

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Comments:				
Bottom Mounted Instrumentation System Bottom-mounted instrumentation (BMI) column bodies	Visual examination (VT-3)	100% of BMI column bodies for which difficulty is detected during flux thimble insertion/withdrawal. See Figure 4-35 of MRP-227-A.	N/A	N/A
Comments:				

Notes to Westinghouse Expansion Component Table:

1. Examination acceptance criteria and expansion criteria for the Westinghouse components are in Table 5-3 of MRP-227-A .
2. A minimum of 75% coverage of the entire examination area or volume, or a minimum sample size of 75% of the total population of like components of the examination is required (including both the accessible and inaccessible portions).

Existing Programs Components

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings
Core Barrel Assembly Core barrel flange	Visual examination (VT-3) to determine general condition for excessive wear.	All accessible surfaces at specified frequency.	N/A – examination scheduled for 2R25 – Spring of 2014.	N/A – examination scheduled for 2R25 – Spring of 2014.
Comments: Scheduled during 2R25 – Spring 2014.				
Upper Internals Assembly Upper support ring or skirt	Visual examination (VT-3)	All accessible surfaces at specified frequency.	N/A – examination scheduled for 2R25 – Spring of 2014.	N/A – examination scheduled for 2R25 – Spring of 2014.
Comments: Scheduled during 2R25 – Spring 2014.				
Lower Internals Assembly Lower core plate XL lower core plate (Note 1)	Visual (VT-3) examination of the lower core plates to detect evidence of distortion and/or loss of bolt integrity.	All accessible surfaces at specified frequency.	N/A – examination scheduled for 2R25 – Spring of 2014.	N/A – examination scheduled for 2R25 – Spring of 2014.

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings
Comments: Scheduled during 2R25 – Spring 2014.				
Lower Internals Assembly Lower core plate XL lower core plate (Note 1)	Visual examination (VT-3)	All accessible surfaces at specified frequency.	N/A – examination scheduled for 2R25 – Spring of 2014.	N/A – examination scheduled for 2R25 – Spring of 2014.
Comments: Scheduled during 2R25 – Spring 2014.				
Bottom Mounted Instrumentation System Flux thimble tubes	Surface examination (ET)	Eddy current surface examination as defined in plant response to IEB 88-09.	2R24 (Nov. 2012). All 50 of 50 were inspected. No tubes are capped. All tubes were inspected full length. 14 tubes had been replaced prior to this inspection. They are presented below.	No issues noted during the examinations.
Comments: The following flux thimble tubes were replaced prior to the Nov 2012 inspection: B5, C12, D3, D5, D12, G9, H6, H13, L4, L6, M3, N7, N8, & N12.				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings
Alignment and Interfacing Components Clevis insert bolts	Visual examination (VT-3)	All accessible surfaces at specified frequency.	N/A – examination scheduled for 2R25 – Spring of 2014.	N/A – examination scheduled for 2R25 – Spring of 2014
Comments: Scheduled during 2R25 – Spring 2014.				
Alignment and Interfacing Components Upper core plate alignment pins	Visual examination (VT-3)	All accessible surfaces at specified frequency.	N/A – examination scheduled for 2R25 – Spring of 2014.	N/A – examination scheduled for 2R25 – Spring of 2014.
Comments: Scheduled during 2R25 – Spring 2014.				

Notes to Westinghouse Existing Programs Components Table:

