRVIP-47-A. No indications identified.
CRD Stub Tube	1992 (1R04)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations once per interval, in excess of Section XI. No indications identified.
	1996 (1R06)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations. No indications identified.
	1998 (1R07)	VT-3	VT-3 of tube to housing and tube to RPV weld at core loc. 54-49, 48-55,50-51, 42-59, 30-31, 30-34, 34-35, 26-31, 34-31, 26-27, 30-27, and 34-27. No indications identified.
	2000 (1R08)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations. No indications identified.
	2006 (1R11)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations. No indications identified.
	2010 (1R13)	Best Effort VT-1 and VT-3	Visually examined CRDH/ST-1 and CRST/RPV-1 welds at core locations 22-31, 26-27, 26-31, 26-35, 30-23, 30-27,

			30-31, and 34-27 due to control rod guide tube removal in support of bottom head drain cleaning. No indications were identified.
In-Core Housing	1992 (1R04)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations once per interval, in excess of Section XI. No indications identified.
	1996 (1R06)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations. No indications identified.
	1998 (1R07)	VT-3	VT-3 of housing and weld to RPV at core loc. 48-53, 32-29, 24-29, 24-33, and 32-33. No indications identified.
	2006 (1R11)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations. No indications identified.
	2010 (1R13)	Best Effort VT-1 and VT-3	Visually examined ICH/RPV-1 and ICHS-1 welds at core locations 24-29, 24-33, 32-25, and 32-29. Visually examined ICHS/ICGT-1 welds at core locations 24-33 and 32-25. These locations were examined due to control rod guide tube removal in support of bottom head drain cleaning. No indications were identified.
Dry Tube	1989 (1R02)	VT-3	VT-3 examination of accessible portions of dry tubes at core locations 16-45, 40-45, 40-21, 16-21, (SRM's), 16-53, 48-53, 24-37, 32-37, 32-29, 24-29, 48-13, and 16-13 (IRM's). No indications identified.
	1992 (1R04)	VT-1	VT-1 examination of 4 dry tubes. No indications identified.
	1994 (1R05)	VT-1	VT-1 examination of dry tubes at core

			locations: 24-37 (IRM), and 40-21 and 38-23 (SRM). No indications identified.
	2004 (1R10)	VT-1	Examined SRMs at 16-45 and 40-21 and IRMs at 24-29, 24-37, 32-37 and 48-13. Dry tube 24-29 identified as not fully engaged with the top guide. No other indications identified.
	2006 (1R11)	N/A	Replaced dry tubes SRMs 16-21 and 40-45 and IRMs 24-29, 24-37, 48-13, and 48-53 with new universal style dry tube and shuttle tube.
	2008 (1R12)	N/A	Replaced dry tubes SRMs 16-45 and 40-21 and IRMs 16-13, 16-53, 32-29, and 32-37 with new universal style dry tube and shuttle tube.
Instrument Penetrations	1990 (1R03)	VT-3	VT-3 examination of interior attachment of instrument nozzles N16A through D, N12A through D, and N11 A & B. No indications identified. PT examination performed on all instrument nozzle to safe end welds once per interval, per Section XI (includes N10 Core Differential Pressure penetration). No indications identified.
	1996 (1R06)	VT-2	VT-2 examination from vessel exterior on 100% of penetrations once per interval, in excess of Section XI. No indications identified.
	2006 (1R11)	VT-2	VT-2 examination from vessel exterior once per interval. No indications identified.
Vessel ID Attachment Welds	1987 (1R01) to 1996 (1R06)	VT-1 & VT-3	VT-1 or VT-3 performed on all ID attachment welds once per interval per Section XI. No indications identified.
	1998 (1R07)	MVT-1 /	Examinations include 4 steam dryer

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

		VT-1	VT-1 examined attachment welds of one surveillance sample holder at 300°. No indications identified.
		VT-3	VT-3 examined both Guide Rod lugs at 0° and 180°. No indications identified.
	2008 (1R12)	EVT-1	EVT-1 examination of Jet Pump Riser Brace Support Pads (RBSP) on JP1/2 and JP19/20, Feedwater Sparger End Brackets (FWSB) at 5°, 55°, and 65°, and Core Spray Brackets (CSB) at 15° and 85.5°. No indications identified. EVT-1 examined the Steam Dryer support bracket attachment weld at 4° and identified a minor wear mark on the top surface of the bracket itself. When compared to previous inspection video, there was no change in condition. The attachment weld had no indications identified.
	2010 (1R13)	EVT-1 & VT-3	EVT-1 examined the Core Spray Bracket (CSB) attachment welds at 112.5° and 165° and Steam Dryer Support Bracket (SDSB) attachment weld at 94°. VT-3 examined the top surface only of the Steam Dryer Support Brackets at 4°, 94°, 184°, and 274°. No indications were identified in the attachment welds; however, all SDSBs were found to have various levels of wear identified on the top surface of the brackets. These indications were evaluated as acceptable with no repair required.
LPCI Coupling	1987 (1R01), 1990 (1R03), 1994(1R05)	VT-3	VT-3 examination of all 4 couplings. No indications identified.
	1998 (1R07)	MVT-1	All of N-17A and B. No indications identified.

	2000 (1R08)	EVT-1, VT-1, & VT-3	All of N-17C and D. No indications identified.
	2002 (1R09)	EVT-1 & VT-3	N17A, locations 45-3b, 6a, 6b, 6c and 6d. No indications identified.
	2004 (1R10)	EVT-1, VT-1, & VT-3	N17A, locations 45-8a, 8b, 8c, 8d and 12 and all of N17B. No indications identified.
	2008 (1R12)	EVT-1, VT-1, & VT-3	All of N17C and N17D were examined. No indications identified. Due to new angle and distance requirements for visual exams in accordance with BWRVIP-03 Revision 10, the 45-12 (Sleeve Flange to Thermal Sleeve) welds on both LPCI couplings were performed as best effort EVT-1 exams.
Steam Dryer	1998 (1R07)	VT-1 & VT-3	VT-1 examined the steam dryer drain channel welds. No indications identified. VT-3 examined the overall condition of the steam dryer. No indications identified.
	2000 (1R08)	VT-1	VT-1 examined the steam dryer drain channel welds. No indications identified.
	2002 (1R09)	VT-1 & VT-3	VT-1 examined the steam dryer drain channel welds. Stain identified on drain channel SDDC4c. No other indications identified. VT-3 examined the overall condition of the steam dryer. No indications identified.
	2004 (1R10)	VT-1 & VT-3	VT-1 examined cover plate welds, outer bank hood seam welds, drain channel

			welds, and previous support ring indications. One support ring bolt was found with old mechanical deformation/damage and left as-is. Minor IGSCC previously identified on the support ring. No other indications identified. VT-3 examined steam dryer tie bars. During examination of tie bars, one cam nut was found to be protruding from end bank number 6. This cam nut was staked during the same outage.
	2006 (1R11)	VT-1	Performed BWRVIP-139 inspections of cover plates SDCP 1a-b and 7a-b, top and bottom hood SDBH 1a-b, 2a-b, 3a-b, 4a-b, 5a-b, and 6a-b, end bank welds SDEB 1a-d and 2a-d, lifting lugs, support ring and cam nut tack welds. Minor IGSCC identified on the support ring and tack weld cracking on cam nuts. No other indications identified.
	2008 (1R12)	VT-1	VT-1 examined cover plates (SDCP1a-b, SDCP7a-b), hood seam welds (SDHS1a-d, SDHS2a-e, SDHS3a-e, SDHS4a-e, SDHS5a-e, SDHS6a-d), lifting rod eye welds (SDLRALE, SDLRBLE, SDLRCLE, SDLRDLE), plenum partitions (SDPP2a-b, SDPP3a-b, SDPP4a-b, SDPP5a-b), and all 37 tie bars (SDTB01-SDTB37). Minor IGSCC indication re-examined on support ring in area of SDCP7b. No change in condition. IGSCC indication identified on SDHS4d at the top of the hood seam weld. Indication is approximately 1.5 inches in length and was evaluated as acceptable. No repair required. Indications identified on 11 cam nuts

