PIPING MATERIAL SPECIFICATION

UTTAM ENERGY SYSTEM LTD	OWNER		REV NO	0		1	
EPC	OWNER'S ENGINEER			DATE	SIGNATURE	DATE	SIGNATURE
			PPD BY				
PUNE	PROJECT		CKD BY				
			APP BY				

INDEX

Uttam Energy Systems Limited, Pune
Project: 1 x 5MW Captive power plant
Document: EPC Line list - Doc no.: PB598-123-M-PLL-619
Reference Drawing : P& ID of External steam sytem (Drg. No.:PB598-102-P-PID-0506)

S.No	LINE NO	DESCRIPTION	FROM	TO	OPERATING		DESIGN		FLUID FLOW IN TPH			PIPE SIZE			MOC	IBR/ NON IBR	REMARKS
					PR. IN KG/CM²	TEMP. IN º C	PR. IN KG/CM²	TEMP. IN º C	MIN.	NOR.	MAX.	OD x THK	NB	SCH			
1	CPP-552-S-150-AS-1000	Main steam line	Boiler MSSV	Turbine inlet	67	485	72	490	-	22.18	23	OD168.3x10.97mmTHK	150	80	SA335P11	IBR	
2	CPP-552-S-25-AS-1001	Main steam line drain line	Main steam line	Drain line	67	485	72	490	-	-	-	OD33.4x4.55mmTHK	25	80	SA335P11	IBR	
3	CPP-552-S-50-AS-1002	Turbine warm up vent line	Main steam line	Turbine warm up vent	67	485	72	490	-	-	-	OD60.3x3.91mmTHK	50	40	SA335P11	IBR	
4	CPP-552-S-150-CS-1003	Turbine bleed line to Deaerator	Turbine bleed line	Deaerator inlet	2.57	160.2	4.3	240.2	-	2.28	-	OD168.3x7.11mmTHK	150	40	SA106Gr.B	IBR	
5	CPP-552-S-40-CS-1004	Turbine extraction line drain before QCNRV	Turbine extraction line	ACC flash tank	2.57	160.2	4.3	240.2	-	-	-	OD48.26x3.68mmTHK	40	40	SA106Gr.B	IBR	
6	CPP-552-S-25-CS-1005	SJAE, Gland Sealing PRDS outlet to GSC	SJAE, Gland Sealing PRDS outlet	GSC	25	370	30	380	-	-	-	OD33.4x4.55mmTHK	25	80	SA106Gr.B	IBR	
7	CPP-552-S-40-CS-1006	Turbine extraction line drain after QCNRV	Turbine extraction line	Drain line	2.57	160.2	4.3	240.2	-	-	-	OD48.26x3.68mmTHK	40	40	SA106Gr.B	IBR	
8	CPP-552-S-15-CS-1007	Turbine exhaust drain line	Turbine exhaust	ACC flash tank	-	-	-	-	-	-	-	OD21.3x3.73mmTHK	15	80	SA106Gr.B	IBR	
9	CPP-552-S-15-AS-1008	HP governor valve drain line	HP governor valve	ACC flash tank	-	-	-	-	-	-	-	OD21.3x3.73mmTHK	15	80	SA335P11	IBR	
10	CPP-552-S-15-AS-1009	ESV drain line	ESV	ACC flash tank	-	-	-	-	-	-	-	OD21.3x3.73mmTHK	15	80	SA335P11	IBR	
11	CPP-552-S-50-AS-1010	Steam line to Deaerator pegging steam PCV inlet	Main steam Line	Deaerator pegging steam PCV	67	485	72	490	0.44	1.06	1.77	OD60.3x3.91mmTHK	50	40	SA335P11	IBR	
12	CPP-552-S-80-AS-1011	Steam line from Deaerator pegging steam PCV outlet to De-superheater DS-2	Deaerator pegging steam PCV	DS-2	10	485	11.7	490	0.5	1.2	2	OD88.9x5.49mmTHK	80	40	SA335P11	IBR	
13	CPP-552-S-80-CS-1012	Deaerator pegging steam PRDS outlet piping	Deaerator pegging steam PRDS outlet	Deaerator pegging	10	300	11.7	310	0.5	1.2	2	OD88.9x5.49mmTHK	80	40	SA106Gr.B	IBR	
14	CPP-552-S-20-AS-1013	Steam line to SJAE, Gland Sealing steam PCV inlet	Main steam Line	SJAE, Gland Sealing steam PCV	67	485	72	490	0.21	0.487	0.728	OD26.7x2.87mmTHK	20	40	SA335P11	IBR	
15	CPP-552-S-40-AS-1014	Steam line from SJAE, Gland Sealing steam PCV outlet to De-superheater DS-1	SJAE, Gland Sealing steam PCV	DS-1	25	485	30	490	0.225	0.525	0.785	OD48.3x3.68mmTHK	40	40	SA335P11	IBR	
16	CPP-552-S-25-CS-1015	Gland Sealing steam line drain	Gland Sealing steam line	Drain line	25	370	30	380	-	-	-	OD33.4x4.55mmTHK	25	80	SA106Gr.B	IBR	
17	CPP-552-W-15-CS-1016	Common spray water line for DS-1 and DS-2	-	-	91	126	105	130	0.074	0.176	0.288	OD21.3x2.77mmTHK	15	40	SA106Gr.B	IBR	
18	CPP-552-W-15-CS-1017	Spray water line for DS-2	Common spray water	NRV of DS-2	91	126	105	130	0.058	0.138	0.231	OD21.3x2.77mmTHK	15	40	SA106Gr.B	IBR	
19	CPP-552-W-15-AS-1018	Spray water line for DS-2	NRV of DS-2	DS-2	91	126	105	130	0.058	0.138	0.231	OD21.3x2.77mmTHK	15	40	SA335P11	IBR	
20	CPP-552-W-15-CS-1019	Spray water line for DS-1	Common spray water	NRV of DS-1	91	126	105	130	0.016	0.038	0.057	OD21.3x2.77mmTHK	15	40	SA106Gr.B	IBR	
21	CPP-552-W-15-AS-1020	Spray water line for DS-1	NRV of DS-1	DS-1	91	126	105	130	0.016	0.038	0.057	OD21.3x2.77mmTHK	15	40	SA335P11	IBR	
22	CPP-552-S-40-CS-1021	SJAE, Gland Sealing steam PRDS outlet piping	SJAE, Gland Sealing steam PRDS outlet	SJAE, Gland Sealing steam	25	370	30	380	0.225	0.525	0.785	OD48.3x3.68mmTHK	40	40	SA106Gr.B	IBR	