1. XL = "Extra Long" referring to Westinghouse plants with 14-foot cores.

Tables for Reporting MRP-227-A Inspection Results for B&W Plants

Plant Name: Oconee Unit 1 Utility: Duke Energy

Date of Exams: 11/1/2012 to 11/12/2012 Plant Age: 39.75 (years) / 30.61 EFPY

Primary Components

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 2)
Plenum Cover Assembly & Core Support Shield Assembly	One-time physical measurement (initial Inspection)	Determination of differential height of top of plenum rib pads to reactor vessel seating surface, with plenum in reactor vessel.	Measurement performed in 2006	No relevant Indications were noted.
Plenum cover weldment rib pads	Visual (VT-3) for subsequent inspections	See Figure 4-1 of MRP-227-A.	VT-3 100%	No relevant Indications were noted.
Plenum cover support flange				
CSS top flange				
Comments: The one-time physical measurement was performed in November 2006 with no evidence of wear occurring during service period (AREVA Engineering Information Record 51-9115429-000)				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 2)
Control Rod Guide Tube Assembly CRGT spacer castings	Visual (VT-3)	Accessible surfaces at each of the 4 screw locations (at every 90°) of 100% of the CRGT spacer castings (limited accessibility). See Figure 4-5 of MRP-227-A.	100% 690 castings with 4 screws each.	No relevant Indications were noted.
Comments:				
Core Support Shield Assembly CSS vent valve top retaining ring CSS vent valve bottom retaining ring (Note 1)	Visual (VT-3)	100% of accessible surfaces (see BAW-2248A, page 4.3 and Table 4-1). See Figure 4-11 of MRP-227-A.	100% including top and bottom retaining rings and locking devices. The Jack screws which are not included in MRP-227-A were also inspected. There are 8 vent valves.	No relevant Indications were noted on retaining rings or locking devices. There was a crack like indication on one of the jack screws and signs of mechanical damage on vent valve ZW. The vent valve was replaced with a new one.
Comments: In valve ZW length of engagement of jack screws were not the same (from Internals ID left jack screw shorter than right jack screw), and right jack screw contained a crack. The jack screw locking devices are not currently in MRP-227 but were identified as needing to be screened in A/LAI #2. They received a VT-3 inspection under as a Category B-N-3 component under ASME Section XI. The Jack screw is also not an item listed in MRP-227-A.				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 2)
Core Support Shield Assembly Upper core barrel (UCB) bolts and their locking devices	Volumetric examination (UT) of the bolts	100% of accessible bolts and their locking devices. (Note 3)	UT performed in 2008 (116 UCB bolts)	No relevant Indications were noted.
	Visual (VT-3) examination of bolt locking devices	See Figure 4-7 of MRP-227-A.	VT-3 100% performed this outage (116 locking devices)	No relevant Indications were noted.
Comments: 116 (100%) upper core barrel bolts were inspected in April 2008 (AREVA Engineering Information Record 51-9078346-00) with no indications found. Four bolts (#1, #31, #60, and #91) were removed in the 1980s for testing and no indications were found.				
Core Barrel Assembly Lower core barrel (LCB) bolts and their locking devices	Volumetric examination (UT) of the bolts	100% of accessible bolts and their locking devices (Note 3)	100% - 108 bolts	UT – 5 lower core barrel with crack like indications.
	Visual (VT-3) examination of bolt locking devices	See Figure 4-8 of MRP-227-A.	100% - 101 bolts and locking devices. 50% - 6 bolts and locking devices (#1, 19, 36, 37, 55 and 90). 40% - 1 bolt and locking device(#108).	VT – 1 locking device with a missing weld on one side and a small weld on the other.
Comments: 5 bolts with indications the bolt numbers are 37, 40, 57, 58, and 86. The bolt locking device with the missing weld on one side and small weld on the other was #44. The coverage for the VT-3 examination of 7 of the LCB bolts and there locking devices was 40% to 50% due to the partial obstruction from the CAS stand, although 100% of the accessible surfaces were examined.				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 2)
Core Barrel Assembly Baffle-to-former bolts	Volumetric examination (UT)	100% of accessible bolts. (Note 3) See Figure 4-2 of MRP-227-A.	860 out of 864, 4 baffle-to-former bolts were un-inspectable due to large welds on locking bars.	No relevant Indications were noted.
Comments: The 4 un-inspectable bolts (Quadrant – Plate – Column – Elevation) are 1-2-6-7, 3-2-1-7, 3-2-4-6, and 3-2-4-7.				
Core Barrel Assembly Baffle plates	Visual examination (VT-3)	100% of the accessible surface within 1 inch around each flow and bolt hole. See Figure 4-2 of MRP-227-A.	100%	No relevant Indications were noted.
Comments:				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 2)
Core Barrel Assembly Locking devices, including locking welds, of baffle-to-former bolts and internal baffle-to-baffle bolts	Visual examination (VT-3)	100% of accessible baffle-to-former and internal baffle-to-baffle bolt locking devices. (Note 3) See Figure 4-2 of MRP-227-A.	100% 864 baffle-to-former and 272 internal baffle-to-baffle bolts.	No relevant Indications were noted.
Comments:				
Flow Distributor Assembly Flow distributor (FD) bolts and their locking devices	Volumetric examination (UT) of the bolts Visual (VT-3) examination of bolt locking devices	100% of accessible bolts and their locking devices. (Note 3) See Figure 4-8 of MRP-227-A.	UT -- 100% 95 bolts inspected, 1 was removed during the 1981 inspections. VT -- 100% 94 locking devices inspected, 2 were removed during the 1981 inspections.	UT -- 1 flow distributor bolt (#49) with crack like indication. VT -- No relevant Indications were noted.
Comments: 2 locking clips (#2 & #47) and 1 bolt (#2) and were removed in the 1981. The second bolt for which the locking was removed could not be removed due to high torque values. Bolt #2 was sent for laboratory examination in 1981 and no indications were found.				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 2)
Lower Grid Assembly Alloy X-750 dowel-to-guide block welds	Visual examination (VT-3)	Accessible surfaces of 100% of the 24 dowel-to-guide block welds. See Figure 4-4 of MRP-227-A.	100% 22 dowel-to-guide blocks	No relevant Indications were noted.
Comments: Previously one guide block was lost and its pair was removed. Neither W7L nor W7R were replaced.				
Incore Monitoring Instrumentation (IMI) Guide Tube Assembly IMI guide tube spiders IMI guide tube spider-to-lower grid rib section welds	Visual examination (VT-3)	100% of top surfaces of 52 spider castings and welds to the adjacent lower grid rib section. See Figures 4-3 and 4-6 of MRP-227-A.	100% 52 spider castings each casting with 8 welds.	No relevant Indications were noted.
Comments: Unidentified loose part pinned under IMI guide tube spider casting F13.				

