

INPUT TO E&C TENDER
PROJECT: RIL CCPP 4 x 93.1 MW STG (HMD)
WONO: 1-0-851-358-00

ESTIMATED PIPING INSULATION AREA/VOLUME

SL NO	LINE NUMBER	WORK TEMP	INS THK	INSULATION MATERIAL	NB	OD	INS THK PYROGEL	INS THK MINWOOL	INS THK TOTAL	PIPE LENGTH	NO OF UNITS	PER UNIT				TOTAL			
												INS AREA PER UNIT	INS VOL PG PER UNIT	INS VOL MW PER UNIT	INV VOL COMB PER UNIT	INS AREA TOTAL	INS VOL PG TOTAL	INS VOL MW TOTAL	INS VOL COMB TOTAL
		[Deg C]	[mm]			[mm]	[mm]	[mm]	[mm]	[m]		[Sq.m]	[Cu.m]	[Cu.m]	[Cu.m]	[Sq.m]	[Cu.m]	[Cu.m]	[Cu.m]
1	HSAB-BSS-BHL-0-B051-10-65C-HC	530	40/210	PGEL/MW	250	273.1	40	210	250	39.66	1	40.84	1.63	8.58	10.21	40.84	1.63	8.58	10.21
2	HSAB-BSS-BHL-0-B052-10-65C-HC	530	40/210	PGEL/MW	250	273.1	40	210	250	1.5	1	1.55	0.06	0.32	0.38	1.55	0.06	0.32	0.38
3	HSAB-BSS-BHL-0-B053-10-65C-HC	530	40/210	PGEL/MW	250	273.1	40	210	250	3.24	1	3.34	0.13	0.7	0.83	3.34	0.13	0.7	0.83
4	HSAB-BSS-BHL-0-B054-32-23C-HC	474	40/200	PGEL/MW	800	819	40	200	240	1	1	3.08	0.12	0.61	0.73	3.08	0.12	0.61	0.73
5	HSAB-BSS-BHL-0-B055-32-23C-HC	474	40/200	PGEL/MW	800	819	40	200	240	1	1	3.08	0.12	0.61	0.73	3.08	0.12	0.61	0.73
6	HSAB-BSS-BHL-0-B062-28-11C-HC	200	10/65	PGEL/MW	700	711	10	65	75	139.4	1	373.64	3.73	24.29	28.02	373.64	3.73	24.29	28.02
7	HSAB-HS-BHL-0-B001-20-65C-HC	530	50/200	PGEL/MW	500	508	50	200	250	6.29	1	12.05	0.6	2.41	3.01	12.05	0.6	2.41	3.01
8	HSAB-HS-BHL-0-B002-20-65C-HC	530	50/200	PGEL/MW	500	508	50	200	250	6.29	1	12.05	0.6	2.41	3.01	12.05	0.6	2.41	3.01
9	HSAB-HS-BHL-0-B003-20-65C-HC	530	50/200	PGEL/MW	500	508	50	200	250	116.8	1	223.68	11.18	44.74	55.92	223.68	11.18	44.74	55.92
10	HSAB-HS-BHL-0-B004-20-65C-HC	530	50/200	PGEL/MW	500	508	50	200	250	111.8	1	214.1	10.7	42.82	53.52	214.1	10.7	42.82	53.52
11	HSAB-HS-BHL-0-B010-4-65C-HC	530	50/165	PGEL/MW	100	114.3	50	165	215	22.11	1	9.53	0.48	1.57	2.05	9.53	0.48	1.57	2.05
12	HSAB-HS-BHL-0-B201-1.5-65C-HC	530	0/175	PGEL/MW	40	48.3	0	175	175	1.3	1	0.24	0	0.05	0.05	0.24	0	0.05	0.05
13	HSAB-HS-BHL-0-B202-1.5-65C-HC	530	0/175	PGEL/MW	40	48.3	0	175	175	1.89	1	0.35	0	0.06	0.06	0.35	0	0.06	0.06