23	CPP-552-S-25-CS-1022	SJAE, Gland Sealing PRDS outlet to SJAE	SJAE, Gland Sealing PRDS outlet	SJAE	25	370	30	380	-	-	-	OD33.4x4.55mmTHK	25	80	SA106Gr.B	IBR	
24	CPP-552-S-25-AS-1023	Drain line at Steam line to Deaerator pegging steam PRDS upstream line	Deaerator pegging steam PRDS upstream line	Drain line	67	485	72	490	-	-	-	OD33.4x4.55mmTHK	25	80	SA335P11	IBR	
25	CPP-552-S-25-CS-1024	Gland sealing condenser drain line	Gland sealing condenser drain	ACC flash tank	-	-	-	-	-	-	-	OD33.4x4.55mmTHK	25	80	SA106Gr.B	IBR	

MARK	COMPONENT	SHORT DESC	MAIN SIZE	RED SIZE	DESCRIPTION	FINAL QTY
1	90 DEG ELBOW	90 ELBOW	50		90 LR ELL, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	36
		90 ELBOW	50		90 LR ELL, SCH 40, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	0
2		90 ELBOW	80		90 LR ELL, SCH 40, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	16
3		90 ELBOW	80		90 LR ELL, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	14
4		90 ELBOW	80		90 LR ELL, SCH 80, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	10
5		90 ELBOW	100		90 LR ELL, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	34
6		90 ELBOW	100		90 LR ELL, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	8
7		90 ELBOW	150		90 LR ELL, SCH 40, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	7
8		90 ELBOW	150		90 LR ELL, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	19
		90 ELBOW	150		90 LR ELL, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	4
9		90 ELBOW	150		90 LR ELL, SCH 80, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	48
10		90 ELBOW	200		90 LR ELL, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	66
11		90 ELBOW	200		90 LR ELL, SCH 40, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	25
		90 ELBOW	200		90 LR ELL, SCH 80, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	0
		90 ELBOW	200		90 LR ELL, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	5
12		90 ELBOW	200		90 LR ELL, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	24
13		90 ELBOW	250		90 LR ELL, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	11
14		90 ELBOW	300		90 LR ELL, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	4
15		90 ELBOW	15		90 ELL, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	60
		90 ELBOW	15		90 ELL, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	22
16		90 ELBOW	25		90 ELL, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	100
17		90 ELBOW	25		90 ELL, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	130
18		90 ELBOW	25		90 ELL, CL 3000, SW, STAINLESS STEEL, ASTM A 182-F 304, ASME B16.11	20
19		90 ELBOW	40		90 ELL, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	110
	45 DEG ELBOW	45 ELBOW	40		45 ELL, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	7
20		45 ELBOW	50		45 ELL, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	2
21		45 ELBOW	80		45 ELL, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	9
		45 ELBOW	100		45 ELL, SCH 80, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	6
22		45 ELBOW	150		45 ELL, SCH 80, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	3
23		45 ELBOW	200		45 ELL, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	4
		45 ELBOW	200		45 ELL, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP11, ASME B16.11	9
24		45 ELBOW	250		45 ELL, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	2
		45 ELBOW	15		45 ELL, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	0
25		45 ELBOW	25		45 ELL, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	15
26		45 ELBOW	25		45 ELL, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	13
27		TEE EQUAL	50		TEE, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	7
		TEE EQUAL	80		TEE, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	4
28		TEE EQUAL	100		TEE, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	5
29		TEE EQUAL	150		TEE, SCH 40, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	3
30		TEE EQUAL	150		TEE, SCH 80, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	7

31	EQUAL TEE	TEE EQUAL	200		TEE, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	4