Notes to B&W Primary Component Table

1. A verification of the operation of each vent valve shall also be performed through manual actuation of the valve. Verify that the valves are not stuck in the open position and that no abnormal degradation has occurred. Examine the valves for evidence of scratches, pitting, embedded particles, leakage of the seating surfaces, cracking of lock welds and locking cups, jack screws for proper position, and wear. The frequency is defined in each unit's technical specifications or in their pump and valve inservice test programs (see BAW-2248A, page 4-3 and Table 4-1, reference 18 of MRP-227-A).
2. Examination acceptance criteria and expansion criteria for the B&W components are in Table 5-1 of MRP-227-A.
3. A minimum of 75% of the total population (examined + unexamined), including coverage consistent with the Expansion criteria in Table 5-1, must be examined for inspection credit.

Expansion Components

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Upper Grid Assembly Alloy X-750 dowel-to-upper grid fuel assembly support pad welds	Visual examination (VT-3)	Accessible surfaces of 100% of the dowel locking welds. See Figure 4-6 of MRP-227-A (i.e., these are similar to the lower grid fuel assembly support pads).		
Comments:				
Core Barrel Assembly Upper thermal shield (UTS) bolts and their locking devices	Bolts: Volumetric examination (UT). Locking Devices: Visual examination (VT-3)	100% of accessible bolts or studs/nuts and their locking devices (Note 2). See Figure 4-7 of MRP-227-A.		
Comments:				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Core Barrel Assembly Surveillance specimen holder tube (SSHT) studs/nuts (CR-3) or bolts (DB) and their locking devices	Bolt or Stud/Nut: Volumetric examination (UT). Locking Devices: Visual examination (VT-3)	100% of accessible bolts or studs/nuts and their locking devices (Note 2). See Figure 4-7 of MRP-227-A.		
Comments: 				
Lower Grid Assembly Lower grid fuel assembly support pad items: pad, pad-to-rib section welds, Alloy X-750 dowel, cap screw, and their locking welds	Visual examination (VT-3)	Accessible surfaces of the pads, dowels, and cap screws, and associated welds in 100% of the lower grid fuel assembly support pads. See Figure 4-6 of MRP-227-A.		
Comments: 				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Lower Grid Assembly Alloy X-750 dowel-to-lower grid fuel assembly support pad welds	Visual examination (VT-3)	Accessible surfaces of 100% of the support pad dowel locking welds. See Figure 4-6 of MRP-227-A.		
Comments:				
Lower Grid Assembly Lower grid shock pad bolts and their locking devices	Bolts: Volumetric examination (UT). Locking Devices: Visual examination (VT-3)	100% of accessible bolts and their locking devices. (Note 2) See Figure 4-4 of MRP-227-A.		
Comments:				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Lower Grid Assembly Lower thermal shield (LTS) bolts (ANO-1, DB and TMI-1) or studs/nuts (ONS, CR-3) and their locking devices	Bolts: Volumetric examination (UT). Locking Devices: Visual examination (VT-3)	100% of accessible bolts and their locking devices. (Note 2) See Figure 4-8 of MRP-227-A.		
Comments:				

Notes to B&W Expansion Components Table:

1. Examination acceptance criteria and expansion criteria for the B&W components are in Table 5-1 of MRP-227-A.
2. A minimum of 75% of the total population (examined + unexamined) must be examined for inspection credit.