			(SDCN). All were evaluated as acceptable. No repairs required.
	2010 (1R13)	VT-3 & VT-1	VT-3 examined the overall condition of the steam dryer. No indications identified. VT-1 examined all Steam Dryer Cam Nut (SDCN) locations, including areas of previously identified indications. From this inspection, indications were noted on 13 of 48 cam nuts. All flaws were evaluated as acceptable with no repairs required. VT-1 examined the Steam Dryer Support Ring (SDSR), including areas of previously identified indications and the seismic blocks at 4°, 94°, 184°, and 274°. A few new IGSCC indications were noted with no change to the existing indications on the support ring. Minor wear and rub marks were identified on the underside of the seismic blocks at all locations. All flaws were evaluated as acceptable. VT-1 examined the previous indication identified at the SDHS4d location (at the top of the hood seam weld). No change in condition was noted.
Access Hole Covers	1987 (1R01), 1990 (1R03), 1994(1R05)	VT-3	VT-3 examination of both access hole covers and welds at 0° and 180°. No indications identified.
	1998 (1R07)	VT-3	VT-3 examination of both access hole covers and welds at 0° and 180°. No indications identified.
	2004 (1R10)	EVT-1, VT-1	EVT-1 and VT-1 examination of both access hole cover welds at 0° and 180°. No indications identified.
	2008 (1R12)	VT-1	

			VT-1 examined all access hole cover welds at 0° and 180°. No indications identified.
DM Welds- BWRVIP-75-A Category A	2008 (1R12)	UT	1 weld inspected: 1 automated, no flaws, no repairs
DM Welds- BWRVIP-75-A Category C	2006 (1R11)	UT	3 welds inspected (DCA-318-3 N17C, RC 012, and RC 013): 1 weld with 82/182, 3 manual, no flaws, no repairs
	2008 (1R12)	UT	5 welds inspected (VRR-1RD-1B N2A, DCA-318-1 N17B, DCA-319-1 N5A, DCA-320-1 N5B, and RPV-1IN N9): 5 weld with 82/182, 1 manual, 4 automated, no flaws, no repairs
DM Welds- BWRVIP-75-A Category C (Cont.)	2010 (1R13)	UT	5 welds inspected (VRR-1RS-1B N1B, VRR-1RD-1B N2D, VRR-1RD-1B N2E, VRR-1RD-1A N2G, and VRR-1RD-1A N2J): 5 welds with 82/182, 5 automated, no flaws, no repairs
DM Welds- BWRVIP-75-A Category E	2010 (1R13)	UT	1 weld inspected (VRR-1RD-1A N2H): known indication mitigated with MSIP in 1992, first PDI examination, indication acceptable for continued service

Reactor Internals Inspection History

Plant: **Nine Mile Point Unit #2**

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

	RF06 (5-98)	UT	RF06 (5-98) - Base line UT exams performed. Welds H1 through H7 inspected with indications observed in all but weld H6. Indications varied from approximately 2% to 85% of length inspected with maximum depth of 0.65 inches. All indications acceptable for continued operation. Welds V12 through V17 inspected with no indications observed.
	RF03 (10/93)	VT	H1, H2, H7 OD H3, H4, H5 ID No reportable indications
Shroud Support	RF12(4/10)	EVT-1	Access Hole Covers at 0 and 180 degrees No indications found.
	RF11 (3/08)	EVT-1	Access Hole Covers at 0 degree No indications found.
		EVT-1	Shroud to baffle plate between JP20-JP1 No indications found.
	Mid-Cycle (11/07)	VT-1	Disassembly of JP11 provided access to H-10, H-11 and H-12 welds of the shroud support legs at 190 and 210 degrees. Approximately 20% coverage was obtained with VT-1 resolution. No indications found
	Mid-Cycle (11/07)	VT-1	Disassembly of JP11 provided access to the bottom side of H9A (H8) and H9B (H9) welds at 202 degrees. Approximately 5.5% coverage was obtained with VT-1 resolution. No indications found
	RF10 (3/06)	EVT-1	H9 weld inspections performed between JP sets and one Access Hole cover plate examined (top hat design) examined. No indications found.
	RF09 (3/04)	UT	Obtained 100% coverage of H9 from vessel side, a single ½" long original

			construction flaw was noted (not surface connected)
	RF08 (3/03)	EVT-1	Both access hole covers examined, no indications noted. (SIL 462, rev 1 exam)
	RF07	EVT-1	~25% of H9A & H9B
	RF06 (5-98)		RF06 (5-98) - No Inspections Performed
	RF04 (5/95)	VT-3	The shroud support access hole cover welds were found to be free of radial cracking.
Core Spray Piping	RF12(4/10)	EVT-1	P2 piping T-Box cover plate welds at 120 and 240 degrees. No indications found.
		EVT-1	P3 piping to T-Box welds at 120 and 240 degrees. No indications found.
		EVT-1	P4a Piping to upper elbow weld and P4b upper elbow to downcomer weld at 350 degrees. No indications found.
		EVT-1	P5, P6 and P7 welds on all four downcomers at 10, 170, 190, and 350 degrees. No indications found.
		EVT-1	P8a pipe to thermal sleeve weld and P8b thermal sleeve to Shroud weld on all four downcomers at 10, 170, 190 and 350 degrees. No indications found.
		EVT-1	Piping bracket welds at 195, 265, 290 and 345 degrees. No indications found.
	RF11 (3/08)	EVT-1	P2 piping T-Box cover plate welds at 120 and 240 degrees. No indications found.
		EVT-1	P3 piping to T-Box welds at 120 and 240 degrees. No indications found.
		EVT-1	P4c downcomer to elbow welds and P4d

			elbow to pipe welds at 170 and 350 degrees. No indications found.
		EVT-1	P5, P6 and P7 welds on all four downcomers at 10, 170, 190, and 350 degrees. No indications found.
		EVT-1	P8a pipe to thermal sleeve weld and P8b thermal sleeve to Shroud weld on all four downcomers at 10, 170, 190 and 350 degrees. No indications found.
	RF10 (3/06)	EVT-1	Visual pick-up exams on 4 remaining target welds, P8a & P8b that were not UT examined last outage. No indications found.
	RF09 (3/04)	UT / EVT-1	Baseline UT, including both P1 welds, completed with no indications noted. Also other BWRVIP visual exams completed
	RF08 (3/02)	EVT-1	Inspections performed per BWRVIP guidelines. No indications found.
	RF07 (3/00)	VT	RF07 (3/00) – Per BWRVIP-guidelines, 100% of target welds and 25% of remaining welds. No indications found
	RF06, 1998	EVT-1	RF06 (5-98) - No Indications EVT-1 only
	RF04 (5/95) RF02 (3/92) RF01 (10/90)	VT	No indications
Core Spray Sparger	RF12(4/10)	VT-1	S3a and S3b welds on C and D Sparger nozzles
		VT-1	Sparger Bracket to Shroud welds at 100, 130, 135, 140, 170, 190, 220, 225, 230,260 and 265 degrees. No indications found.
	RF11 (3/08)	EVT-1	S1 cover plate to T-Box welds at 10,

			170, 190 and 350 degrees. No indications found.
		EVT-1	S2 T-Box to sparger pipe welds at 10, 170, 190 and 350 degrees. No indications found.
		VT-1	S3a and S3b welds on the A and B Sparger nozzles. No indications found.
		VT-1	B and D Sparger drain welds at 260 and 280 degrees. No indications found.
		EVT-1	S4 end cap to Sparger pipe welds at 85, 95, 265 and 275 degrees. No indications found.
		VT-1	Sparger Bracket to Shroud welds at 10, 40, 45, 50, 80, 280, 310, 315, 320 and 350 degrees. No indications found.
	RF10 (3/06)	EVT-1 / VT-1	Inspections performed per BWRVIP guidelines. No indications found.
	RF09 (3/04)	EVT-1 / VT-1	Inspections performed per BWRVIP guidelines. No indications found.
	RF08 (3/02)	EVT-1 / VT-1	Inspections performed per BWRVIP guidelines. No indications found.
	RF07 (3/00)	VT	RF07 (3/00) Per BWRVIP guidelines - 1 sparger (welds S3a, S3b,S3c & brackets) No indications found
	RF06 (5-98)	VT	RF06 (5-98) - No Indications
	RF04 (5/95)	VT	EVT-1 & MVT
	RF02 (3/92)		
	RF01 (10/90)		No indications
Top Guide (Grid Beam, etc.)	RF12(4/10)	EVT-1	Examined 6 Top Guide Cells (Lower 25% of the vertical plate, bottom of plate and grid intersections) No

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

	RF11 (3/08)		No inspections required
	RF10 (3/06)		No inspections required
	RF09 (3/04)		N/A, NMP2 (injects boron through HPCS line)
	RF08 (3/02)	UT	UT of N11 safe-end to nozzle weld and accessible portions of adjacent base metal using PDI qualified technique. No indications found.
	RF07 (3/00)		No Inspections performed
	RF06 (5-98)		2RPV-KB34 provides core ΔP only Nozzle exams per ASME code No Inspections
	RF04 (5/95)	PT	Core plate ΔP only this unit 2RPV-KB34 No reportable indications
Jet Pump Assembly	RF12(4/10)	VT-1/VT-3	Examined clamp assemblies on Jet Pumps 5, 6 and 19
		VT-1	Sensing lines and stand-offs for Jet Pumps 6, 18, 19 and 20 Circumferential indication on the bottom side of the lower stand-off on JP6 remains unchanged.
		VT-1	Examined WD-1 wedges on Jet Pumps 1, 3-8, 13 and 18-20.
		VT-1	Examined WD-2a,b wedge rods on Jet Pumps 1, 3-8, and 18-20.
		VT-1	Examined AS-1 and AS-2 on Jet Pumps 2, 4, 14-16, 19 and 20.
		EVT-1	Examined BB3 area on Jet Pump 10 - indication in that area remains unchanged.
		VT-3	Examined Jet Pump 13 auxiliary wedges