32		TEE EQUAL	200		TEE, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	4
33		TEE EQUAL	300		TEE, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	2
34		TEE EQUAL	15		TEE, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	6
35		TEE EQUAL	25		TEE, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	30
36		TEE EQUAL	25		TEE, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	38
	REDUCING TEE	TEE RED	50	25	TEE RED, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	0
		TEE RED	100	50	TEE RED, SCH 40, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	0
37		TEE RED	100	80	TEE RED, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	2
38		TEE RED	150	80	TEE RED, SCH 80, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	5
		TEE RED	200	100	TEE RED, SCH 20, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	0
		TEE RED	200	100	TEE RED, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	0
39		TEE RED	200	150	TEE RED, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	2
40		TEE RED	200	100	TEE RED, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	6
41		TEE RED	200	100	TEE RED, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	3
42		TEE RED	250	100	TEE RED, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	0
43		TEE RED	250	150	TEE RED, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	0
44		TEE RED	250	150	TEE RED, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	0
		TEE RED	250	200	TEE RED, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	7
45		TEE RED	250	200	TEE RED, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	0
46		TEE RED	300	250	TEE RED, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	2
47	CONCENTRIC REDUCERS	RED CONC	100	50	RED CONC, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	4
48		RED CONC	100	80	RED CONC, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	4
49		RED CONC	150	100	RED CONC, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	2
50		RED CONC	150	80	RED CONC, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	4
51		RED CONC	150	80	RED CONC, SCH 80, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	6
		RED CONC	200	100	RED CONC, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	0
52		RED CONC	200	150	RED CONC, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	6
53		RED CONC	200	150	RED CONC, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	4
54	ECCENTRIC REDUCERS	RED ECC	80	40	RED ECC, SCH 80, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	5
55		RED ECC	100	50	RED ECC, SCH 40, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	3
56		RED ECC	100	80	RED ECC, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	5
57		RED ECC	150	100	RED ECC, SCH 40, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	2
58		RED ECC	150	80	RED ECC, SCH 80, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	5
		RED ECC	200	150	RED ECC, SCH 40, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	0
59		RED ECC	200	100	RED ECC, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	3
		RED ECC	250	200	RED ECC, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	3
60		RED ECC	250	200	RED ECC, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	3
	END CAPS	CAP	80		CAP, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	2
61		CAP	200		CAP, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	0
62		CAP	250		CAP, SCH 80, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	1
		CAP	300		CAP, SCH 20, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	2

63		CAP	300		CAP, SCH 40, BW, CARBON STEEL, ASTM A 234-WPB, ASME B16.9	2
	COUPLINGS	COUPLING	15		COUPLING, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	14
		COUPLING	15		COUPLING, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	32
		COUPLING	25		COUPLING, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	8
		COUPLING	25		COUPLING, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	6
64		HALF COUPLING	15		HALF COUPLING, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	15