Expansion Components Requiring Evaluation or Replacement In Lieu of Inspection

Item	Examination Method	Disposition
Core Barrel Assembly Core barrel cylinder (including vertical and circumferential seam welds) Former plates	No examination requirements. Justify by evaluation or by replacement.	
Comments:		
Core Barrel Assembly Baffle-to-baffle bolts Core barrel-to-former bolts	Internal baffle-to-baffle bolts: No examination requirements, Justify by evaluation or by replacement.	
	External baffle-to-baffle bolts, core barrel-to-former bolts: No examination requirements. Justify by evaluation or by replacement.	
Comments:		
Core Barrel Assembly Locking devices, including locking welds, for the external baffle-to-baffle bolts and core barrel-to-former bolts	No examination requirements. Justify by evaluation or by replacement.	
Comments:		

Tables for Reporting MRP-227-A Inspection Results for Westinghouse Plants

Plant Name: North Anna Power Station Unit 1 Utility: Dominion

Date of Exams: 3/16/2012 to 3/22/2012 Plant Age: 34 (years) / 26.9 EFPY

Existing Programs Components

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings
Bottom Mounted Instrumentation System Flux thimble tubes	Surface examination (ET)	Eddy current surface examination as defined in plant response to IEB 88-09.	Total Tubes – 50 Tubes Inspected – 50 100% Examined	Wall Losses: 90% & Greater 1 70% to 89% 0 50% to 69% 8 30% to 49% 11 Less than 30% 10 No damage 20
Comments: Three new indications of minor vibrational wear were recorded during this inspection, tube N-12 and tube B-10, located at previously identified wear areas. Wall loss is not severe and no tubes require repositioning at this time.				

Tables for Reporting MRP-227-A Inspection Results for Westinghouse Plants

Plant Name: North Anna Power Station Unit 2 Utility: Dominion

Date of Exams: 9/14/2011 to 10/11/2011 Plant Age: 31 (years) / 25.7 EFPY

Existing Programs Components

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings
Bottom Mounted Instrumentation System Flux thimble tubes	Surface examination (ET)	Eddy current surface examination as defined in plant response to IEB 88-09.	Total Tubes – 50 Tubes Inspected – 50 100% Examined	Wall Losses: 90% & Greater 1 70% to 89% 3 50% to 69% 7 30% to 49% 10 Less than 30% 11 No damage 18
Comments: Tubes G-14, L-14 and N-8 have recorded wall losses indicating active degradation. Tube G-14 recorded a 6% increase in wear from 40% to 46%, and does not require any further action. Tube L-14 recorded an increase in wear from 62% to 76%. This tube is an isolated tube and should remain isolated; however, as the wear recorded indicates an area of active wear, the tube should be repositioned 3". Tube N-8 recorded an increase in wear from 60% to 65%, identifying an area of active wear. This tube should be repositioned 3".				