14	HSAB-HS-BHL-0-B251-3-65C-HC	530	40/160	PGEL/MW	80	88.9	40	160	200	1.77	1	0.59	0.02	0.1	0.12	0.59	0.02	0.1	0.12
15	HSAB-HS-BHL-0-B252-3-65C-HC	530	40/160	PGEL/MW	80	88.9	40	160	200	1	1	0.34	0.01	0.05	0.06	0.34	0.01	0.05	0.06
16	HSAE-FDW-BHL-0-B651-18-61C-HC	236.5	20/75	PGEL/MW	450	457	20	75	95	58.49	1	100.76	2.02	7.56	9.58	100.76	2.02	7.56	9.58
17	HSAE-FDW-BHL-0-B652-18-61C-HC	236.5	20/75	PGEL/MW	450	457	20	75	95	73.67	1	126.92	2.54	9.52	12.06	126.92	2.54	9.52	12.06
18	HSAE-FDW-BHL-0-B653-18-61C-HC	236.5	20/75	PGEL/MW	450	457	20	75	95	14.93	1	25.73	0.52	1.93	2.45	25.73	0.52	1.93	2.45
19	HSAE-FDW-BHL-0-B654-18-61C-HC	236.5	20/75	PGEL/MW	450	457	20	75	95	14.93	1	25.73	0.52	1.93	2.45	25.73	0.52	1.93	2.45
20	HSAE-FDW-BHL-0-B655-3-51C-HC	174.4	20/40	PGEL/MW	80	88.9	20	40	60	122.17	1	40.94	0.82	1.63	2.45	40.94	0.82	1.63	2.45
21	HSAE-FDW-BHL-0-B661-1-51C-HC	174.4	0/40	PGEL/MW	25	33.4	0	40	40	20.46	1	2.58	0	0.11	0.11	2.58	0	0.11	0.11
22	HSAE-FDW-BHL-0-B662-1-51C-HC	174.4	0/40	PGEL/MW	25	33.4	0	40	40	20.18	1	2.54	0	0.1	0.1	2.54	0	0.1	0.1
23	HSAE-FDW-BHL-0-B671-2-51C-HC	174.4	20/25	PGEL/MW	50	60.3	20	25	45	16.22	1	3.68	0.07	0.1	0.17	3.68	0.07	0.1	0.17
24	HSAE-FDW-BHL-0-B671-8-11B-HC	170.4	20/50	PGEL/MW	200	219.1	20	50	70	64.4	1	53.2	1.07	2.66	3.73	53.2	1.07	2.66	3.73
25	HSAE-FDW-BHL-0-B672-2-51C-HC	174.4	20/25	PGEL/MW	50	60.3	20	25	45	16.22	1	3.68	0.07	0.1	0.17	3.68	0.07	0.1	0.17
26	HSAE-FDW-BHL-0-B672-8-11B-HC	170.4	20/50	PGEL/MW	200	219.1	20	50	70	41.1	1	33.95	0.68	1.69	2.38	33.95	0.68	1.69	2.38
27	HSAE-FDW-BHL-0-B673-8-11B-HC	170.4	20/50	PGEL/MW	200	219.1	20	50	70	9.01	1	7.44	0.14	0.37	0.52	7.44	0.14	0.37	0.52
28	HSAE-FDW-BHL-0-B674-8-11B-HC	170.4	20/50	PGEL/MW	200	219.1	20	50	70	8.99	1	7.43	0.14	0.37	0.52	7.43	0.14	0.37	0.52
29	HSAB-BSS-BHL-0-B191-6-11C-HC	172	20/40	PGEL/MW	150	168.3	20	40	60	15.25	1	9.67	0.19	0.38	0.58	9.67	0.19	0.38	0.58
30	HSAB-BSS-BHL-0-B192-6-11C-HC	172	20/40	PGEL/MW	150	168.3	20	40	60	15.23	1	9.66	0.19	0.38	0.58	9.66	0.19	0.38	0.58
31	HSAB-BSS-BHL-0-B193-6-11C-HC	172	20/40	PGEL/MW	150	168.3	20	40	60	105.65	1	67.03	1.34	2.68	4.02	67.03	1.34	2.68	4.02