			No indications found
		EVT-1	Examined RS-1 welds on Jet Pump Risers at 30, 60, 90 and 240 degrees. Previous indication on 240 Riser remained unchanged and no new indications found.
		EVT-1	Examined RS-2 welds on Jet Pump Risers at 30, 60 and 90 degrees. No indications found
		EVT-1	Examined RS-3 welds on Jet Pump Risers at 30, 60, 90, 120, 150, 210, 240, 270, 300 and 330 degrees. No indications found.
		EVT-1	Examined RS-8 welds on Jet Pump Risers at 30, 90, 120, 210, 240, 270, 300 and 330 degrees. No indications found.
		EVT-1	Examined RS-9 welds on Jet Pump Risers at 240 and 270 degrees. Previous indications remain unchanged and no new indications found.
	RF11 (3/08)	EVT-1	Examined IN-1 & IN-2 welds for Jets Pumps 1-10. No indications found
		VT-1/VT-3	Examined clamp assemblies on jet Pumps 1-12, 13-18 and 20
		EVT-1	Vibration instrumentation at 30 and 90 degrees.
		VT-1	Sensing lines and stand-offs for Jet Pumps 1-10, 16 and 17 - Circumferential indication was found on the bottom side of the lower stand-off. Use-As-Is Disposition
		VT-1	Wedges (WD1) and Wedge Rods (2A/B) for Jet Pumps 2 and 9-17 - No change in previously reported rod wear on JP2 - No change in previously reported

			wedge movement and rod wear on JP09. - No change in previously reported wedge movement and rod wear on JP10. - No change in previously reported wedge movement and rod wear on JP11. - No change in previously reported wedge movement and rod wear on JP12. - No change in previously reported wedge movement on JP13. - No change in previously reported wedge movement on JP15. - No change in previously reported wedge movement and rod wear on JP17.
		EVT-1	Jet Pump Beams (BB1 & BB3) on pumps 8-11, 16 and 20 - JP10 was found with an indication in the BB3 area. Use-As-Is Disposition
		EVT-1	Riser welds RS6 & RS7 on the 30, 60, 120, 150, 240 and 270 degree risers.
		EVT-1	Riser welds RS 8 & RS9 on the 30, 60, 90, 120, 150, 210, 240, 270, 300 and 330 degree risers - Indication was found adjacent to the RS9 weld on JP14 side of the 240 degree riser. Use-As-Is Disposition - Indication was found adjacent to the RS9 weld on JP16 side of the 270 degree riser. Use-As-Is Disposition
		EVT-1	Riser Brace Yoke to riser welds (2a,b,c and d) on the 30, 60, 120, 150, 240 and 270 degree risers
		EVT-1	Riser Brace Leaf to pad welds (1a,b,c and d) on the 30, 60, 120, 150, 240 and 270 degree risers
		VT1/VT3	Aux. wedges on Jet Pumps 11, 16 and 20
		VT-1	Set Screw gaps on Jet Pumps 11, 13-16 and 20 - Gap was found on the vessel side of

			JP13. Aux. wedge installed
		EVT-1	Riser weld RS1 on the 120, 240 and 270 degree risers - Indication was found adjacent to RS1 weld on the vessel side. Use-As-Is Disposition
		EVT-1	Riser weld RS2 on the 240 and 270 degree risers
		VT-3	Riser Brace assembly 270 degree risers on the 240 and
	RF10 (3/06)		Examined all previously installed repair clamps & wedges a. Pre-emptive repair, clamps installed, on the remaining 13 JP's due to increase in core differential pressure in Cycle 10 (20 JP's now have clamps) b. UT JP beams, replaced two that had flaw like indications
	RF09 (3/04)	UT / EVT-1 VT-1	UT of 2 risers with no indications noted. Have completed 50% of inspections per BWRVIP guidelines. a. Performed re-inspection of main wedges and set screws for gaps (all) b. Identify locations where gaps/ wedge wear was noted during RF09, which required aux. wedge/ clamp installation c. Pre-emptive repair (i.e., clamp / wedge installation) performed. Installed clamps on JP's 5, 6, 13, 15, 16, 19 and 20. Installed auxiliary wedges on JP's 1, 7, 16, 19 and 20
Jet Pumps 5,6,15,16	RF08 (3/02)	EVT-1 VT-1	Baseline inspection of 5 JP's performed. Expanded sample of all to determine restrainer bracket wedge wear and / or set screw gaps. Installed 2 aux. wedges, (JP 6 & 11) to address gaps. 3

			additional set screw gaps identified (JP 7,16,20 gaps within engineering allowable) No other indications were noted.
		VT	RF07 JP 5 & 6 reinspected wedges for previously identified movement, no major change noted
Jet Pumps 1 thru 10	RF06	EVT-1 VT-1	No Indications Welds RS-1, RS-2 & RS-3 Riser welds RB-1, RB-2, RB-8 & RB-9
Jet Pumps 5, 6, 11, 12, 19, 20	RF06 (5-98) Expanded Scope	VT-1	Beam engagement, Rams head seating, Set screw gap & tack welds, and wedge assembly
	RF05 (11/95)		Adjusting screws gap RF04-RF05
	RF04 (5/95)		Replaced Beams RF04
	RF02 (3/92)	VT-1	Adjusting screws tack welds RF01, 2
	RF01 (10/90)		
Jet Pump Diffuser	RF12(4/10)	EVT-1	Examined DF-1, DF-2 DF-3 and AD-2 Jet Pump Diffuser and Adaptors on Jet Pumps 6 and 13-20. No indications found
	RF11 (3/08)		No inspections scheduled
	RF10 (3/06)		No inspections required
	RF09 (3/04)	UT	UT (TEJET / DF-1, DF-2, DF-3 and AD-2) of 11 Jet Pump diffusers. No indications found
JP 16 thru 20	RF08 (3/02)		Diffuser welds were part of JP baseline
	RF07 (3/00)		JP 5,6,15,16 Inlet mixers, crud buildup noted
	RF06 (5-98)		ISI Program plan has no special

			inspection frequency, it is performed during the code required B-N-1 examinations.
CRD Guide Tube	RF12(4/10)		No inspections performed
	RF11 (3/08)	EVT-1 VT-3	1 guide tube examined in place, no indications found
	Mid-Cycle (11/07)	VT-1	Guide Tube Base to Body Weld CRGT-3 at core locations 1803 and 2203 from Lower Plenum. Approximately 30% coverage was obtained with VT-1 resolution. No indications found
	RF10 (3/06)	EVT-1 VT-3	1 guide tube examined in place, no indications noted
	RF09 (3/04)	EVT-1	6 guide tubes examined in place, no indications noted
	RF08 (3/02)	VT-1 EVT-1	9 guide tubes examined in place, no indications noted
	RF07 (3-00)		No inspections performed
	RF06 (5-98)		N/A
CRD Stub Tube	RF12(4/10)		Inaccessible
	Only when accessible	VT	
	RF11		Inaccessible
	Mid Cycle (11/07)	VT-1	CRD Stub Tube to RPV (ST/RPV-1) weld at core locations 1803 and 2203. Approximately 30% coverage was obtained with VT-1 resolution. No indications found
		VT-1	Stub Tube Base Metal (Stub Tube) at core locations 18-03 and 22-03. Approximately 25% coverage was obtained with VT-1 resolution. No indications found

		VT-1	CRD Housing to Stub Tube Weld (CRDH/ST-1) at core location 22-03. Approximately 25% coverage was obtained with VT-1 resolution. No indications found
		VT-1	Bottom Head Cladding (RPV-BOT) at 202 degrees.100% of the accessible area was inspected with VT-1 resolution. No indications found
	RF10		Inaccessible
	RF09		Inaccessible
	RF08		Inaccessible
	RF07		Inaccessible
	RF06		Inaccessible
In-Core Housing	RF12(4/10)		Inaccessible
	RF11 (3/08)		Inaccessible
	RF10		Inaccessible
	RF09		Inaccessible
	RF08		Inaccessible
	RF07		Inaccessible
	RF06		Inaccessible
Dry Tube	RF12(4/10)	EVT-1	Two (2) dry tubes inspected No indications found.
	RF11 (3/08)	EVT-1	Two (2) dry tubes inspected per SIL 409 R2. No indications found.
	RF10 (3/06)		Two (2) dry tubes inspected per SIL 409 R2. No indications noted. Two (2) original dry tubes replaced due to age.
	RF09 (3/04)	VT-1	No inspections performed.
	RF08 (3/02)		9 dry tubes examined per SIL409-R2, no indications noted
	RF07 (3/00)		No inspections performed
	RF06 (5/98)		RF06 (5-98) - Examined 12 Dry Tubes, 3 were reported separation at the collar to shaft interface