Tables for Reporting MRP-227-A Inspection Results for Westinghouse Plants

Plant Name: Point Beach Nuclear Plant Unit 1 Utility: NextEra Energy

Date of Exams: March 24 to April 4, 2013 Plant Age: 42 (years) / 33.64 EFPY

Primary Components

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Control Rod Guide Tube Assembly Guide plates (cards)	Visual examination (VT-3)	20% examination of the number of CRGT assemblies, with all guide cards within each selected CRGT assembly examined. See Figure 4-20 of MRP-227-A	Guide cards in all 33 CRGTs	93 of 297 guide cards with recordable indications (wear) were identified. Based on Operation Curve Method – 2 CRGTs yellow in ~ 7 EFPY, 3 CRGTs yellow in 17 to 20 EFPY, and 28 yellow in 20+ EFPY Based on Operation Curve Method – 1 CRGT red in ~ 7 EFPY and 32 CRGTs red in 20+ EFPY
Comments: FME found during guide card exams and removed after guide cards examined. 1 flexureless insert needed to be replaced after exams completed.				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Control Rod Guide Tube Assembly Lower flange welds	Enhanced visual examination (EVT-1) to determine the presence of crack-like surface flaws in flange welds	100% of outer (accessible) CRGT lower flange weld surfaces and adjacent base metal on the individual periphery CRGT assemblies. (Note 2) See Figure 4-21 of MRP-227-A.	110 welds of 118 "accessible" welds (93%) for 24 peripheral CRGT assemblies	No evidence of cracking observed
Comments: During planning, 96 welds were determined to be accessible for EVT-1 exams. During actual implementation of EVT-1 exams, 110 welds were able to be examined to EVT-1. 8 welds planned to be examined were inaccessible due to an interference with the reactor vessel flange protection ring which was on the lower internals stand. No was cleaning required.				
Core Barrel Assembly Upper core barrel flange weld	Enhanced visual examination (EVT-1)	100% of one side of the accessible surfaces of the selected weld and adjacent base metal (Note 4). See Figure 4-22 of MRP-227-A.	100% of exterior surface	No evidence of cracking observed
Comments: Upper core barrel flange weld - Weld has distinct features typically associated with welds. Weld edges were well defined. No cleaning was required.				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Core Barrel Assembly Upper and lower core barrel cylinder girth welds	Enhanced visual examination (EVT-1)	100% of one side of the accessible surfaces of the selected weld and adjacent base metal (Note 4).	Upper core barrel cylinder girth weld	
		See Figure 4-22 of MRP-227-A	100% of exterior surface	No evidence of cracking observed
			Lower core barrel cylinder girth weld	
			77% of exterior surface	No evidence of cracking observed
Comments:				
Upper core barrel cylinder girth weld - Weld has distinct features typically associated with welds. Weld edges were well defined. No cleaning was required.				
Lower core barrel cylinder girth weld - Weld does not have any features typically associated with welds. Weld is finished flush with no evidence of weld edges, weld ripple or other distinguishing marks. Scans 15" above and 15" below the design drawing weld location were performed without any obvious weld observed. The intersecting longitudinal welds were also undetectable. Weld appeared to be ground at various locations. No cleaning was required. The design drawings showed 16 obstructions which would have limited coverage to 73%, Actually, 6 jacking bolts were not present, resulting in the 77% coverage,				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Core Barrel Assembly Lower core barrel flange weld (Note 5)	Enhanced visual examination (EVT-1)	100% of one side of the accessible surfaces of the selected weld and adjacent base metal (Note 4).	92% of exterior surface	No evidence of cracking observed
Comments: Lower core barrel flange weld - Weld does not have any features typically associated with welds. Weld is finished flush with no evidence of weld edges, weld ripple or other distinguishing marks. The intersecting longitudinal welds were also undetectable. Weld and adjacent base material appeared to be ground all along the circumference. No cleaning was required. Due to exterior obstruction (reactor vessel flange protection ring), about 30 degrees of the weld circumference was inaccessible to EVT-1 exam.				
Baffle-Former Assembly Baffle-edge bolts	Visual examination (VT-3)	Bolts and locking devices on high fluence seams. 100% of components accessible from core side (Note 3). See Figure 4-23 of MRP-227-A.	100% of 384 baffle-edge bolts	No evidence of failures
Comments: 				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Baffle-Former Assembly Baffle-former bolts	Volumetric examination (UT)	100% of accessible bolts (Note 3). Heads accessible from the core side. UT accessibility may be affected by complexity of head and locking device designs. See Figures 4-23 and 4-24 of MRP-227-A.	100% of 728 bolts were examined by phased array UT 92% of the bolts provided relevant exam results	No failures found for 670 bolts with relevant exam results,
Comments: Baffle former bolt design has internal hex head with locking washer. 58 bolts did not produce relevant exam results. Internal hex hole for these bolts have a flat bottom which was not included in the sample bolts used to develop the UT technique.				
Baffle-Former Assembly Assembly (Includes: Baffle plates, baffle edge bolts and indirect effects of void swelling in former plates)	Visual examination (VT-3)	Core side surface as indicated. See Figures 4-24, 4-25, 4-26 and 4-27 of MRP-227-A.	100% of hi-fluence seams and vertical plate alignment	No abnormal gaps or displacement.
Comments: 16 hi-fluence seams				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Alignment and Interfacing Components Internals hold down spring	Direct measurement of spring height	Measurements should be taken at several points around the circumference of the spring, with a statistically adequate number of measurements at each point to minimize uncertainty. See Figure 4-28 of MRP-227-A.	N/A	N/A
Comments: PBNP has internals hold down springs made from 403 stainless steel.				
Thermal Shield Assembly Thermal shield flexures	Visual examination (VT-3)	100% of thermal shield flexures. See Figures 4-29 and 4-36 of MRP-227-A.	100% of 6 thermal shield flexures	No evidence of cracking, deformation, or wear.
Comments: 				

Notes to Westinghouse Primary Components Table:

1. Examination acceptance criteria and expansion criteria for the Westinghouse components are in Table 5-3 of MRP-227-A.
2. A minimum of 75% of the total identified sample population must be examined.
3. A minimum of 75% of the total population (examined + unexamined), including coverage consistent with the Expansion criteria in Table 5-3 of MRP-227-A, must be examined for inspection credit.
4. A minimum of 75% of the total weld length (examined + unexamined), including coverage consistent with the Expansion criteria in Table 5-3 of MRP-227-A, must be examined from either the inner or outer diameter for inspection credit.
5. The lower core barrel flange weld may be alternatively designated as the core barrel-to-support plate weld in some Westinghouse plant designs.