32	HSSA-AXS-BHL-0-B203-3-23C-HC	480	35/140	PGEL/MW	80	88.9	35	140	175	9.31	1	3.12	0.11	0.43	0.54	3.12	0.11	0.43	0.54
33	HSSA-AXS-BHL-0-B206-3-23C-HC	480	35/140	PGEL/MW	80	88.9	35	140	175	8.84	1	2.96	0.11	0.42	0.53	2.96	0.11	0.42	0.53
34	HSSA-AXS-BHL-0-B211-3-21C-HC	260	15/65	PGEL/MW	80	88.9	15	65	80	24.94	1	8.36	0.12	0.54	0.66	8.36	0.12	0.54	0.66
35	HSSA-AXS-BHL-0-B212-3-21C-HC	260	15/65	PGEL/MW	80	88.9	15	65	80	169.17	1	56.7	0.85	3.68	4.54	56.7	0.85	3.68	4.54
36	HSSA-AXS-BHL-0-B213-3-21C-HC	260	15/65	PGEL/MW	80	88.9	15	65	80	164.95	1	55.28	0.83	3.59	4.42	55.28	0.83	3.59	4.42
37	HSSA-AXS-BHL-0-B253-10-23C-HC	475.9	40/175	PGEL/MW	250	273.1	40	175	215	14.26	1	14.68	0.59	2.57	3.16	14.68	0.59	2.57	3.16
38	HSSA-AXS-BHL-0-B256-10-23C-HC	475.9	40/175	PGEL/MW	250	273.1	40	175	215	14.02	1	14.44	0.58	2.53	3.11	14.44	0.58	2.53	3.11
39	HSSA-AXS-BHL-0-B261-10-11C-HC	190	20/50	PGEL/MW	250	273.1	20	50	70	0.5	1	0.52	0.01	0.02	0.04	0.52	0.01	0.02	0.04
40	HSSA-AXS-BHL-0-B262-10-11C-HC	190	20/50	PGEL/MW	250	273.1	20	50	70	43.11	1	44.39	0.89	2.22	3.11	44.39	0.89	2.22	3.11
41	HSSA-AXS-BHL-0-B263-10-11C-HC	190	20/50	PGEL/MW	250	273.1	20	50	70	77.39	1	79.68	1.6	3.98	5.58	79.68	1.6	3.98	5.58
42	HSAB-AV-BHL-1-B009-6-11B-HC		25/90	PGEL/MW	150	168.3	25	90	115	14.07	4	8.93	0.23	0.8	1.03	35.72	0.92	3.2	4.12
43	HSAB-BSS-BHL-1-B063-18-11C-HC	200	10/65	PGEL/MW	450	457	10	65	75	53.25	4	91.74	0.91	5.96	6.88	366.96	3.64	23.84	27.52
44	HSAB-BSS-BHL-1-B064-12-11C-HC	200	20/50	PGEL/MW	300	323.8	20	50	70	3.43	4	4.19	0.08	0.2	0.29	16.76	0.32	0.8	1.16
45	HSAB-BSS-BHL-1-B065-12-11C-HC	200	20/50	PGEL/MW	300	323.8	20	50	70	2.26	4	2.76	0.06	0.14	0.2	11.04	0.24	0.56	0.8
46	HSAB-HS-BHL-1-B005-16-65C-HC	530	50/200	PGEL/MW	400	406.4	50	200	250	32.47	4	49.75	2.48	9.95	12.43	199	9.92	39.8	49.72
47	HSAB-HS-BHL-1-B006-12-65C-HC	530	40/210	PGEL/MW	300	323.8	40	210	250	7.3	4	8.92	0.36	1.87	2.23	35.68	1.44	7.48	8.92
48	HSAB-HS-BHL-1-B007-12-65C-HC	530	40/210	PGEL/MW	300	323.8	40	210	250	10.05	4	12.26	0.49	2.58	3.07	49.04	1.96	10.32	12.28