	RF05 (11/96) RF04 (5/95) RF01 (10-90)		 Bent plunger found @RF04 Replaced @RF05
Instrument Penetrations	RF12(4/10)	VT-2	Performed VT-2 on eleven (11) instrument nozzles. No indications found
	RF11 (3/08)	VT-2	Performed VT-2 on eleven (11) instrument nozzles. No indications found
	RF10 (3/06) RF09 (3/04) RF08 (3/02)	 UT	No inspections required No inspections performed Nozzle N-14 (ICS) required by SIL 571, No indications found
	RF97 (3/00) RF06 (5/98)		No inspections performed No Inspections performed
Vessel ID Brackets	RF12(4/10)	VT-3 EVT-1	Examined four Core Spray Piping Brackets (195, 265, 290 and 345) No indications found. Examined Feedwater A, B, C, D, E and F Sparger End Brackets. No indications found.
	RF11 (3/08)	EVT-1	Examined six (6) Jet Pump Riser Brace to RPV attachment welds at 30, 60, 120, 150, 240 and 270 degree locations. No indications found
	RF10 (3/06)		No inspections required
	RF09 (3/04)	EVT-1	Examined 2 JP riser brace attachments, no indications noted
	RF08 (3/02)	EVT-1	Examined 3 JP riser brace and 8 CS vessel attachment welds, no indications noted
	RF07 (3/00)		RF07 (3/00) - No inspections performed
	RF06 (5-98)		RF06 (5-98) - No Indications

			Jet Pumps 1 thru 10 riser brace welds
	RF04 (5/95) RF02 (3/92) RF01 (10/90)	VT	5 0% riser brace welds each outage No indications
LPCI Coupling	RF12(4/10)	VT-1, VT-3 EVT-1	Examined 45 degree coupling - No indications found.
	RF11 (3/08)		No inspections performed
	RF10 (3/06)	EVT-1	RF010, One coupling inspected. No indications found.
	RF09 (3/04)	EVT-1	No inspections performed.
	RF08 (3/02)		Examined the remaining 2 couplings, no indications noted
	RF07 (3/00)		Per BWRVIP guidelines one LPCI coupling was examined. No indications found
	RF06 (5-98)		No inspections performed
Steam Dryer	RF12(4/10)	VT-1	Steam Dryer Exterior Examined several previously identified indications on Cam Nut Tack welds for change. No significant changes noted.
		VT-1	Examined exterior Seal Plates and welds At 4, 94, 184 and 274 degrees. No indications found.
		VT-1	Examined several previously identified indications on Tie Bar welds for change. No changes noted.
		EVT-1	Examined vertical Drain Channel welds and previously noted indications at 140 and 320 degrees. No significant changes noted.
		VT-1	Examined High Stress Area HS16 – no

			indications noted
		VT-1	Examined several previously identified indications on Lifting Rod assemblies at 40, 140, 220 and 320 degrees for change. No significant changes noted.
		VT-1	Examined Hood Repaired welds V07, V16, V29 and V40. No indications found.
		UT	Performed supplemental UT depth sizing on previously identified visual indications on two Drain Channel welds and the Upper Support Ring. All indications in ring confirmed shallow IGSCC in the ring. Drain channel indications confirmed shallow part through-wall.
			Steam Dryer Interior
		VT-1	Examined interior Seal Plates and welds At 4, 94, 184 and 274 degrees. No indications found.
		VT-1	Examined 16 interior Hood Plate attachment welds on A – F hoods. Cracked welds found at several locations. Indications consistent with BWRVIP-139. Use-As-Is Disposition
		VT-1	Examined 12 interior Drain Trough Pipe assembly welds on A – F drain troughs. No indications found.
	RF11 (3/08)	VT-1	Completed baseline inspection of BWRVIP-139 and SIL-644. The following locations were visually inspected:
		VT-1	Cam Nut/Washer Tack Welds on all banks. Cracked tacks found at six locations. Use-As-Is Disposition

		VT-1	Four (4) Earthquake blocks – wear and deformation noted from misalignment during installation. Use-As-Is Disposition
		EVT-1	Thirty four (34) upper and lower bank horizontal welds no indications found
		VT-1	Two (2) drain channel vertical welds with previous indications. Some of the previous indications could not be found – no change noted in the remaining indications.
		VT-1	Six (6) hood high stress welds – no indications found.
		EVT-1	Lifting eye to rod tack welds - cracked tacks found on all four (4) lifting rods. Use-As-Is Disposition
		VT-1	Upper Support Ring – reinspected previously identified indications with no change noted. Identified several new indications. Use-As-Is Disposition
		VT-1	Twenty four(24) vertical bank welds - no indications found
		VT-1	Reinspected bent gusset plate on the 180 degree lower guide. No change from previous inspection.
		VT-1, VT-3 EVT-1	Steam Dryer Upper Guides at 0 and 180 degrees – No indications found
	RF10 (3/06)	VT-1, VT-3 EVT-1	All BWRVIP-139 required inspections have been completed. Supplemental inspections of drain channels performed. Monitoring of cracking in upper support ring, no changes noted.
	RF09 (3/04)		RF09, Baseline SIL-644 exams completed. Repairs made to one hood due to cracking, opposite hood was preemptively repaired. Monitoring of

			cracking in upper support ring, no changes noted.
BWRVIP-75-A Dissimilar Metal Welds	RF12 (4/10)	UT	Inspected 14 Category D welds (N2A, N2C, N2E, N2F, N2H, N2J, N4A, N4B, N4E, N4F, N6B, N6C, N6B, N6C). No flaws recorded.

Reactor Internals Inspection History

Plant: **Quad Cities Unit 2**

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

	02/02	EVT-1	6 vertical welds from the OD per BWRVIP-76. No indications.
	03/04	EVT-1	Examined six welds, including 3 welds inaccessible to UT and three with only single side access. No reportable indications.
	04/06	EVT-1	Ring segment vertical welds. Since the location of the welds was not known, examined 100% of the ring segments. No reportable indications in vertical welds. Indications adjacent to weld H-5 were noted; however, the shroud tie rods structurally replaced this weld.
	03/08	EVT-1	Examined accessible areas of the 6 non-beltline vertical welds from the OD. No reportable indications.
	03/10	UT	Performed automated UT of the six shroud beltline vertical welds and two non-beltline vertical welds (one upper barrel and one lower barrel). No Reportable Indications.
Shroud Support (BWRVIP-38)	04/95	EVT-1	EVT-1 of H8 and H9 for approx 10" -12" at 4 locations of shroud repair hardware attachment areas. Access Hole Covers; VT/UT in 1991, circ indications observed and permanent repair installed 1993.
	01/00	EVT-1	Performed visual examination of H8 and H9 in accordance with BWRVIP-38 adjacent to AHC between jet pumps #20 - #1 (e.g. at least 10% of total circumference examined). No Reportable Indications.
	04/06	EVT-1	Examined >10% of H8 and H9 from annulus adjacent to AHC between jet pumps #10 - #11. No Reportable Indications.