Expansion Components

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Upper Internals Assembly Upper core plate	Enhanced visual examination (EVT-1)	100% of accessible surfaces (Note 2).	N/A	Not examined
Comments:				
Lower Internals Assembly Lower support forging or castings	Enhanced visual examination (EVT-1)	100% of accessible surfaces (Note 2). See Figure 4-33 of MRP-227-A.	N/A	Not examined
Comments:				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Core Barrel Assembly Barrel-former bolts	Volumetric examination (UT)	100% of accessible bolts. Accessibility may be limited by presence of thermal shields or neutron pads (Note 2). See Figure 4-23 of MRP-227-A.	N/A	Not examined
Comments:				
Lower Support Assembly Lower support column bolts	Volumetric examination (UT)	100% of accessible bolts or as supported by plant-specific justification (Note 2). See Figures 4-32 and 4-33 of MRP-227-A.	N/A	Not examined
Comments:				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Core Barrel Assembly Core barrel outlet nozzle welds	Enhanced visual examination (EVT-1)	100% of one side of the accessible surfaces of the selected weld and adjacent base metal (Note 2). See Figure 4-22 of MRP-227-A.	N/A	Not examined
Comments:				
Core Barrel Assembly Upper and lower core barrel cylinder axial welds	Enhanced visual examination (EVT-1)	100% of one side of the accessible surfaces of the selected weld and adjacent base metal (Note 2). See Figure 4-22 of MRP-227-A.	N/A	Not examined
Comments:				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Lower Support Assembly Lower support column bodies (non cast)	Enhanced visual examination (EVT-1)	100% of accessible surfaces (Note 2). See Figure 4-34 of MRP-227-A.	N/A	Not examined
Comments:				
Lower Support Assembly Lower support column bodies (cast)	Enhanced visual examination (EVT-1)	100% of accessible support columns (Note 2). See Figure 4-34 of MRP-227-A.	N/A	Not examined
Comments:				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Bottom Mounted Instrumentation System Bottom-mounted instrumentation (BMI) column bodies	Visual examination (VT-3)	100% of BMI column bodies for which difficulty is detected during flux thimble insertion/withdrawal. See Figure 4-35 of MRP-227-A.	N/A	Not examined
Comments: 				

Notes to Westinghouse Expansion Component Table:

1. Examination acceptance criteria and expansion criteria for the Westinghouse components are in Table 5-3 of MRP-227-A .
2. A minimum of 75% coverage of the entire examination area or volume, or a minimum sample size of 75% of the total population of like components of the examination is required (including both the accessible and inaccessible portions).

Existing Programs Components

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings
Core Barrel Assembly Core barrel flange	Visual examination (VT-3) to determine general condition for excessive wear.	All accessible surfaces at specified frequency.	N/A	Not examined
Comments:				
Upper Internals Assembly Upper support ring or skirt	Visual examination (VT-3)	All accessible surfaces at specified frequency.	N/A	Not examined
Comments:				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings
Lower Internals Assembly Lower core plate XL lower core plate (Note 1)	Visual (VT-3) examination of the lower core plates to detect evidence of distortion and/or loss of bolt integrity.	All accessible surfaces at specified frequency.	N/A	Not examined
Comments:				
Lower Internals Assembly Lower core plate XL lower core plate (Note 1)	Visual examination (VT-3)	All accessible surfaces at specified frequency.	N/A	Not examined
Comments:				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings
Bottom Mounted Instrumentation System Flux thimble tubes	Surface examination (ET)	Eddy current surface examination as defined in plant response to IEB 88-09.	N/A	Not examined
Comments:				
Alignment and Interfacing Components Clevis insert bolts	Visual examination (VT-3)	All accessible surfaces at specified frequency.	N/A	Not examined
Comments:				
Alignment and Interfacing Components Upper core plate alignment pins	Visual examination (VT-3)	All accessible surfaces at specified frequency.	N/A	Not examined
Comments:				

Notes to Westinghouse Existing Programs Components Table:

1. XL = "Extra Long" referring to Westinghouse plants with 14-foot cores.

Tables for Reporting MRP-227-A Inspection Results for Westinghouse Plants

Plant Name: Millstone Unit 3 (MPS3) Utility: Dominion Nuclear Connecticut

Date of Exams: Spring 2013 Plant Age: 27 (years) / 20.7 (approx.) EFPY

MPS3 *inspected only its flux thimble tubes* and does not expect to perform other Primary or Expansion inspections until approximately 2027

Existing Programs Components

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings
Bottom Mounted Instrumentation System Flux thimble tubes	Surface examination (ET)	Eddy current surface examination as defined in plant response to IEB 88-09.	Spring 2013: 100%: All 58 flux thimble tubes inspected full length	Spring 2013: Maximum wear of 60% observed, little changed from last cycle. No corrective actions required
Comments: None.				