49	HSAB-HS-BHL-1-B008-2-65C-HC	530	25/150	PGEL/MW	50	60.3	25	150	175	21.92	4	4.98	0.12	0.74	0.86	19.92	0.48	2.96	3.44
50	HSAD-CDD-BHL-1-B513-14-22B-HC	75.5	10/40	PGEL/MW	350	355.6	10	40	50	33.5	4	44.9	0.44	1.8	2.24	179.6	1.76	7.2	8.96
51	HSAD-CDD-BHL-1-B514-14-22B-HC	104.7	10/40	PGEL/MW	350	355.6	10	40	50	49.47	4	66.32	0.66	2.65	3.31	265.28	2.64	10.6	13.24
52	HSAD-CDD-BHL-1-B515-14-22B-HC	140.1	10/40	PGEL/MW	350	355.6	10	40	50	4.48	4	6	0.06	0.24	0.3	24	0.24	0.96	1.2

SL NO	LINE NUMBER	WORK TEMP	INS THK	INSULATION MATERIAL	NB	OD	INS THK PYROGEL	INS THK MINWOOL	INS THK TOTAL	PIPE LENGTH	NO OF UNITS	PER UNIT				TOTAL			
												INS AREA PER UNIT	INS VOL PG PER UNIT	INS VOL MW PER UNIT	INV VOL COMB PER UNIT	INS AREA TOTAL	INS VOL PG TOTAL	INS VOL MW TOTAL	INS VOL COMB TOTAL
												[Sq.m]	[Cu.m]	[Cu.m]	[Cu.m]	[Sq.m]	[Cu.m]	[Cu.m]	[Cu.m]
53	HSAD-CDD-BHL-1-B516-14-22B-HC	140.1	10/40	PGEL/MW	350	355.6	10	40	50	21.73	4	29.14	0.29	1.16	1.45	116.56	1.16	4.64	5.8
54	HSAE-FDW-BHL-1-B601-16-11C-HC	170.4	20/50	PGEL/MW	400	406.4	20	50	70	42.75	4	65.5	1.31	3.28	4.58	262	5.24	13.12	18.32
55	HSAE-FDW-BHL-1-B602-6-11B-HC	170.4	20/40	PGEL/MW	150	168.3	20	40	60		3	1.91	0.04	0.07	0.11	7.64	0.16	0.28	0.44
56	HSAE-FDW-BHL-1-B603-12-11B-HC	170.4	20/50	PGEL/MW	300	323.8	20	50	70	1.88	4	2.29	0.05	0.12	0.17	9.16	0.2	0.48	0.68
57	HSAE-FDW-BHL-1-B604-14-11B-HC	170.4	20/50	PGEL/MW	350	355.6	20	50	70	8.05	4	10.79	0.22	0.54	0.76	43.16	0.88	2.16	3.04
58	HSAE-FDW-BHL-1-B605-12-11B-HC	170.4	20/50	PGEL/MW	300	323.8	20	50	70	11.93	4	14.57	0.29	0.73	1.02	58.28	1.16	2.92	4.08
59	HSAE-FDW-BHL-1-B606-10-51C-HC	174.4	20/50	PGEL/MW	250	273.1	20	50	70	10.09	4	10.39	0.2	0.52	0.72	41.56	0.8	2.08	2.88
60	HSAE-FDW-BHL-1-B607-4-51C-HC	174.4	20/40	PGEL/MW	100	114.3	20	40	60	26.91	4	11.59	0.23	0.47	0.7	46.36	0.92	1.88	2.8
61	HSAE-FDW-BHL-1-B608-12-11B-HC	170.4	20/50	PGEL/MW	300	323.8	20	50	70	1.88	4	2.29	0.05	0.12	0.17	9.16	0.2	0.48	0.68
62	HSAE-FDW-BHL-1-B609-14-11B-HC	170.4	20/50	PGEL/MW	350	355.6	20	50	70	8.05	4	10.79	0.22	0.54	0.76	43.16	0.88	2.16	3.04
63	HSAE-FDW-BHL-1-B610-12-11B-HC	170.4	20/50	PGEL/MW	300	323.8	20	50	70	11.93	4	14.57	0.29	0.73	1.02	58.28	1.16	2.92	4.08
