6.6 Preservice and Inservice Inspection, and Testing of Class 2 and 3 Components and Piping

The information in this section of the reference ABWR DCD, including all subsections, and tables, is incorporated by reference with the following departures and supplements.

STD DEP T1 2.4-1 (Table 6.6-1, Residual Heat Removal System)

STD DEP T1 2.4-3 (Table 6.6-1, Reactor Core Isolation Cooling System)

STD DEP T1 2.14-1 (Table 6.6-1, Flammability Control System)

STD DEP 6.6-1

STD DEP 6.6-2

STD DEP Admin

This subsection describes the preservice and inservice inspection and system pressure test programs for Quality Groups B and C (i.e., ASME Code Class 2 and 3 items, respectively). It describes those programs implementing the requirements of ASME B&PV Code Section XI, Subsections IWC and IWD. The requirements for subsequent inservice inspection intervals are addressed in Subsection ~~5.3.3.7~~6.6.4.*

6.6.2.1 Class 2 RHR Heat Exchangers

STD DEP 6.6-1

The physical arrangement of the residual heat removal (RHR) heat exchangers shall be conducive to the performance of the required ultrasonic and surface examinations. ~~The RHR heat exchanger nozzle-to-shell welds will be 100% accessible for preservice inspection during fabrication but might have limited areas that will not be accessible from the outer surface for inservice examination techniques.~~ Any inservice inspection program relief request will be reviewed by the NRC staff based on the Code Edition and Addenda in effect and inservice inspection techniques available at the time of COL application. Removable thermal insulation is provided or those welds and nozzles selected for frequent examination during the inservice inspection. Platforms and ladders are provided as necessary to facilitate examination.

6.6.2.2 Class 2 Piping, Pumps, Valves, and Supports

STD DEP 6.6-1

Restrictions: For piping systems and portions of piping systems subject to volumetric ~~and surface~~ examination, the following piping designs are generally not used:

Straight sections of pipe and spool pieces shall be added between fittings. The minimum length of the spool piece has been determined by using the formula, L = 2T + 15.24 cm, where L equals the length of the spool piece (not including weld preparation) and T equals the pipe wall thickness (cm).

Where less than the minimum straight section length is used, an evaluation is performed to demonstrate that sufficient access exists to perform the required examinations.

6.6.7.2 Erosion-Corrosion

STD DEP 6.6-2

Piping systems determined to be susceptible to ~~single-phase~~ erosion-corrosion shall be subject to a program of nondestructive examinations to verify the system structural integrity. The examination schedule and examination methods shall be determined in accordance with ~~the NUMARC program (or another equally effective program), as discussed in~~ Generic Letter 89-08, the guidelines of EPRI NSAC-202L Rev. 3*, and applicable rules of Section XI of the ASME Boiler and Pressure Vessel Code.*

6.6.9 COL License Information

6.6.9.1 PSI and ISI Program Plan

The following site-specific supplement addresses COL License Information Item 6.10.

STPNOC will prepare a comprehensive plant-specific PSI and ISI program plan. This plan is outlined in reference ABWR DCD Section 6.6 for Class 2 and 3 components and in reference ABWR DCD Section 5.2 for Class 1 components. This plan will be submitted to the NRC at least 12 months prior to commercial power operation for the respective unit, based on the final as-built plant configuration, addressing specific welds, bolting, pipe supports, etc. There will be a separate plan for Unit 3 and for Unit 4. (COM 6.6-1)

The initial inservice examinations conducted during the first 120 months of operation will comply, to the extent practical, with the requirements of the ASME B&PV Code Section XI Edition and Addenda incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the date of issuance of the operating license, subject to modifications listed by the reference sections.

The inservice examinations conducted throughout the service life of the plant will comply, to the extent practical, with the requirements of the ASME B&PV Code Section XI Edition and Addenda incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the inspection interval, subject to limitations listed by the reference sections.

6.6.9.2 Access Requirement

The following standard supplement addresses COL License Information Item 6.11.

The plans for NDE during design and construction are incorporated in order to meet all access requirements of the regulations, per IWC 2500 and IWD 2500 (Subsection 6.6.2). As an integral part of the design process, the access requirements are incorporated in the applicable specifications.

6.6.10 References

6.6-1 “Recommendations for an Effective Flow-Accelerated Corrosion Program”, NSAC-202L-R3, 1011838, Electric Power Research Institute, May 2006.

Table 6.6-1 Examination Categories and Methods

Quality Group	System Number	System Title	System Description	P&ID Diagram	Sec. XI Exam Cat.	Items Examined	Exam Method
~~C~~	~~T49~~	~~Flammability Control~~	~~Piping from valves F006A & B up to and including the recombiner skids A & B~~	~~Figure 6.2-40~~			
			~~All pressure-retaining components and piping~~		~~D-B~~	~~External Surfaces (Note 7)~~	~~VT-2~~
			~~Integral attachments~~		~~D-B~~	~~Welds (Note 8)~~	~~VT-3~~
			~~Piping and Component Supports~~		~~F-A~~	~~Supports (Note 6)~~	~~VT-3~~
			~~All Class C piping 20A, 25A, 50A, 80A and 100A in diameter, i.e.:~~ ~~- drain lines~~ ~~- test connections~~ ~~- SRV discharge line~~ ~~- instrument lines~~ ~~- small process lines~~ ~~- and etc.~~	~~Figure 6.2-40~~	~~Exempted per IWD-1220~~		
			~~All pressure-retaining components and piping~~		~~D-B~~	~~External Surfaces (Note 7)~~	~~VT-2~~
			~~Integral attachments~~		~~D-B~~	~~Welds (Note 8)~~	~~VT-3~~
			~~Piping and Component Supports~~		~~F-A~~	~~Supports (Note 6)~~	~~VT-3~~