65		HALF COUPLING	25		HALF COUPLING, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	16
66		HALF COUPLING	40		HALF COUPLING, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	8
		COUPLING RED	25	15	COUPLING RED, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	7
67		COUPLING RED	25	15	COUPLING RED, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	4
68		COUPLING RED	50	25	COUPLING RED, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	7
69		COUPLING RED	50	25	COUPLING RED, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	12
70		COUPLING RED	50	40	COUPLING RED, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	3
71	O-LET	SOCK-O-LET	50	15	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	6
72		SOCK-O-LET	50	25	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	11
73		SOCK-O-LET	80	25	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	6
74		SOCK-O-LET	100	40	SOCK-O-LET, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	3
75		SOCK-O-LET	100	25	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	3
76		SOCK-O-LET	100	40	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	4
77		SOCK-O-LET	150	25	SOCK-O-LET, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	5
78		SOCK-O-LET	150	25	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	17
79		SOCK-O-LET	150	40	SOCK-O-LET, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	3
80		SOCK-O-LET	150	40	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	4
81		SOCK-O-LET	200	15	SOCK-O-LET, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	4
82		SOCK-O-LET	200	15	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	8
83		SOCK-O-LET	200	25	SOCK-O-LET, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	20
84		SOCK-O-LET	200	25	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	12
85		SOCK-O-LET	200	40	SOCK-O-LET, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	6
86		SOCK-O-LET	200	40	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	10
87		SOCK-O-LET	250	25	SOCK-O-LET, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	7
88		SOCK-O-LET	250	40	SOCK-O-LET, CL 3000, SW, ALLOY STEEL, ASTM A 182-F 11, ASME B16.11	4
		SOCK-O-LET	300	25	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	7
		SOCK-O-LET	300	40	SOCK-O-LET, CL 3000, SW, CARBON STEEL, ASTM A 105-, ASME B16.11	5
89		WELD-O-LET	200	80	WELD-O-LET, SCH 40, BW, ALLOY STEEL, ASTM A 234-WP 11, ASME B16.9	4

Sr. No.	Scheme	Description	Flange Application	Line size	Flange Type	Flange rating	Flanges	MATERIAL	GASKET	(B) Bolt/(S)Stud
1	551-PS-80-CS-03-075	Pegging Steam	551-MN-GV-80-005	80	SORF	300	2	ASTM A 105	4.5THK-2NO.	(B)M20x125-16NO.
2	551-PS-80-CS-03-075	Pegging Steam	551-MN-GV-150-007	150	SORF	300	2	ASTM A 105	4.5THK-2NO.	(B)M20x130-24NO.
3	551-PS-80-CS-03-075	Pegging Steam	551-MN-NRV-150-013	150	SORF	300	2	ASTM A 105	4.5THK-2NO.	(B)M20x130-24NO.
4	551-PS-80-CS-03-075	Pegging Steam	551-MN-GV-80-010	80	SORF	300	2	ASTM A 105	4.5THK-2NO.	(B)M20x125-16NO.
5	551-PS-80-CS-03-075	Pegging Steam	551-PNV-GLV-80-006	80	SORF	300	2	ASTM A 105	4.5THK-2NO.	(B)M20x125-16NO.
6	551-PS-150-CS-005-50	Turbine Bleed	551-MN-NRV-150-014	150	SORF	150	2	ASTM A 105	4.5THK-2NO.	(B)M20x130-16NO.
7	CPP-552-S-150-AS-1000	Main Steam	Breaking Flange	150	WNRF	900	2	ASTM A 182F11	4.5THK-1NO.	(S)M30x210-12NO.
8	551-SHS-150-AS-115-175	Main Steam (PSV)	551-SV-103	80	WNRF	150	1	ASTM A 182F11	4.5THK-1NO.	(S)M16x100-4NO.
9	551-BFW-150-CS-007-40	BFP Suction	551-MNV-GV-150-022	150	SORF	150	2	ASTM A 105	4.5THK-2NO.	(B)M20x130-16NO.
10	551-BFW-150-CS-007-40	BFP Suction	551-MNV-GV-150-023	150	SORF	150	2	ASTM A 105	4.5THK-2NO.	(B)M20x130-16NO.
11	551-BFW-80-CS-10-40	BFP Discharge	551-PNV-GLV-80-108	80	WN RTJ	900	2	ASTM A 105	TYPE R31-2NO.	(B)M24x175-16NO.
12	551-PS-80-CS-002-075	Initial heating	551-MN-GLV-80-003	80	SORF	300	2	ASTM A 105	4.5THK-2NO.	(B)M20x130-16NO.
13	551-PS-80-CS-002-075	Initial heating	551-MN-NRV-80-004	80	SORF	300	2	ASTM A 105	4.5THK-2NO.	(B)M20x130-16NO.
14	551-BFW-25-CS-117-25	SPRAY WATER	551-PNV-GLV-25-228	25	SO RTJ	900	2	ASTM A 105	TYPE R16-2NO.	(B)M24x150-8NO.