Shroud Repair Hardware (BWRVIP Letters 2006-112 and 2006-220)	04/06	EVT-1, VT-3	EVT-1 of all tie rod upper support vertical faces, VT-3 of high-stressed fasteners and other contact points, and overall VT-3 per BWRVIP Letters 2006-112 and 2006-220. Also, VT-3 of core plate wedges adjacent to repair hardware. No reportable indications.
Core Spray Piping (BWRVIP-18)	1980's to 1996	VT-1 (1 mil)	IEB 80-13/NUREG of piping and welds in annulus. No indications observed.
	03/97	UT, EVT-1	UT or EVT-1 performed in accordance with BWRVIP-18. Two indications (1.60" and 2.25" in length) observed at slip joint (P6), evaluated for at least 48 months of hot operation.
	01/00	EVT-1	Performed visual examination of P4d and P8a (4 connections) and P2 at both T-boxes in accordance with BWRVIP-18. No Reportable Indications.
	02/02	UT	BWRVIP-18 UT examinations of all accessible welds (32). No relevant indications.
		EVT-1 on Piping	BWRVIP-18 EVT-1 on 5 welds inaccessible to UT. No indications.
	03/04	EVT-1	Examined 100% of P8a & P4d target welds. No relevant indications.
	04/06	UT EVT-1	BWRVIP-18 UT examinations of all accessible welds (32). No relevant indications. Examined two P4a, one P4b, one P4c, four P4d, two P8a and two P8b welds. No relevant indications.
	03/08	EVT-1	Examined all four P4d, all four P8a and all four P8b welds. No relevant indications.
	03/10	UT	UT examinations of all accessible welds

		EVT-1	(32). No relevant indications. Examined welds for which two-sided UT has not been demonstrated (P2s, P3s, P8as, P8bs, P4d). No relevant indications.
Core Spray Sparger (BWRVIP-18)	1980's to 1996	VT-1 (1 mil)	IEB 80-13/NUREG of welds on sparger. No indications found
	03/97	CSVT-1, VT-3	CSVT-1, VT-3 performed in accordance with BWRVIP-18, geometry tolerant. No Reportable Indications.
	01/00	N/A	No examinations performed.
	02/02	EVT-1 of S1, S2, S4 and brackets; VT-1 of S3	Examined 50% sparger nozzles, 100% of the S3a, S3b, & S3c nozzle welds, and 100% of S1, S2 and sparger bracket welds. Examined for IEB 80-13 and BWRVIP-18. No indications.
	04/06	EVT-1 of S1, S2, S4 and brackets; VT-1 of S3	Examined 50% sparger nozzles, 100% of the S3a, S3b, & S3c nozzle welds, and 100% of S1, S2 and sparger bracket welds. No Reportable Indications.
	03/08	N/A	No examinations performed.
	03/10	EVT-1 of S1, S2, S4 and brackets; VT-1 of S3	Examined 50% sparger nozzles, 100% of the S3a, S3b, & S3c nozzle welds, and 100% of S1, S2 and sparger bracket welds. No Reportable Indications.
Top Guide (Rim, etc.) (BWRVIP-26)	04/95	VT-1	VT-1 of 5 cells. No indications. VT-1 of alignment assemblies. No indications.
	04/97	VT-1	VT-1 of alignment assemblies and adjacent rim weld. No Reportable Indications.
	01/00	N/A	No examinations performed.

	02/02	EVT-1, VT- 1	Inspected 2 alignment assemblies (VT-1) and accessible rim welds (EVT-1) per BWRVIP-26. No indications.
	03/04	EVT-1	Inspected two Guide Aligner Pins and rim welds at adjacent locations. No recordable indications.
	03/08	EVT-1, VT-1	Examined the rim weld adjacent to all four aligner pins. Not able to claim any EVT-1 coverage per BWRVIP-03 Rev. 10. Obtained 50% VT-1 coverage per BWRVIP-03 Rev. 10. No reportable indications. Actual exam coverage same as previous – change is due to change in EVT-1 definition.
	03/10	EVT-1	EVT-1 of 9 top guide grid cells (5%). NRI.
Core Plate (Rim, etc.) (BWRVIP-25)	N/A	N/A	Core Plate Wedges installed 4/97.
	04/06	VT-3	Examined core plate wedges as part of shroud repair (tie rod) inspections. No Reportable Indications.
SLC (BWRVIP-27)	01/00	UT	Performed augmented (non PDI) volumetric examination of nozzle to safe-end weld. No Reportable Indications.
	03/04	PT	Performed surface examination of Nozzle To Safe End weld. No Reportable Indications.
	03/08	UT	UT in accordance with ASME Section XI Appendix 8 Supplement 10 was performed on the Unit 2 nozzle-to-safe end weld with acceptable results.
Jet Pump Assembly (BWRVIP-41)	03/93	VT-1	JP#7 and JP#18 set screws backed out, repaired and tack welded.
	04/95	VT-1	Hold down beams, beam bolt keepers, lock plates and retainers; restrainer wedges, stops, and adjusting screws, clamp bolts and keepers; riser brace

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

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

			pump.
	03/10	EVT-1	Inspected three RB-1a/b, three RB2a/b, seven DF-1, four AD-1 and 4AD-2 welds. No recordable indications.
		VT-1	Inspected all 20 WD-1 and three aux wedges, 5 retainer tack welds, 2 JPSL clamps. No recordable indications.
CRD Guide Tube (BWRVIP-47)	04/97	VT-3	Performed visual examination of CRGTs G-7 and H-8 while removed from core. No Reportable Indications.
	02/02	VT-1, VT-3 on CRGT-1; EVT-1 on CRGT-2 & 3	Examined 6 sets of guide tube welds (CRGT-1, CRGT-2, and CRGT-3) per BWRVIP-47. No Indications. Examined 6 pin welds (FS/GT-ARPIN-1). No Indications.
	03/04	EVT-1, VT-3	Examined 3 sets of guide tube welds (CRGT-1, CRGT-2, and CRGT-3). Examined 3 pin welds (FS/GT-ARPIN-1). No Indications
	04/06	EVT-1, VT-3	Examined 4 sets of guide tube welds (CRGT-1, CRGT-2, and CRGT-3) and FS/GT-ARPIN. No Indications.
	03/08	EVT-1, VT-3	Examined 5 pin/welds (FS/GT-ARPIN-1) and 5 each CRGT-1, CRGT-2 and CRGT-3 per BWRVIP-47 to complete baseline. No Reportable Indications.
	03/10	N/A	No exams performed since 10% baseline completed.
CRD Stub Tube	N/A	N/A	N/A
In-Core Housing	N/A	N/A	N/A
Dry Tube (GE SIL-409 and BWRVIP-47)	04/97	VT	Replaced 6 dry tubes 1997. Dry tubes examined every other outage. Plunger engagement verified each outage.
	01/00	VT	Verified plungers engaged at Top Guide.

			NO Reportable Indications.
	02/02	MVT-1	Examined 6 dry tubes. Indications observed on 5 dry tubes, and authorized for one additional cycle of operation.
	03/04 04/06 03/08 03/10	N/A	No inspections required until 2016. All original dry tubes have been replaced.
Feedwater Spargers (BWRVIP-48)	1983	Manual UT	UT of all four N4 nozzles and inner radii. NRI
	1986	Manual UT	UT of all four N4 nozzles and inner radii. NRI
	1990	Manual UT	UT of all four N4 nozzles and inner radii. NRI
	1993	Manual UT	UT of all four N4 nozzles and inner radii. NRI
	1995	UT (GERIS)	UT of all four N4 nozzles and inner radii. NRI
	02/02	VT-1	Examined all Feedwater Spargers. Examined per NUREG-0619 program and BWRVIP-48. No indications.
	2004	UT (GERIS)	UT of all four N4 nozzles and inner radii. Acceptable.
	04/06	VT-1, VT-3	VT-3 overall condition and VT-1 bracket welds of all FW sparger end brackets. Three FW sparger end brackets showed signs of wear where the pins had worn into the brackets. All stop pin nuts were welded to the pins as a pre-planned measure.
	03/08	VT-1, VT-3	Visual inspection of sparger end brackets. Seven of eight brackets have some amount of acceptable wear. OE26726.

	03/10	VT-1, VT-3	Visual inspection of sparger end brackets. Brackets have no additional discernable wear since 2008.
Instrument Penetrations (BWRVIP-49)	04/97, 01/00, 02/02, 03,04, 04/06, 03/08, 03/10	VT-2	VT-2 system leakage test. Acceptable.
Vessel ID Attachments (BWRVIP-48)	04/95	VT-1, VT-3	Section XI inspections of jet pump riser brace, dryer, feedwater sparger, core spray, and surveillance capsule holder brackets, performed once per interval. VT-3, or VT-1 if in beltline region. No Reportable Indications.
	02/02	VT-1, EVT-1, VT-3	Inspected 8 core spray brackets, 4 feedwater sparger brackets, and 4 steam dryer wall support brackets per BWRVIP-48. No indications.
	03/04	VT-1, EVT-1, VT-3	Examined dryer support lugs and surveillance specimen brackets, with no reportable indications. Examined steam separator and steam dryer guide rod bracket welds. One separator guide rod was bent, but the welds had no reportable indications. Examined feedwater sparger end brackets. One FW sparger end bracket pin was missing a lower nut. A new nut was welded into place.
	04/06	EVT-1, VT-3	Performed BWRVIP-48 and ASME Code inspections of four steam dryer wall support lugs. All four lugs sustained some damage during May 2005 installation of new steam dryer, but all lugs acceptable as-is. No recordable indications in welds.
	03/08	EVT-1, VT-3	Performed follow-up exams all 4 steam dryer wall support lugs. No additional damage except for expected wear and tear.

