3M Resolution Of Intersystem Loss Of Coolant Accident For ABWR

The information in this appendix of the reference ABWR DCD, including all subsections and tables, is incorporated by reference with ~~no departures or supplements~~the following departures.

STD DEP 11.2-1 (Table 3M-1)

STD DEP T1 2.4-3

3M.3 Boundary Limits of URS

STD DEP 11.2-1

(2) *It is impractical to design or construct large tank structures to the URS design pressure that are vented to atmosphere and have a low design pressure. Tanks included in this category are:*

(a) *Condensate storage tank,*

(b) *SLC main tank,*

(c) *LCW* collector ~~*receiving*~~ *tank,*

(d) *HCW* collector ~~*receiving*~~ *tank,*

(e) *FPC skimmer surge tank, and*

(f) *FPC spent fuel storage pool and cask pit.*

(g) *Condensate hotwell*

In summary, the following low pressure sinks are protected by an adjacent closed valve and are impractical to design to the URS design pressure.

(3) ***SLC main tank*** *-- Vented to atmosphere with the first closed valve at least 2.82 MPaG rating . The SLC main tank is designed to Seismic Category I.*

(4) ***LCW* Collector ~~*Receiving*~~ *Tank*** *- Vented to atmosphere, and the first closed valve is at least 2.82 MPaG and one of the* four ~~*dual*~~ *tank's inlet valves is locked open.*

(5) ***HCW* Collector ~~*Receiving*~~ *Tank*** *- Vented to atmosphere, and the first closed valve is at least 2.82 MPaG and one of the* three ~~*dual*~~ *tank's inlet valves is locked open.*

(6) ***FPC Skimmer Surge Tank*** *- The Fuel Pool Cooling Cleanup System's skimmer surge tank is open to the near atmospheric pressure of the refueling floor. The first closed valve is at least 2.82 MPaG rated. The FPC skimmer surge tank is designed to Seismic Category I.*

3M.4 Evaluation Procedure

STD DEP 11.2-1

Typical systems for this upgrade include the:

(1) *Radwaste LCW and HCW* collector ~~*receiving*~~ *tank piping.*

(2) *Fuel Pool Cooling System's RHR interface piping connected to the skimmer surge tanks,*

(3) *Condensate Storage System's tank locked open supply valves,*

(4) *Makeup Water Condensate and Makeup Water Purified Systems with locked open valves and pump bypass piping to the Condensate Storage Tank.*

All test, vent and drain piping was upgraded where it interfaces with the piping upgraded to URS pressure. Similarly, all instrument and relief valve connecting piping was upgraded.

3M.5 Systems Evaluated

STD DEP 11.2-1

The following fourteen systems, interfacing directly or indirectly with the RCPB, were evaluated.

	Tier 2 Figure No.
11. Makeup Water (Purified) (MUWP) System.	*9.2-5*
12. Radwaste System (LCW Collector ~~*Receiving*~~*Tank, HCW* Collector ~~*Receiving*~~ *Tank).*	*11.2-2*
13. Condensate and Feedwater (CFS) System	*10.4-6*

3M.8 Results

STD DEP T1 2.4-3

The results of this work are shown by the markups of the enclosed P&IDs, which are Tier 2 figures. The affected sheets are listed below

System	*Tier 2 Figure No.*	*Affected Sheet Nos.*
1. Residual Heat Removal (RHR) System	*5.4-10*	*1, 2, 3, 4, 6, 7*
2. High Pressure Core Flooder (HPCF) System	*6.3-7*	*1, 2*

System	Tier 2 Figure No.	Affected Sheet Nos.
3. Reactor Core Isolation Cooling (RCIC) System	5.4-8	1, 3
4. Control Rod Drive (CRD) System	4.6-8	1, 3
5. Standby Liquid Control (SLC) System	9.3-1	1
6. Reactor Water Cleanup (CUW) System	5.4-12	1, 3
7. Fuel Pool Cooling and Cleanup (FPC) System	9.1-1	1, 2
8. Nuclear Boiler (NB) System	5.1-3	1, 5
9. Reactor Recirculation (RRS) System	5.4-4	1
10. Makeup Water (Condensate) (MUWC) System	9.2-4	1
11. Makeup Water (Purified) (MUWP) System	9.2-5	1, 2, 3
12. Radwaste System (LCW Collector~~Receiving~~ Tank, HCW Collector~~Receiving~~ Tank)	11.2-2	1, 3, 7
13. Condensate and Feedwater (CSF) System	10.4-6	
14. Sampling (SAM) System Also, see Attachment A for more detail.		
The design pressure of the following ~~two tanks~~tank was upgraded as a result of the evaluations performed in Attachment 3MA.		
SLC test tank ~~RCIC turbine barometric condenser tank~~		

Table 3M-1 Low Pressure Sink Component Sizes

Tank Name	Volume m^3	Diameter m	Height m	Length m	Width m	Design Pressure MPaG	Note
Condensate storage tank	2110	13.9	13.9			1.37	(1)
SLC main tank	32	3.44	3.44			SWH	(1)
LCW collector ~~receiving~~ tank	140 ~~430~~	5.63 ~~8.18~~	5.63 ~~8.18~~			SWH ~~0.98~~	(1)
HCW collector ~~receiving~~ tank	140 ~~45~~	5.63 ~~3.85~~	5.63 ~~3.85~~			SWH ~~0.98~~	(1)
FPC skimmer surge tank	30	2.3	7.2			SWH	
FPC spent fuel storage pool	2960		11.8	17.9	14.0	SWH	
FPC cask pit	121		11.8	3.2	3.2	SWH	
Condensate hotwell	7800		20	30	13		

Notes:

(1) Diameter and height calculated from volume based on diameter = height.
SWH = Static water head