15	551-BD-40-CS-013	Deae Overflow	551-PNV-GV-40-062	40	SO RTJ	150	2	ASTM A 105	TYPE R19-2NO.	(S)M14x95-8NO.
16	551-DW-80-CS-006-NI	Make-Up Water	551-MN-GV-80-015	80	SORF	150	2	ASTM A 105	4.5THK-2NO.	(B)M16x100-4NO.
17	551-DW-80-CS-006-NI	Make-Up Water	551-MN-GV-80-020	80	SORF	150	2	ASTM A 105	4.5THK-2NO.	(B)M16x100-4NO.
18	551-DW-80-CS-006-NI	Make-Up Water	551-MN-GLV-80-019	80	SORF	150	2	ASTM A 105	4.5THK-2NO.	(B)M16x100-4NO.
19	551-DW-80-CS-006-NI	Make-Up Water	551-MN-NRV-80-021	80	SORF	150	2	ASTM A 105	4.5THK-2NO.	(B)M16x100-4NO.
20	551-DW-80-CS-006-NI	Make-Up Water	551-PNV-GLV-016	80	SORF	150	2	ASTM A 105	4.5THK-2NO.	(B)M16x100-4NO.
21	551-TC-80-CS-001-040	COND. RETURN	551-MN-GLV-80-001	80	SORF	150	2	ASTM A 105	4.5THK-2NO.	(B)M16x100-4NO.
22	551-TC-80-CS-001-040	COND. RETURN	551-MN-NRV-80-002	80	SORF	150	2	ASTM A 105	4.5THK-2NO.	(B)M16x100-4NO.
23		Steam Blowing		150	WNRF	900	1	ASTM A 105	4.5THK-1NO.	0

NUTS & WASHER	Remarks
M20-16NO.	Valve
M20-24NO.	Valve
M20-24NO.	NRV
M20-16NO.	By Pass Valve
M20-16NO.	Control Valve
M20-16NO.	
M30-24NO.	
M16-8NO.	
M20-16NO.	Valve
M20-16NO.	Valve
M24-16NO.	Control Valve
M20-16NO.	Valve
M20-16NO.	NRV
M24-8NO.	Control Valve
M14-16NO.	Control Valve
M16-4NO.	Valve
M16-4NO.	Valve
M16-4NO.	By Pass Valve
M16-4NO.	NRV
M16-4NO.	Control Valve
M16-4NO.	Valve
M16-4NO.	NRV
0	Use Breakup Flange Stud

Rev No.	Sr. No.	Scheme	P & ID	Isometric	Description	Pipe Material	Line size
	A1	CPP-552-S-150-AS-1000	PB598-102-M-PID-0506_Rev1	PB598-PIP-17	MAIN STEAM LINE(AFTER MSSV)	SA 335 P11	150
	A2	551-SHS-150-AS-130-175	PB598-PID-01_Rev2	PB598-PIP-16	MAIN STEAM LINE	SA 335 P11	150
	A3		PB598-PID-01_Rev2	PB598-PIP-16	MAIN STEAM LINE (PSV)	SA 335 P11	80
	A4	551-SHS-80-AS-128-150	PB598-PID-01_Rev2	PB598-PIP-16	MAIN STEAM LINE (START UP VENT)	SA 335 P11	80
	A5		PB598-PID-01_Rev2	PB598-PIP-16	VENT,DRAIN & PG	SA 335 P11	25
	A6		PB598-PID-01_Rev2	PB598-PIP-16	PG & SAMPLE COOLING	SA 335 P11	15
	A7		PB598-PID-01_Rev2	PB598-PIP-16	PSV ROUND BAR	SA 335 P11	100
	A8	CPP-551-SHS-150-AS-115-175	PB598-PID-01_Rev2	PB598-PIP-16	MAIN STEAM LINE(UP TO MSSV)	SA 335 P11	150
	A9		PB598-PID-01_Rev2	#NAME?	DRAIN	SA-106 Gr.B	25
	A10		PB598-PID-01_Rev2	PB598-PIP-16	DRAIN	SA-106 Gr.B	25
	B1	CPP-552-S-50-AS-1010	PB598-102-M-PID-0506_Rev1	264.19	PEGGING STEAM (P11)	SA 335 P11	50
	B2		PB598-102-M-PID-0506_Rev1	PB598-PIP-12	PEGGING STEAM (P11)	SA 335 P11	40