	03/10	EVT-1, VT-3	Performed follow-up exams all 4 steam dryer wall support lugs. No additional damage except for expected wear and tear.
RPV Internal Surfaces (Cladding) (ASME B.N.1)	02/02	VT-3	VT-3 visual examination for ASME Section XI, B-N-1 of RPV internal surfaces for 360 degrees between steam dam and flange. No indications.
	03/04	VT-3	VT-3 visual examination for ASME Section XI, B-N-1 of RPV internal surfaces for 360 degrees between steam dam and shroud support plate flange. No indications.
	03/08	VT-3	ASME Section XI VT-3 of RPV internal surfaces credited to other exams in annulus area in accordance with Relief Request for alternate examination methods for B-N-1 and B-N-2 components.
LPCI Coupling	N/A	N/A	Not applicable to Quad Cities.
Steam Dryer (GE SIL-644 and BWRVIP-139)	02/02	VT-3	The dryer was modified to accommodate the Extended Power Uprate. The modification installed a mechanical device on the outlet of the dryer chevrons that would more uniformly distribute the velocity through the dryer and increase moisture removal. General Condition Inspection (VT-3) of general top-view post-modification. No indications.
	03/04	Best Effort VT-1, VT-3	Conducted the following inspections per GE SIL-644 S1: Best effort VT-1 inspections of 100% external vertical and horizontal welds, tie bars, and perforated plates; Best effort VT-1 inspections of 100% internal vertical and horizontal hood welds, struts and supports, plates, drain channels;

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

	03/10	Best Effort VT-1, VT-3	Inspections per BWRVIP-139 and GE recommendations, including all previous indications and at least 50% of areas similar to those that were cracked. There were no apparent changes to any of the previous indications, and no new recordable indications.
Access Hole Covers (BWRVIP-180)	05/92 11/94 03/04 03/10	VT, UT VT, UT VT-1 VT-1	IGSCC observed adjacent to welds in both AHCs. Mechanical repairs made. UT performed during installation of permanent mechanical repair that replaced the first repair. No recordable indications. No recordable indications.
Dissimilar Metal Welds (BWRVIP-75-A Cat. A)	03/08 03/10	UT	Examined 7 Category A welds per BWRVIP-75 and ASME Section XI, Appendix VIII, Supplement 10. No flaws were identified and no weld overlays were performed. 100% of the required exam volumes were inspected on all of the welds. Three of the exams were manual. Four welds contained a stainless steel inlay. Automated exams were performed on those four welds. No Category A DM welds examined
Dissimilar Metal Welds (BWRVIP-75-A Cat. B)	03/08	N/A	No Category B DM welds examined – Quad has no Category B DM welds
Dissimilar Metal Welds (BWRVIP-75-A Cat. C)	03/08	UT	Examined 4 Category C welds per BWRVIP-75 and ASME Section XI, Appendix VIII, Supplement 10. No flaws were identified and no weld overlays were performed. 100% of the required exam volumes were inspected on all of the welds. Three of the exams were manual and one was automated. One weld contained Alloy 82/182 butter, which was also the weld on which the

	03/10	UT	automated exam was performed. Examined 4 Category C welds per BWRVIP-75-A and ASME Section XI, Appendix VIII, Supplement 10. No flaws were identified and no weld overlays were performed. 100% of the required exam volumes were inspected on all of the welds. Two of the exams were manual and Two were automated phased array. One of the automated exams was on a weld containing Alloy 82/182 butter. This last exam completes the requirements for BWRVIP-222.
Dissimilar Metal Welds (BWRVIP-75-A Cat. D)	03/08	N/A	No Category D DM welds examined – Quad has no Category D DM welds

Reactor Internals Inspection History

Plant: **Susquehanna Unit 1**

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

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

			Recordable Indications.
	2010	UT	16 RIO Ultrasonic exam of Horizontal Welds H1, H2, H3, H4, H5, H6a, H6b, H7. Ultrasonic exam of 10 Vertical Welds. Increase in crack length on all horizontal welds. Between 1% and 6% additional cracking. Minor increase in crack length in V6 weld. 0.94" in 2000 and 4" in 2010 New Flaw in V4 2.3" All welds are acceptable for 10 years
Shroud Support	1993	VT-1	7 RIO Shroud Support legs inspected in 1993 during Jet Pump Beam replacements. No Recordable Indications.
		VT-1	VT-1 of 0 deg to 360 deg of H8 and H9 during the first interval. No Recordable Indications.
	1995	EVT-1	8 RIO (Spring 95), H8 and H9 examined (enhanced VT-1) for 360 deg of accessible area. No Recordable Indications.
	1996	EVT-1, UT	9 RIO (Fall 96), 18-inch indication found behind AHC at 180 deg at the shroud support horizontal plate to shroud cylinder plate weld H8 while performing AHC inspections. UT performed on the accessible areas of the indication. Inspected (enhanced VT-1) remaining accessible areas of H8 and 360 deg of accessible H9 without any additional recordable indications. Structural margins were maintained.
	1998	UT	10 RIO (Spring 98), the H9 weld was inspected 100% from the OD of the vessel and No Recordable Indications. The H8 weld was inspected over 10.21% or 64.4" of the circumference from the OD of the vessel and No Recordable Indications.
		EVT-1	EVT-1 examinations were performed on shroud weld H8 at 180 deg. to verify a

			previously noted crack adjacent to the Access Hole Cover. The indication was determined to be non-relevant due to dark grit built up at the weld toe.
	2004	VT-1	13 RIO (Spring 2004) AHC at 0 and 180 degrees. No Recordable Indications.
		VOL/VT-3	H9 inspected from vessel OD 31% For VIP-38. No Recordable Indications.
		EVT-1/VT-3	H8 inspected 25% per VIP-38 and ASME XI. No Recordable Indications.
		VT-3	Shroud support legs and welds, all 13 per VIP-38 with GE remote Firefly inspection tool. No Recordable Indications.
	2008	EVT-1/VT-3	15 RIO AHC at 0 and 180 degrees. No Recordable Indications in 180 degree Top Hat design. Approximely .070 inch radial IGSCC crack in 0 degree in weld HAZ into cover plate. Use-As-Is
	2010	EVT-1	16 RIO AHC at 0 degrees of existing IGSCC indication. No growth noted.
		EVT-1/VT-3	H8 inspected 25% per VIP-38 and ASME Section XI. No Recordable Indications.
Core Spray Piping	1980's to 1995	VT-1, VT-3	Piping and welds in annulus. No Recordable Indications.
	1996	VT-1 enhanced, UT	9 RIO Inspect per BWRVIP-18, no relevant indications though one indication was ultrasonically examined and no depth was recorded.
	1998	VT-1E and VT-3	10 RIO Inspect per VIP –18. No Recordable Indications.
	2000	EVT-1	11 RIO Inspect per VIP –18. No Recordable Indications.
	2002	UT & EVT-	12 RIO (spring 2002) Inspect per VIP-18.

		1	No Recordable Indications.
	2004	EVT-1	13 RIO Inspect per VIP –18, for welds that cannot be inspected by UT P8A, P4D, P4A. No Recordable indications were observed
	2006	UT	14 RIO Inspect per BWRVIP-18A, UT 23 welds, P2, P3, P5, P7, P4a, P4b, P4c. No Recordable Indications.
		EVT-1	EVT-1 for 9 welds without an approved UT method, P4d, P8a, P8b. No Recordable Indications.
		VT-1	VT-1 of Core Spray Brackets (8) No Recordable Indications.
	2008	EVT-1	15 RIO EVT-1 of Core Spray piping per BWRVIP-18A. All P2, P3, P8a, and P8b welds. One each P4c and P4d. No Recordable Indications.
	2010	EVT-1	16 RIO EVT-1 of 41 Core Spray piping welds per BWRVIP-18 Rev. 1. All P2, P3, P5, P6, P7, P8a, P8b welds. Selected P4 welds. Junction Box OD exam for P1 locations. No Recordable Indications.
		VT-1	VT-1 of 4 Core Spray Brackets. No Recordable Indications
Core Spray Sparger	1980's to 1995 1996	VT-1,VT-3 VT-1, VT-3	No recordable indications, but one indication found in 1985 on S2, 173 degrees was identified. 9RIO Inspect per BWRVIP-18. Cracking found visually on shroud ID at #4 Core Spray Support Bracket. Determined acceptable to Use-as-is.
	2000	EVT-1	11 RIO No Recordable Indications.
	2002	EVT-1	12 RIO Linear indication on core spray sparger tee box S2 weld @173 degrees. This was the same indication identified in 1985. It was evaluated for use as is since it

			did not grow in size over 17 years.
	2004	EVT-1, VT-1, UT	13 RIO VT-1 8 sparger brackets. Cracking at Bracket 04 on shroud side inspected for sizing by UT and analyzed per VIP-76 vertical weld criteria. Determined acceptable to Use-as-is.
	2006	EVT-1	14 RIO EVT-1 of sparger piping both loops, S1, S2, and S4. No Recordable Indications. S2 weld at 173 degrees inspected, no growth noted. VT-1 of 50% of sparger welds S3a, S3b, S3c, S4. One of three tack welds found cracked during S3a inspection in orifice to elbow. Per GE analysis only two are required for structural integrity. VT-1 of five sparger brackets. Six sparger brackets, SB01 through SB06. Visual re-inspection of SB04 to verify no visible growth in shroud side crack.
	2008	EVT-1, VT-1	15RIO VT-1 of six sparger brackets original scope. Bracket 11 cracked approximately 1 inch in length on shroud side of bracket observed. Determined acceptable Use-as-is. Scope expanded to the six brackets inspected in 2006. No growth observed in SB04 reinspection. No Recordable Indications in all remaining brackets.
	2010	EVT-1, VT-1	16 RIO EVT-1 of 20 Core Spray Sparger Welds (S1, S2, S4). 40 exams – No Recordable Indications. S2 exam, one 1.5" IGSCC crack. No growth since discovery in 1985. VT-1 of 50% of S3a and S3b Nozzle Welds. Two cracked tack welds discovered during S3a and S3b exams.
Core Plate (Rim, etc.)	to date	VT-3 / VT-1	VT-1 of surface welds and bolt tack welds on upper surfaces. VT-3 of bolt and upper surface and cross-members.