Notes to Westinghouse Existing Programs Components Table:

1. XL = "Extra Long" referring to Westinghouse plants with 14-foot cores.

Tables for Reporting MRP-227-A Inspection Results for Westinghouse Plants

Plant Name: H.B. Robinson Nuclear Plant Utility: Duke Energy Progress

Date of Exams: October 2013 Plant Age: 43 (years) / 31.4 EFPY

Primary Components

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Control Rod Guide Tube Assembly Guide plates (cards)	Visual examination (VT-3)	20% examination of the number of CRGT assemblies, with all guide cards within each selected CRGT assembly examined. See Figure 4-20 of MRP-227-A	100%	None
Comments: 20% Inspected in RO26 (2010). During the guide card wear inspection at H.B. Robinson Unit 2, nine guide tubes were inspected, and the wear in these guide tubes was found to be in the green zone.				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Control Rod Guide Tube Assembly Lower flange welds	Enhanced visual examination (EVT-1) to determine the presence of crack-like surface flaws in flange welds	100% of outer (accessible) CRGT lower flange weld surfaces and adjacent base metal on the individual periphery CRGT assemblies. (Note 2) See Figure 4-21 of MRP-227-A.	100%	None

Comments:

Completed in RO27 (2012). Of the accessible CRGT lower flange weld surfaces and adjacent base metal on the individual periphery CRGT assemblies, H.B. Robinson obtained coverage of 100%. There were 32 peripheral Control Rod Guide Tube Assemblies (CRGTAs) initially scoped for inspecting. H.B. Robinson Nuclear Plant examined 13 of the 32 peripherals. Inability to access all 32 peripheral CRGTAs was due to upper internals configuration or adjacent component proximities. Also, examiners noticed air bubbles near upper welds from the Tri-Nuc filtration system that would continuously return after attempted removal. The 13 CRGTAs inspected were CRGTA-B-6 totaling 50% coverage, CRGTA-F-2 totaling 50% coverage, CRGTA-K-2 totaling 50% coverage, CRGTA-P-10 totaling 50% coverage, CRGTA-F-14 totaling 31% coverage, CRGTA-P-8 totaling 31% coverage, CRGTA-B-10 totaling 28% coverage, CRGTA-H-2 totaling 25% coverage, CRGTA-M-6 totaling 22% coverage, CRGTA-B-8 totaling 19% coverage, CRGTA-K-14 totaling 19%, CRGTA-H-14 totaling 15% coverage, and CRGTA-D-10 totaling 13% coverage. A given CRGTA totaling 50% coverage, for example, signifies that particular CRGTA contained 8 accessible and acceptable welds of the total 16 weld locations.

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Core Barrel Assembly Upper core barrel flange weld	Enhanced visual examination (EVT-1)	100% of one side of the accessible surfaces of the selected weld and adjacent base metal (Note 4). See Figure 4-22 of MRP-227-A.	100%	Circumferential indication identified at weld centerline around 345°, this was determined to be a Non-relevant fabrication anomaly
Comments: Completed in RO27 (2012). RNP Core Barrel protrudes out of Containment Vessel cavity water approximately 18" while in the stand. A portion of this exam was completed while pulling the Core Barrel out of the Reactor Vessel and the remaining area was completed with the Core Barrel in the stand.				
Core Barrel Assembly Upper and lower core barrel cylinder girth welds	Enhanced visual examination (EVT-1)	100% of one side of the accessible surfaces of the selected weld and adjacent base metal (Note 4). See Figure 4-22 of MRP-227-A	100%	No evidence of cracking was observed.