	B3	CPP-552-S-80-AS-1011	PB598-102-M-PID-0506_Rev1	PB598-PIP-12	PEGGING STEAM (P11)	SA 335 P11	80
	B4		PB598-102-M-PID-0506_Rev1	PB598-PIP-12	PEGGING STEAM (P11)	SA 335 P11	25
	B5		PB598-102-M-PID-0506_Rev1	PB598-PIP-12	PEGGING STEAM (P11)	SA 335 P11	20
	B6	CPP-552-S-80-CS-1012	PB598-PID-106_Rev2	PB598-PIP-12	PEGGING STEAM	SA-106 Gr.B	80
	B7		PB598-PID-106_Rev2	PB598-PIP-12	TG,TE	SA-106 Gr.B	100
	B10		PB598-PID-106_Rev2	PB598-PIP-12	PEGGING STEAM	SA-106 Gr.B	150
	B11		PB598-PID-106_Rev2	PB598-PIP-12	PEGGING STEAM DRAIN	SA-106 Gr.B	25
	B12		PB598-PID-106_Rev2	PB598-PIP-12	PEGGING STEAM DRAIN	SA-106 Gr.B	20
	C1	CCP-S-150-CS-1003	PB598-102-M-PID-0506_Rev1	PB598-PIP-13	TURBINE BLEED	SA-106 Gr.B	150
	C3		PB598-102-M-PID-0506_Rev1	PB598-PIP-13		SA-106 Gr.B	40
	D1	CPP-552-S-20-AS-1013 & DRAIN	PB598-102-M-PID-0506_Rev1	PB598-PIP-15	AUXI STEAM (P11)	SA 335 P11	20
	D2	CPP-552-S-40-AS-1014	PB598-102-M-PID-0506_Rev1	PB598-PIP-15	AUXI STEAM (P11)	SA 335 P11	40
	D3	PSV	PB598-102-M-PID-0506_Rev1	PB598-PIP-15	AUXI STEAM (P11)	SA 335 P11	50
	D4	PSV	PB598-102-M-PID-0506_Rev1	PB598-PIP-15	AUXI STEAM (P11)	SA 335 P11	25
	D5		PB598-102-M-PID-0506_Rev1	PB598-PIP-15	AUXI STEAM	SA-106 Gr.B	15
	D6		PB598-102-M-PID-0506_Rev1	PB598-PIP-15	AUXI STEAM	SA-106 Gr.B	20
	D7		PB598-102-M-PID-0506_Rev1	PB598-PIP-15	AUXI STEAM	SA-106 Gr.B	25
	D8		PB598-102-M-PID-0506_Rev1	PB598-PIP-15	AUXI STEAM	SA-106 Gr.B	40
	D9		PB598-102-M-PID-0506_Rev1	PB598-PIP-15	AUXI STEAM	SA-106 Gr.B	100
	D10		PB598-102-M-PID-0506_Rev1	PB598-PIP-15	AUXI STEAM	SA-106 Gr.B	40
	E1	CPP-552-S-50-AS-1002	PB598-102-M-PID-0506_Rev1	PB598-PIP-18	WARMUP VENT	SA 335 P11	50
	F1		PB598-102-M-PID-0506_Rev1	PB598-PIP-31	STEAM BLOWING	SA-106 Gr.B	150
	G1	CPP-552-S-15-AS-1008	PB598-102-M-PID-0506_Rev1	STG PIPING	HP GOVERNER VALVE DRAIN	SA 335 P11	15

	H1	CPP-552-S-15-AS-1009	PB598-102-M-PID-0506_Rev1	STG PIPING	ESV DRAIN	SA 335 P11	15
	I1	551-BFW-150-CS-007-40	PB598-PID-106_Rev2	PB598-PIP-10	BFP SUCTION	SA-106 Gr.B	150
	I2		PB598-PID-106_Rev2	PB598-PIP-10		SA-106 Gr.B	100
	I3	551-BFW-15-CS-12	PB598-PID-106_Rev2	PB598-PIP-10	SAMPLE	SA-106 Gr.B	15
	I4	551-BFW-80-CS-010-40	PB598-PID-106_Rev2	PB598-PIP-11	BFP DISCHARGE	SA-106 Gr.B	80
	I5		PB598-PID-106_Rev2	PB598-PIP-11		SA-106 Gr.B	50
	I6		PB598-PID-106_Rev2	PB598-PIP-11	SPRAY & DRAIN	SA-106 Gr.B	25
	J1	551-PS-80-CS-02-75	PB598-PID-106_Rev2	PB598-PIP-14	INITIAL HEATING	SA-106 Gr.B	80
	K1	552-W-15-AS-1020	PB598-PID-106_Rev2	PB598-PIP-21	SPRAY FOR SJAE & GSC	SA 335 P11	15