	2004	VT-3	13 RIO VT-3 of Core Support Plate Bolts and Tack welds from under-side with GE Firefly remote tool. No Recordable Indications.
		VT-3	VT-3 of Core Plate surfaces and welds during CRGT inspections. Satisfy VIP-25 and ASME XI. No Recordable Indications.
	2008		15 RIO VT-3 of Core Plate surfaces and welds during CRGT inspections. Satisfy VIP-25 and ASME XI. No Recordable Indications.
	2010		16 RIO VT-3 of 7 Core Plate surfaces during CRGT inspections. Satisfy ASME XI. No Recordable Indications.
SLC	92	VT-3	6 RIO One side of the Standby Liquid Control Standpipe inspected. Disassembly of the jet pumps for a Power Uprate modification made inspection possible. No Recordable Indications.
	2002-2010	EVT-2	Enhanced VT-2 during vessel post outage leak check. No Recordable Indications.
Top Guide	2008	EVT-1	15 RIO EVT-1 of one Top Guide location to satisfy BWRVIP-26A. No Recordable Indications.
	2010	EVT-1	16 RIO EVT-1 of 9 Top Guide locations to satisfy BWRVIP-183 initial selection of 5%. No Recordable Indications.
Jet Pumps	93-96	VT-1, VOL, VT-3	Riser brace welds inspected every other outage. Jet pump beam volumetric exams once in ten years. Remaining components (welds (VT-1), set screws (VT-3), wedges (VT-3), sensing line clamps (VT-1 & VT-3), tack welds (VT-1), etc are once per period. Jet pump beams replaced.
	1993	VT-1M	7 RIO Beams replaced. Non-rejectable

			gaps in set screws reported over several outages.
	1998	VT-1 & EVT-1	10 RIO Jet Pumps 11-20 were inspected per BWRVIP-41 guidelines. No Recordable Indications.
	2000	VT-1 & EVT-1	11 RIO Jet pumps 01, 02, 03, and 04 inspected per BWRVIP-41. No Recordable Indications.
	2002	VT-1 &EVT-1	12 RIO Jet Pumps 05, 06, 11, and 12 inspected per BWRVIP-41, all jet pump set screw gaps measured, all wedges inspected. Excessive set screw gaps on JP–02 (shroud side set screw), JP-11 (shroud side set screw), JP-12 (shroud and vessel side set screws), JP-13 (vessel side set screw), JP-17 (shroud and vessel side set screws), and JP-20 (shroud side set screw). A total of eight auxiliary spring wedges installed in the jet pumps listed above. Additional riser brace inspections were performed on JP-02, 11, 12, 13, 17 and 20. No Recordable Indications.
	2004	UT	13 RIO UT of all 20 Jet Pump Beams, BB-1, BB-2 only. No Recordable Indications.
		EVT-1	EVT-1 of remainder of VIP-41 high priority welds, AD-1, AD-2 RS-1, RS-1A, RS-2, RS-3. No Recordable Indications.
		VT-1	VT-1 of jet pump wedges and set screw gaps pre-modification and post-modification. All 20 jet pump inlet mixer labyrinth seal EDM machining. New oversized wedges and wedge rods installed on 5 pumps. Auxiliary wedges installed in 3 set screws with excessive gaps after modification.
	2006	VT-1	14 RIO VT-1 of all 20 Jet Pump wedges following inlet mixer labyrinth seal modification and VT-3 of modification hardware. Minor wear and movement

			found in several wedge rods and minor wear in two wedges. One wedge required expanded BWRVIP-41 exams due to wear. No set screw gaps or damage found. Expanded scope N2A JP01 RS6, RS7, MX-7 AS-1, AS-2. No Recordable Indications.
		EVT-1	EVT-1 of selected JP welds 2 each RS-1, RS-2, and RS-3 for second inspection cycle for High Priority welds and continued with Medium priority weld inspections for selected IN-4. Four welds: two RS-8 and RS-9 welds, each. No Recordable Indications
		EVT-1	N2D and N2G Riser brace welds RB-1 a-d and RB-2 a-d. No Recordable Indications.
	2008	UT	15 RIO UT of all 20 Jet Pump Beams, BB-1, BB-2, and BB-3. No Recordable Indications.
		UT	UT of Jet Pump Diffuser Welds. All 20 jet pumps UT of AD-1, AD-2, DF-1, DF-2, and MX-2 welds. No Recordable Indications.
		EVT-1	EVT-1 of Jet Pump Medium and High priority welds. N2 F Riser welds RS-1, RS-1a, RS-2, and RS-3 High priority welds ,three each. N2D, N2E, N2G, and N2 H Riser Medium priority welds, 6 each. RS-6 and RS-7 welds(8 each) and N2H riser RB1a-b and RB2-a-b welds. No Recordable Indications.
		VT-1	VT-1 of all 20 wedges WD-1 exams, one set screw AS-2 exam. Five jet pumps with previous wedge wear, no increase in wear noted, newly discovered wear in two jet pumps this outage. Twelve jet pumps with previous wedge rod wear inspected, increase in wear noted in 4 jet pumps,

			newly discovered wear in one jet pump. Set screw on JP01 minor wear into bellyband. Three additional wedges showed minor rod wear.
	2010	EVT-1	16 RIO EVT-1 High priority RS1, RS2, RS3 welds at two risers. RS6, RS7, IN4 welds at four jet pumps RB1a-d RB2a-d at two risers. All RS8 and RS9 welds per BWRVIP-41. Maximum weld coverage.
		VT-3	VT-3 Inspection of Jet Pump Sensing Lines and associated supports and welds in response to 2009 Unit 2 indication of movement of sensing line clamps. Sensing lines for 15 jet pumps inspected. 14 of 15 are jet pumps without clamps. JP20 inspected due to higher signal noise levels in this jet pump. No service induced defects were discovered. One indication attributed to a cutting tool was discovered and determined to be acceptable.
		VT-1	VT-1 of all Jet Pump Wedge WD-1 exams completed. 18 of 20 had prior rod or wedge wear. Five Jet Pumps had significant additional wedge and rod wear. Five Jet Pumps had additional minor rod wear. Eight Jet Pumps had no change in wedge or rod wear. Two continue to have no wedge or rod wear. Wedge movement noted on three jet pumps.
		EVT-1	Scope expansion for 14 of 20 jet pumps. No cracking observed in EVT-1 weld exams RS6/RS7, VT-3 of MX7. No Recordable Indications.
		VT-1	Jet Pump AS1 exams revealed significant set screw gaps and set screws digging into belly band. Set screw gaps observed in following

			locations: JP04 VS 3 mils JP08 SS 68 mils JP12 SS 96 mils JP12 VS 97 mils JP14 VS 73 mils JP14 SS 77 mils Set screw digging into belly band at 14 locations.
		EVT-1	EVT-1 - Set screw gaps greater than 58 mils requires RB-1and RB2 exams. RB1a-d / RB2a-d EVT-1 exams performed on three risers due to gaps on JP08, JP12, and JP14. All exams No Recordable Indications
		VT-1	Modifications - Auxiliary Spring Wedges Installed at following locations due to set screw gaps or wedge movement: JP03 VS JP04 SS VS JP07 VS JP08 SS JP12 SS VS JP14 SS VS JP17 SS Slip Joint Clamps were installed on Jet Pumps JP04, JP12, and JP14 due to the extent of wedge wear and movement
LPCI Couplings			Not applicable to this plant
Lower Plenum Components			
CRD Guide Tubes	2002	EVT-1 and VT-3	12 RIO, inspected 4 guide tubes, CRGT-1, 2, and 3 per BWRVIP-47. No Recordable Indications.
	2004	EVT-1 and VT-3	13 RIO inspected 6 guide tubes, CRGT-1, 2, and 3 per BWRVIP-47. No Recordable Indications.
	2008	EVT-1 and VT-3	15 RIO inspection of 2 guide tubes, CRGT-1, 2, and 3 per BWRVIP-47. No