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Comments: Completed in RO28 (Fall 2013). 100% of the Upper Core Barrel Girth Weld was accessible and the examination obtained 100% coverage with no evidence of cracking observed. There were no obstructions during the examination of the Upper Core Barrel Girth Weld. 80% of the Lower Core Barrel Girth Weld was accessible and the examination obtained 80% coverage with no evidence of cracking observed. There were multiple obstructions during the examination of the Lower Core Barrel Girth Weld located behind the Core Barrel Thermal Shield.				
Core Barrel Assembly Lower core barrel flange weld (Note 5)	Enhanced visual examination (EVT-1)	100% of one side of the accessible surfaces of the selected weld and adjacent base metal (Note 4).	N/A	N/A
Comments: Completed in RO28 (Fall 2013). 94% of the Lower Core Barrel Flange Weld was accessible and the examination obtained 100% coverage with no evidence of cracking observed. Proximity of the weld to the reactor cavity wall became an obstruction.				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Baffle-Former Assembly Baffle-edge bolts	Visual examination (VT-3)	Bolts and locking devices on high fluence seams. 100% of components accessible from core side (Note 3). See Figure 4-23 of MRP-227-A.	100%	<u>Non-relevant indications</u> <ul style="list-style-type: none"> Undercut indication on upper tack weld (Q1-A-Bolt 34) Baffle seam indication with no vertical displacement (Q1-E) Cold lap type indication on lower locking bar tack weld/lock bar and bolt are both in proper place. (Q4-C-Bolt 22)
Comments: Completed in RO27 (2012). No missing bolts or locking bars on any of the 322 Baffle-edge bolts. A black and white camera was used during this inspection due to high radiation proximity.				
Baffle-Former Assembly Baffle-former bolts	Volumetric examination (UT)	100% of accessible bolts (Note 3). Heads accessible from the core side. UT accessibility may be affected by complexity of head and locking device designs. See Figures 4-23 and 4-24 of MRP-227-A.	100%	Total Baffle-Former Bolts: 1088 Total accessible (inspected): 1076 Total with possible defect: 8 Total with confirmed Head-Shank defect: 1

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Comments: Completed in RO28 (Fall 2013). 98% of the Baffle-Former Bolts were accessible during the UT examination. The RNP Baffle-Former Bolt has an external hexagonal head and is locked in place with a lock bar tack welded to the baffle plate. There was no distinct flaw signal in the bolt volume of the 8 bolts listed as possibly having a defect. There were no missing or damaged lock bars, misaligned bolt heads, or other anomalies observed. All relevant and nonrelevant indications were determined to be acceptable for return to service, and examination of the expansion components as described in MRP-227-A were not required. RNP experienced several probe failures during the UT exam of the Baffle-Former Bolts. The issue is believed to have been the unexpected width of the unique square lock bars on the RNP bolts.				
Baffle-Former Assembly Assembly (Includes: Baffle plates, baffle edge bolts and indirect effects of void swelling in former plates)	Visual examination (VT-3)	Core side surface as indicated. See Figures 4-24, 4-25, 4-26 and 4-27 of MRP-227-A.	100%	None
Comments: Completed in RO27 (2012). No signs of void swelling, induced distortion, vertical displacement, or any other aging mechanisms. A black and white camera was used during this due to high radiation proximity				

Item	Examination Method	Required Examination Coverage	Coverage Achieved	Examination Findings (Note 1)
Alignment and Interfacing Components Internals hold down spring	Direct measurement of spring height	Measurements should be taken at several points around the circumference of the spring, with a statistically adequate number of measurements at each point to minimize uncertainty. See Figure 4-28 of MRP-227-A.	N/A	N/A
Comments: Currently planned for replacement during RO-29 (Spring 2015).				
Thermal Shield Assembly Thermal shield flexures	Visual examination (VT-3)	100% of thermal shield flexures. See Figures 4-29 and 4-36 of MRP-227-A.	100%	None
Comments: Completed in RO27 (2012). There were <u>2</u> weld locations requiring inspection of each of the 6 Thermal Shield Assembly Thermal shield flexures. The vendor denoted the two weld locations as (1) Thermal Shield Weld and (2) Thermal Shield Flexure Weld. Also a portion of this exam, the 2 weld locations at the 90° azimuth, was completed while pulling the Core Barrel out of the Reactor Vessel and the remaining exam was completed with the Core Barrel in the stand.				

Notes to Westinghouse Primary Components Table:

- Examination acceptance criteria and expansion criteria for the Westinghouse components are in Table 5-3 of MRP-227-A.

2. A minimum of 75% of the total identified sample population must be examined.
3. A minimum of 75% of the total population (examined + unexamined), including coverage consistent with the Expansion criteria in Table 5-3 of MRP-227-A, must be examined for inspection credit.
4. A minimum of 75% of the total weld length (examined + unexamined), including coverage consistent with the Expansion criteria in Table 5-3 of MRP-227-A, must be examined from either the inner or outer diameter for inspection credit.
5. The lower core barrel flange weld may be alternatively designated as the core barrel-to-support plate weld in some Westinghouse plant designs.