	K2		PB598-PID-106_Rev2	PB598-PIP-21	SPRAY FOR SJAE & GSC	SA 335 P11	25
	K3	552-W-15-CS-1019	PB598-102-M-PID-0506_Rev1	PB598-PIP-21	SPRAY FOR SJAE & GSC	SA-106 Gr.B	15
	L1		PB598-PID-106_Rev2	PB598-PIP-22	SPRAY FOR PEGGING	SA 335 P11	25
	L2	552-W-15-AS-1018	PB598-PID-106_Rev2	PB598-PIP-22	SPRAY FOR PEGGING	SA 335 P11	15
	L3	551-BFW-25-CS-19-25	PB598-102-M-PID-0506_Rev1	PB598-PIP-22	SPRAY FOR PEGGING	SA-106 Gr.B	25
	L4	552-W-15-CS-1016	PB598-102-M-PID-0506_Rev1	PB598-PIP-22	SPRAY FOR PEGGING	SA-106 Gr.B	15
	M1	551-BFW-25-CS-117-25	PB598-PID-01_Rev2	PB598-PIP-24	SPRAY FOR BOILER	SA-106 Gr.B	25
	M2		PB598-PID-01_Rev2	PB598-PIP-24	SPRAY FOR BOILER	SA-106 Gr.B	15
	N1	551-BD-40-CS-13	PB598-PID-106_Rev2	PB598-PIP-26	DEAERATOR OVERFLOW	SA-106 Gr.B	40
	O1	551-BFW-40-CS-14-NIL	PB598-PID-106_Rev2	PB598-PIP-29	BFP BALANCE LEAK OFF-1	SA-106 Gr.B	40
	O2	551-BFW-40-CS-15-NIL	PB598-PID-106_Rev2	PB598-PIP-29	BFP BALANCE LEAK OFF-2	SA-106 Gr.B	40
	O3	551-BFW-25-CS-16-NIL	PB598-PID-106_Rev2	PB598-PIP-30	BFP RECIRCULATION-1	SA-106 Gr.B	25
	O4		PB598-PID-106_Rev2	PB598-PIP-30	BFP RECIRCULATION-1	SA-106 Gr.B	40
	O5	551-BFW-25-CS-17-NIL	PB598-PID-106_Rev2	PB598-PIP-30	BFP RECIRCULATION-2	SA-106 Gr.B	25
	O6		PB598-PID-106_Rev2	PB598-PIP-30	BFP RECIRCULATION-2	SA-106 Gr.B	40
	Q1	CPP-552-S-40-CS-1007	PB598-102-M-PID-0506_Rev1	STG PIPING	DERAIN FROM TURBINE (TP07)	SA-106 Gr.B	40

Pipe OD (mm)	Pipe (M)	Insulation thk. (MM)	1st layer	2nd layer	Insulation width - 1st layer (m)	Insulation width - 2nd layer (m)	cladding width(m)	Insulation requirement 1st layer (m2)	Insulation requirement 2nd layer (m2)	Cladding Area(m2)	Remarks
168.27	53.4	175	100	75	1.16	1.63	1.658	61.78	86.95	88.55	
168.27	7	175	100	75	1.16	1.63	1.658	8.10	11.40	11.61	
88.9	0.68	175	100	75	0.91	1.38	1.409	0.62	0.94	0.96	
88.9	8.006	150	75	75	0.75	1.22	1.252	6.01	9.78	10.02	
33.4	12.96	115	100	25	0.73	0.89	0.920	9.50	11.54	11.93	
21.34	23.42	100	50	50	0.38	0.70	0.725	8.93	16.29	16.99	
114.3	0.35	100	50	50	0.67	0.99	1.017	0.24	0.35	0.36	
168.27	11.9	175	100	75	1.16	1.63	1.658	13.77	19.38	19.73	
33.4	2.85	115	100	25	0.73	0.89	0.920	2.09	2.54	2.62	
33.4	20.6	115	100	25	0.73	0.89	0.920	15.10	18.34	18.96	
60.3	8.6	150	75	75	0.66	1.13	1.162	5.68	9.73	9.99	
48.26	0.4	150	75	75	0.62	1.09	1.124	0.25	0.44	0.45	
88.9	5.07	150	75	75	0.75	1.22	1.252	3.81	6.19	6.35	
33.4	0.3	115	100	25	0.73	0.89	0.920	0.22	0.27	0.28	