64	HSAE-FDW-BHL-1-B611-10-51C-HC	174.4	20/50	PGEL/MW	250	273.1	20	50	70	10.09	4	10.39	0.2	0.52	0.72	41.56	0.8	2.08	2.88
65	HSAE-FDW-BHL-1-B612-4-51C-HC	174.4	20/40	PGEL/MW	100	114.3	20	40	60	30.91	4	13.32	0.26	0.53	0.79	53.28	1.04	2.12	3.16
66	HSAE-FDW-BHL-1-B613-12-11B-HC	170.4	20/50	PGEL/MW	300	323.8	20	50	70	1.88	4	2.29	0.05	0.12	0.17	9.16	0.2	0.48	0.68
67	HSAE-FDW-BHL-1-B614-14-11B-HC	170.4	20/50	PGEL/MW	350	355.6	20	50	70	8.05	4	10.79	0.22	0.54	0.76	43.16	0.88	2.16	3.04
68	HSAE-FDW-BHL-1-B615-12-11B-HC	170.4	20/50	PGEL/MW	300	323.8	20	50	70	11.93	4	14.57	0.29	0.73	1.02	58.28	1.16	2.92	4.08
69	HSAE-FDW-BHL-1-B616-10-51C-HC	174.4	20/50	PGEL/MW	250	273.1	20	50	70	11.32	4	11.65	0.23	0.59	0.82	46.6	0.92	2.36	3.28
70	HSAE-FDW-BHL-1-B617-4-51C-HC	174.4	20/40	PGEL/MW	100	114.3	20	40	60	26.91	4	11.59	0.23	0.47	0.7	46.36	0.92	1.88	2.8
71	HSAE-FDW-BHL-1-B618-14-51C-HC	174.4	20/50	PGEL/MW	350	355.6	20	50	70	7.44	4	9.97	0.2	0.5	0.71	39.88	0.8	2	2.84
72	HSAE-FDW-BHL-1-B619-14-51C-HC	174.4	20/50	PGEL/MW	350	355.6	20	50	70	50.6	4	67.84	1.36	3.4	4.75	271.36	5.44	13.6	19
73	HSAE-FDW-BHL-1-B620-14-51C-HC	202.9	20/75	PGEL/MW	350	355.6	20	75	95	32.34	4	43.36	0.86	3.25	4.12	173.44	3.44	13	16.48
74	HSAE-FDW-BHL-1-B621-14-61C-HC	236.5	20/75	PGEL/MW	350	355.6	20	75	95	41.68	4	55.87	1.12	4.19	5.3	223.48	4.48	16.76	21.2
75	HSAE-FDW-BHL-1-B622-3-51C-HC	174.4	20/40	PGEL/MW	80	88.9	20	40	60	70.88	4	23.76	0.48	0.95	1.43	95.04	1.92	3.8	5.72
76	HSAB-BS-BHL-1-B194-6-11C-HC	172	20/40	PGEL/MW	150	168.3	20	40	60	72.46	4	45.97	0.92	1.84	2.76	183.88	3.68	7.36	11.04
77	HSAB-EXS-BHL-1-B006-8-21C-HC	312.3	30/100	PGEL/MW	200	219.1	30	100	130	13.67	4	11.29	0.34	1.13	1.46	45.16	1.36	4.52	5.84
78	HSAB-EXS-BHL-1-B301-8-21C-HC	338.7	25/90	PGEL/MW	200	219.1	25	90	115	23.8	4	19.66	0.49	1.76	2.26	78.64	1.96	7.04	9.04
79	HSAB-EXS-BHL-1-B303-10-21C-HC	262.6	25/75	PGEL/MW	250	273.1	25	75	100	35.38	4	36.42	0.91	2.74	3.65	145.68	3.64	10.96	14.6
80	HSAB-EXS-BHL-1-B305-10-11C-HC	196.5	20/50	PGEL/MW	250	273.1	20	50	70	7.02	4	7.22	0.14	0.36	0.5	28.88	0.56	1.44	2