Table 6.6-1 Examination Categories and Methods (Continued)

Quality Group	System Number	System Title	System Description	P&ID Diagram	Sec. XI Exam Cat.	Items Examined	Exam Method
B	E11	RHR	150A-RHR-022 Piping				
			Integral attachments		C-C	Welds (Note 3)	MT
			All pressure-retaining components and piping		C-H	External surfaces (Note 5)	VT-2
			Piping and component supports		F-A	Supports (Note 6)	VT-3
			Fuel pool suction lines to RHR from valves ~~F016B & C~~ **F016A,B & C** up to and including connection to the shutdown cooling suction lines of RHR ~~B & C~~ **A, B &C**	Figure 5.4-10 sh. 2			
			300A-RHR-215 Piping		C-F-2	Welds (Note 1)	UT, MT
			300A-RHR-114 Piping				
			300A-RHR-099 Piping				
			Integral attachments		C-C	Welds (Note 3)	MT
			All pressure-retaining components and piping		C-H	External surfaces (Note 5)	VT-2
			Piping and component supports		F-A	Supports (Note 6)	VT-3

Table 6.6-1 Examination Categories and Methods (Continued)

Quality Group	System Number	System Title	System Description	P&ID Diagram	Sec. XI Exam Cat.	Items Examined	Exam Method
B	E11	RHR	Fuel pool return lines from drywell spray line header up to and including valves ~~F015B & C~~ **F015 A,B & C**	Figure 5.4-10 ~~sh. 5, 7~~ **sh. 3,5 & 7**			
			300A-RHR-214 Piping		C-F-2	Welds (Note 1)	UT-MT
			300A-RHR-113 Piping				
			300A-RHR-099 Piping				
			Integral attachments		C-C	Welds (Note 3)	MT
			All pressure-retaining components and piping		C-H	External surfaces (Note 5)	VT-2
			Piping and component supports		F-A	Supports (Note 6)	VT-3
			All class B piping 20A, 25A, 40A, 50A and 100A in diameter, i.e.: - drain lines - vent lines - makeup lines for water leg seal including fill pump - minimum flow bypass lines - instrument lines - sampling lines - wetwell spray lines - SRV discharge lines - equalizing lines - and etc.	Figure 5.4-10 sh. 2-6	Exempted per IWC 1221 (a),(c)		

Table 6.6-1 Examination Categories and Methods (Continued)

Quality Group	System Number	System Title	System Description	P&ID Diagram	Sec. XI Exam Cat.	Items Examined	Exam Method
B	*E51*	*RCIC (Cont.)*	*All pressure retaining piping and components*		*C-H*	*External surfaces (Note 5)*	*VT-2*
			Piping and component supports		*F-A*	*Supports (Note 6)*	*VT-3*
			All Class B piping 15A, 20A, 25A, 50A and 100A in diameter, i.e.: *- ~~cooling water line~~* *- minimum flow bypass* *- test return line* *- leakoff lines* *- ~~vacuum pump discharge line~~* *- ~~condensate pump discharge line~~* *- test connections* *- makeup line for water leg seal* *- SRV discharge line* *- vacuum breaker line* *- and etc.*	*Figure 5.4-8 sh. 1–3*	*Exempted per IWC-1221 (a), (c)*		

Table 6.6-1 Examination Categories and Methods (Continued)

Quality Group	System Number	System Title	System Description	P&ID Diagram	Sec. XI Exam Cat.	Items Examined	Exam Method
C	*P21*	*Reactor Building Cooling Water (Cont.)*	*All Class C branch lines 100A and smaller, i.e.:* *- lines to and from RHR/HPCF pumps seals, motor bearing coolers* *- lines to and from RCIC pump room coolers* *- instrument lines* *- lines to and from FPC~~,~~ and SGTS~~, FCS~~room coolers* *- lines to and from CAM System coolers and air conditioning unit* *- drain lines* *- test connections* *- and etc.*	*Figure 9.2-1 sh. 1, 2, 4, 5, 7, 8*	*Exempted per IWD-1220*		
			All pressure-retaining components and piping		*D-B*	*External Surfaces (Note 7)*	*VT-2*
C	*P41*	*Reactor Service Water*	*From suction strainers through RSW pumps C001A, D, B, E, C, F, and through RCW HXs and into but not including the discharge canal to the ultimate heat sink.*	*Figure 9.2-7*			
			All pressure-retaining components and piping		*D-B*	*External Surfaces (Note 7)*	*VT-2*
			Integral attachments		*D-B*	*Welds (Note 8)*	*VT-3*
			Piping and Component Supports		*F-A*	*Supports (Note 6)*	*VT-3*