26.67	0.5	115	100	25	0.71	0.87	0.899	0.36	0.43	0.45	
88.9	9.7	75	75	0	0.75	0.75	0.781	7.28	7.28	7.57	
114.3	0.35	100	50	50	0.67	0.99	1.017	0.24	0.35	0.36	
168.27	2.4	50	50	0	0.84	0.84	0.873	2.02	2.02	2.09	
33.4	23.27	100	50	50	0.42	0.73	0.763	9.75	17.06	17.76	
26.67	0.8	100	50	50	0.40	0.71	0.742	0.32	0.57	0.59	
168.27	23.01	50	50	0	0.84	0.84	0.873	19.39	19.39	20.08	
48.26	42.7	40	25	25	0.31	0.47	0.496	13.18	19.89	21.17	
26.67	8.4	115	100	25	0.71	0.87	0.899	5.98	7.30	7.55	
48.26	3.15	90	50	50	0.47	0.78	0.810	1.47	2.46	2.55	
60.3	2.55	90	50	50	0.50	0.82	0.848	1.28	2.09	2.16	
33.4	0.3	90	50	50	0.42	0.73	0.763	0.13	0.22	0.23	
21.34	0.7	115	100	25	0.70	0.85	0.882	0.49	0.60	0.62	
26.67	22.08	115	100	25	0.71	0.87	0.899	15.72	19.19	19.85	
33.4	16.35	115	100	25	0.73	0.89	0.920	11.99	14.56	15.05	
48.26	70.6	90	50	50	0.47	0.78	0.810	32.88	55.06	57.18	
114.3	0.25	90	50	50	0.67	0.99	1.017	0.17	0.25	0.25	
48.26	0.1	90	50	50	0.47	0.78	0.810	0.05	0.08	0.08	
60.3	13.25	150	75	75	0.66	1.13	1.162	8.75	15.00	15.40	
168.27	22	175	100	75	1.16	1.63	1.658	25.45	35.82	36.48	
21.34	18.03	100	50	50	0.38	0.70	0.725	6.87	12.54	13.08	

21.34	18.205	100	50	50	0.38	0.70	0.725	6.94	12.66	13.21	
168.27	30.55	40	50	0	0.84	0.84	0.873	25.75	25.75	26.66	
114.3	0.4	40	50	0	0.67	0.67	0.703	0.27	0.27	0.28	
21.34	9.48	12	25	0	0.22	0.22	0.254	2.12	2.12	2.41	
88.9	32.3	40	50	0	0.59	0.59	0.623	19.17	19.17	20.14	
60.3	0.4	40	50	0	0.50	0.50	0.534	0.20	0.20	0.21	
33.4	2	25	25	0	0.26	0.26	0.292	0.52	0.52	0.58	
88.9	4.1	75	50	25	0.59	0.75	0.781	2.43	3.08	3.20	
21.34	0.62	25	25	0	0.22	0.22	0.254	0.14	0.14	0.16	
33.4	0.3	25	25	0	0.26	0.26	0.292	0.08	0.08	0.09	
21.34	33.82	25	25	0	0.22	0.22	0.254	7.58	7.58	8.59	
33.4	0.475	25	25	0	0.26	0.26	0.292	0.12	0.12	0.14	
21.34	0.875	25	25	0	0.22	0.22	0.254	0.20	0.20	0.22	
33.4	32.43	25	25	0	0.26	0.26	0.292	8.50	8.50	9.47	
21.34	9.84	25	25	0	0.22	0.22	0.254	2.21	2.21	2.50	
33.4	33.2	25	25	0	0.26	0.26	0.292	8.70	8.70	9.69	
21.34	1.32	25	25	0	0.22	0.22	0.254	0.30	0.30	0.34	
48.26	21	40	50	0	0.47	0.47	0.496	9.78	9.78	10.41	
48.26	33.5	40	50	0	0.47	0.47	0.496	15.60	15.60	16.61	
48.26	32.5	40	50	0	0.47	0.47	0.496	15.14	15.14	16.11	
33.4	33.37	25	25	0	0.26	0.26	0.292	8.74	8.74	9.74	
48.26	0.4	40	50	0	0.47	0.47	0.496	0.19	0.19	0.20	
33.4	33.9	25	25	0	0.26	0.26	0.292	8.88	8.88	9.90	
48.26	0.4	40	50	0	0.47	0.47	0.496	0.19	0.19	0.20	
48.26	18.35	25	25	0	0.31	0.31	0.339	5.66	5.66	6.22	
										606.63	