

PROJECT: 5X800MW YADADRI TPS UNIT-1-5																								
PRESSURE DROP CALCULATION FOR SERVICE WATER AND POTABLE WATER DISTRIBUTION SCHMATICS -																				Annexure-I				
											WILLIAM & HAZEN CONSTANT C = 120													
NODE	Flow	Dia	Vel	Length		Valves				Bends			Tees		Reducer/ Expander				Total	Equip/		Static Comp. W.R.T. FGL		
	M³/Hr	NB	M/S	M	ΔP	BFV	Gate	Globe	NRV	90°	45°	30°	Thru	Branch	start node	end node	ΔP	Orifice	Ht. Req.	T.P. Pres.	Ht. Avl.			
						Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	Typ	dia	Typ	dia	MWC	Type	ΔP	M	MWC	M
A	Service Water Friction Drop Calculation for farthest point (Air washer of Unit- 5).																							
10-12	326	350	1.0	50.0	0.16		1			1			1											
11-12	815	600	0.8	500.0	0.59					7			4											
12-13	199	250	1.0	120.0	0.59					2			2	2										
13-14	131	300	0.5	180.0	0.17								1	2										
14-15	68	200	0.6	150.0	0.31								1	1										
16-17	55	150	0.8	150.0	0.84		1			2			2	1							29.5			
17-18	5	80	0.3	30.0	0.05		1			2			2	1										
																		Subtotal	3.09					
Static Head Available for Service water						=	40 M																	
Friction head loss in piping & fittings						=	3.40 M																	
Static head required for Air Washer of Unit #5						=	29.50 M																	
Total Head loss						=	32.90 M																	
Service Water Tank is kept at 40M height. Hence Service Water shall be available to farthest point.																								
For inlet to Service water Tank -- Refer Drg no- PE- DG- 417-172- N001 & Service Water Distribution - Refer Drg no- PE- DG- 417-172- N003																								
NOTE:- Service water required for Air Washer Per Unit=55 CubM/Hr. However, 2 nos tapping (28 CubM/Hr)is required at El +29.5 M for Airwasher Unit																								
B	Potable Water Friction Drop Calculation for farthest point (for Unit # 5 Control Room).																							
20-21	25	100	0.8	36.0	0.33		1			5			6											
21-22	15	100	0.5	100.0	0.36		1			6			4	4										
22-23	10	100	0.3	100.0	0.17		1			3			2	2										
23-24	2	50	0.3	20.0	0.05		1			6			4	4								18		
																		Subtotal	1.16					
Static Head Available for potable water						=	35.5 M																	
Friction head loss in piping & fittings						=	1.27 M																	
Static head required for Control Room of Unit #5						=	18.00 M																	
Total Head loss						=	19.27 M																	
Potable Water Tank is kept at 35.5 M height. Hence potable Water shall be available to farthest point.																								
Refer inlet to Potable Water Tank -- Refer Drg no- 1-WT-500-001295 & Potable Water Distribution - Refer Drg no- PE- DG- 417-172- N003																								
NOTE:- Potable water required for Each Unit=5 CubM/Hr. However, 1 no. tapping (Approx-2 CubM/Hr)is required at El +18 M for Control Room																								

Replies to comments on Service and potable water Schamamtics-Rev-01		
S. No	Customer Comments (TR NO- VDT-336, 39.08.2019)	BHEL Replies dated 06.06.2020
Drg no- PE- DG-417-172-N003 ,REV-02		
1	Shall be in closed position	Noted and Incorporated.
2	Header shall sized adequately considering the Unit-1&2 requirments and AHP sluury requiremenmt	Noted and Incorporated.
3	Shall be 200 NB	Noted and Incorporated.
4	Check the line size for the flow mention	Noted and Incorporated.
5	For ESP control buliding air conditioners cooling water shall be supplied from service water, so please check and indicate the same	Noted and Incorporated. Service water for HVAC system for ESP and other buildings are taken from this serivce water Distribution systems.
6	Shall be 200 NB as per pressure drop calculations	Noted and Incorporated.
7	Please check the header size shall be higher considering the 3 units flow	Noted and Incorporated.
8	Indicate the rawter (as shown in KTPS approved P&ID)	Service water for Raw water P/H is alredy taken care in this Service water distribution system. Refer between Grid - D and 3.
9	Check the line size for the flow mention	Noted and Incorporated.
10	As per approved Potable GAdrawing (BP-DG-417-103-004) the overflow nozzle size is 150 NB. BHEL to check and correct the same	Noted and Incorporated.
11	Shall be in closed position	Noted and Incorporated.
12	Indicate the color shade instead of specification reference for all non stainless steel pipes	Noted and Incorporated.
13	why this drawing is refered here List out all the refernce related P&IDs or Building GA drawings	Noted and Incorporated.
14	Indicate the drawing no	Noted and Incorporated.