81	HSAB-EXS-BHL-1-B306-10-11C-HC	196.5	20/50	PGEL/MW	250	273.1	20	50	70	7.47	4	7.69	0.16	0.38	0.54	30.76	0.64	1.52	2.16
82	HSAB-EXS-BHL-1-B307-14-11C-HC	196.5	20/50	PGEL/MW	350	355.6	20	50	70	1	4	1.34	0.02	0.07	0.1	5.36	0.08	0.28	0.4
83	HSAB-EXS-BHL-1-B308-14-11C-HC	196.5	20/50	PGEL/MW	350	355.6	20	50	70	17.91	4	24.01	0.48	1.2	1.68	96.04	1.92	4.8	6.72
84	HSAB-EXS-BHL-1-B309-8-11C-HC	196.5	20/50	PGEL/MW	200	219.1	20	50	70	13.11	4	10.82	0.22	0.54	0.76	43.28	0.88	2.16	3.04
85	HSAB-EXS-BHL-1-B312-16-11C-HC	142.98	10/40	PGEL/MW	400	406.4	10	40	50	3.48	4	5.33	0.05	0.22	0.26	21.32	0.2	0.88	1.04
86	HSAB-EXS-BHL-1-B313-16-11C-HC	142.98	10/40	PGEL/MW	400	406.4	10	40	50	3.48	4	5.33	0.05	0.22	0.26	21.32	0.2	0.88	1.04
87	HSAB-EXS-BHL-1-B314-24-11C-HC	142.98	15/50	PGEL/MW	600	610	15	50	65	1	4	2.3	0.04	0.12	0.16	9.2	0.16	0.48	0.64
88	HSAB-EXS-BHL-1-B316-20-11C-HC	107.33	15/50	PGEL/MW	500	508	15	50	65	2.86	4	5.47	0.08	0.28	0.36	21.88	0.32	1.12	1.44
89	HSAB-EXS-BHL-1-B317-20-11C-HC	107.33	15/50	PGEL/MW	500	508	15	50	65	2.86	4	5.47	0.08	0.28	0.36	21.88	0.32	1.12	1.44
90	HSAB-EXS-BHL-1-B318-30-11C-HC	107.33	15/50	PGEL/MW	750	762	15	50	65	27.71	4	79.6	1.19	3.98	5.17	318.4	4.76	15.92	20.68
91	HSAB-EXS-BHL-1-B320-30-11C-HC	78.17	15/50	PGEL/MW	750	762	15	50	65	5.17	4	14.86	0.23	0.74	0.97	59.44	0.92	2.96	3.88
92	HSAB-EXS-BHL-1-B321-30-11C-HC	78.17	15/50	PGEL/MW	750	762	15	50	65	5.17	4	14.86	0.23	0.74	0.97	59.44	0.92	2.96	3.88
93	HSAB-EXS-BHL-1-B322-44-11C-HC	78.17	15/50	PGEL/MW	1100	1118	15	50	65	26.71	4	112.57	1.69	5.63	7.32	450.28	6.76	22.52	29.28
94	HSAB-HD-BHL-1-B701-6-21B-HC	208.8	20/65	PGEL/MW	150	168.3	20	65	85	19.39	4	12.3	0.25	0.8	1.06	49.2	1	3.2	4.24
95	HSAB-HD-BHL-1-B702-6-21B-HC	204.3	20/65	PGEL/MW	150	168.3	20	65	85	6.98	4	4.43	0.08	0.29	0.37	17.72	0.32	1.16	1.48
96	HSAB-HD-BHL-1-B703-6-21B-HC	208.8	20/65	PGEL/MW	150	168.3	20	65	85	4.03	4	2.56	0.05	0.17	0.22	10.24	0.2	0.68	0.88
97	HSAB-HD-BHL-1-B704-6-21B-HC	170.4	20/40	PGEL/MW	150	168.3	20	40	60	6.14	4	3.9	0.08	0.16	0.24	15.6	0.32	0.64	0.96
98	HSAB-HD-BHL-1-B705-6-21B-HC	208.8	20/65	PGEL/MW	150	168.3	20	65	85	4.58	4	2.9	0.06	0.19	0.25	11.6	0.24	0.76	1