			Recordable Indications.
	2010	EVT-1 and VT-3	16 RIO inspection of 7 guide tubes, CRGT-1, 2, and 3 per BWRVIP-47. No Recordable Indications.
Guide Tubes Below Core Plate	2004	VT-3	13 RIO VT-3 of 40 Guide Tubes OD with GE Firefly remote inspection tool when lower plenum made available by Jet Pump mod. No Recordable Indications.
Stub Tubes	2004	VT-3	VT-3 of 40 Stub Tubes with GE Firefly remote inspection tool when lower plenum made available by Jet Pump mod.
Dry Tubes	Every other outage 2004	VT-3	No recordable indications
		VT-3	13 RIO VT-3 for gross damage only for 6 of 12 dry tubes. Remaining 6 dry tubes were replaced.
Instrument Penetrations	1985 to 2010	VT-2	VT-2 exams during RPV pressure test each outage. No Recordable Indications.
Vessel Brackets	to date	VT-1 and VT-3	1989 ASME Section XI inspections of jet pump riser brace, dryer, feedwater brackets, core spray header brackets, and surveillance capsule holder brackets, performed once per interval. Unit #1 Dryer Support Block C replaced due to fatigue cracking. Measurable but acceptable wear
	1998	VT-3	10 RIO VT-3 Examinations were performed on the dryer hold down bracket attachment welds located at 138 and 221 degrees. No Recordable Indications. VT-3 Examinations were performed on the dryer support brackets and attachment welds located at 4, 94, 184 and 274 degrees. No new indications were observed. Previously recorded wear on support lug "D" at 274 deg. was verified and no additional wear noted.

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

			VT-1 of 4 Steam Dryer Support Brackets as part of new dryer vendor inspection program. Minor markings noted on mating surface with dryer, consistent with expected patterns.
Steam Dryer	2006	VT-1	14 RIO VT-1 exam of all steam dryer components per GE SIL 644 Rev. 1 and BWRVIP-139 in anticipation of EPU. Inspections included Hood Panel Welds, Lifting Lugs, Drain Channel Welds, Hood/End Panel Welds, Steam Dam to Hood Joint Welds, Tie Bar Welds, Vane Bundle to Vane Assembly, and all previously identified indications. Minor growth in existing minor IGSCC cracks, some new IGSCC minor cracks in Drain Channel and Hood/End Panel Welds. Newly discovered Vane Bundle Assembly to Seam Dam weld 8" fatigue crack. Fatigue crack in Upper Dryer Lifting Lug Support for the 220° Lifting Lug found. Entire flaw lengths for both locations were repaired through underwater welding.
	2008	VT-1	15 RIO, VT-1 Baseline PSI exam of new replacement steam dryer prior to installation per BWRVIP-139. Four welds required re-work after acceptance by supplier.
	2010	VT-1 VT-3	16 RIO VT-1 of 380 weld locations of new steam dryer after one cycle per supplier inspection guidance. Minor IGSCC discovered in 3 locations in one drain channel weld HAZ, Use-As-Is. VT-3 of dryer hoods and skirts, 12 locations for gross damage. Includes Instrument Removal areas. No Recordable Indications. VT-3 of Lifting Rods and Lifting Eye tack welds. All four lifting eye set screw anti-rotation tack weld locations were found to

			be cracked. Modification performed to install fillet welds between lifting eye and rod. Modification requires Deviation Disposition due to selection of filler material.
Steam Separator	2008	VT-1	15 RIO VT-1 of 25% of support ring to gusset welds. Minor IGSCC cracks found in 4 welds. Use-As-Is.
		VT-3	VT-3 of all tie bars. No Recordable Indications in tie bars. Nine exhaust tubes exhibited minor areas of deformation / denting all Use As-Is. VT-3 of shroud head bolt windows and pins. Minor wear observed in three bolts. Use-As-Is disposition. UT exam of 31 "old style" shroud head bolts. Two bolts contained Recordable Indications and were replaced.
	2010	VT-1	16 RIO VT-1 exam of 32 Gusset welds per EPU requirement, one quadrant and 4 previous indications. Minor growth in one of four previous indications, 6 gusset welds minor IGSCC cracks, Use-As-Is.
		VT-3	Three Shroud Head Bolt VT-3 exams of existing window and pin wear. No change noted.
Feedwater Spargers and Brackets	2008	VT-1 / VT-3	VT-1 of feedwater sparger welds and nozzles. VT-3 of brackets for OE for pin wear into bracket top. No Recordable Indications Noted.
	2010	VT-3	16 RIO VT-3 of all 12 brackets per EPU for pin wear. Minor acceptable movement was observed in all 12 brackets. Minor pin wear observed in 3 brackets, Use-As-Is.
Miscellaneous DM Welds	2008	UT	During the U1-15RIO, six (6) dissimilar metal (DM) IGSCC Category C welds and two (2) IGSCC Category E weld overlays

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

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 / EVT-1	8 rim hold-down bolts and tack welds, view from above, no indications.
	'08	VT-3	24 Core Plate Plugs. RI – Plugs unseated at 16-33S, 16-33E & 16-25N.
	'10	VT-3	All 58 Core Plate Plugs replaced. Post installation inspection performed – NRI.
		VT-3 / EVT-1	7 rim hold-down bolts and tack welds, view from above, no indications.
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 (3rd 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 (3rd 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)
	'10	EVT-1	Access hole Cover at 0 and 180 degree location (NRI)
		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.
	'10	EVT-1	Re-inspected 30 circumferential target welds. NRI.
		VT-1	Core Spray 3P8b weld clamp repair. No indications.
Core Spray Sparger	'95	CSVT-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	CSVT-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)
	'10	EVT-1	20 of 20 large (tee-box to header, tee-box cover plate, and header to end cap) circumferential welds. NRI
		VT-1	Nozzles and drain holes on A and B spargers. NRI
		VT-1	Sparger tee-box repair. 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-1	End brackets and keepers with indications

			from 2007. Recordable indications on FW-A-EB1, FW-B-EB1 & FW-D-EB2.
	'10	VT-3	Piping and brackets. Minor thermal fatigue cracks at sparger flow holes.
		VT-1	End bracket attachment welds. Bent keepers on C and D spargers and minor pin wear on A, B, C & D spargers.
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.
	'10	VT-3	6 dry tubes replaced: SRM A, SRM C, IRM B, IRM C, IRM D and IRM E. Post installation inspection performed, NRI.
		VT-1	Dry tubes SRM B and SRM D inspected. Dropped plunger on SRM B, RI.
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.
		UT	20 hold-down beams. One beam with UT indication on bolt hole replaced.
	'99	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 on16 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
	'10	EVT-1	RS-8, RS-9 All 10
		VT-3	IN-5 on F, G and H, NRI
		EVT-1	RB-1a/b, RB-2a/b, RS-4, RS-5 on F, G and H, NRI
		EVT-1	RS-1 on H and K, NRI
		EVT-1	DF-2 on 2, 9 and 10 (inside and outside), NRI
		VT-1	Wedges 1-10, 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. Burnishing wear on top surface.
	'08	VT-1	Re-inspected Steam Dryer Attachment Welds and wear patterns on top surface. One wear pattern slightly different. RI
	'10	EVT-1	Re-inspected Steam Dryer Attachment Welds and wear patterns on top surface. Wear patterns 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
	'10	PT	Nozzle-to-safe-end weld and safe-end. NRI
Steam Dryer and Separator	'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.
		VT-1	6 internal strut welds. (NRI)
	'07	VT-1	Steam Separator – All 36 Shroud Hold Down Bolts, 7 Standpipe welds. NRI
		VT-1	Steam Dryer - 1st post EPU inspection per NRC commitment. 100% interior and exterior susceptible and accessable 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 - 2nd post EPU inspection per NRC commitment. Interior and exterior susceptible and accessable 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.
	'10	VT-1/VT-3	Steam Dryer - 3rd post EPU inspection per NRC commitment. Interior and exterior susceptible and accessable locations, re-inspection of all pre-existing flaws and modified/repaired areas. No discernable changes in existing flaws. 1 new RI on DC-V-4C.
		VT-3	Steam Separator – Lifting eye assemblies & attachment welds, peripheral standpipes, attachment welds & assembly welds, tie bars & attachment welds, shroud head flange, accessable areas of shroud head and all 36 shroud hold down bolts. RI on 3 shoud head bolts not unlatched properly.
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	VT-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	N1A, N2K (Cat. D) – No Flaws