99	HSAB-HD-BHL-1-B706-8-21B-HC	208.8	10/40	PGEL/MW	200	219.1	10	40	50	19.02	4	15.71	0.16	0.62	0.78	62.84	0.64	2.48	3.12
100	HSAB-HD-BHL-1-B708-6-21B-HC	180.4	20/40	PGEL/MW	150	168.3	20	40	60	4.03	4	2.56	0.05	0.11	0.16	10.24	0.2	0.44	0.64
101	HSAB-HD-BHL-1-B709-6-21B-HC	180.4	20/40	PGEL/MW	150	168.3	20	40	60	8.39	4	5.33	0.11	0.22	0.32	21.32	0.44	0.88	1.28
102	HSAB-HD-BHL-1-B710-6-21B-HC	180.4	20/40	PGEL/MW	150	168.3	20	40	60	4.58	4	2.9	0.06	0.12	0.18	11.6	0.24	0.48	0.72
103	HSAB-HD-BHL-1-B711-8-21B-HC	180.4	10/40	PGEL/MW	200	219.1	10	40	50	17.16	4	14.17	0.14	0.56	0.71	56.68	0.56	2.24	2.84
104	HSAB-HD-BHL-1-B714-36-11B-HC		15/50	PGEL/MW	900	914	15	50	65	5.46	4	18.82	0.29	0.94	1.22	75.28	1.16	3.76	4.88
105	HSAB-HD-BHL-1-B751-6-11B-HC	110.3	10/40	PGEL/MW	150	168.3	10	40	50	3.88	4	2.46	0.02	0.1	0.12	9.84	0.08	0.4	0.48
106	HSAB-HD-BHL-1-B753-6-11B-HC	110.3	10/40	PGEL/MW	150	168.3	10	40	50	5.94	4	3.77	0.04	0.16	0.19	15.08	0.16	0.64	0.76
107	HSAB-HD-BHL-1-B754-8-11B-HC	110.3	10/40	PGEL/MW	200	219.1	10	40	50	10.76	4	8.89	0.08	0.36	0.44	35.56	0.32	1.44	1.76
108	HSAB-HD-BHL-1-B755-8-11B-HC	81.1	10/40	PGEL/MW	200	219.1	10	40	50	3.99	4	3.3	0.04	0.13	0.17	13.2	0.16	0.52	0.68
109	HSAB-HD-BHL-1-B757-8-11B-HC	81.1	10/40	PGEL/MW	200	219.1	10	40	50	5.64	4	4.66	0.05	0.19	0.24	18.64	0.2	0.76	0.96
110	HSAB-HD-BHL-1-B758-10-11B-HC	81.1	10/40	PGEL/MW	250	273.1	10	40	50	10.99	4	11.32	0.11	0.46	0.56	45.28	0.44	1.84	2.24
111	HSAB-HD-BHL-1-B759-10-11B-HC	78	10/40	PGEL/MW	250	273.1	10	40	50	28.86	4	29.71	0.3	1.19	1.49	118.84	1.2	4.76	5.96

SL NO	LINE NUMBER	WORK TEMP	INS THK	INSULATION MATERIAL	NB	OD	INS THK PYROGEL	INS THK MINWOOL	INS THK TOTAL	PIPE LENGTH	NO OF UNITS	PER UNIT				TOTAL			
												INS AREA PER UNIT	INS VOL PG PER UNIT	INS VOL MW PER UNIT	INV VOL COMB PER UNIT	INS AREA TOTAL	INS VOL PG TOTAL	INS VOL MW TOTAL	INS VOL COMB TOTAL
												[Sq.m]	[Cu.m]	[Cu.m]	[Cu.m]	[Sq.m]	[Cu.m]	[Cu.m]	[Cu.m]
112	HSAF-HD-BHL-1-B760-10-11B-HC	78	10/40	PGEL/MW	250	273.1	10	40	50	14.75	4	15.19	0.16	0.61	0.77	60.76	0.64	2.44	3.08
113	HSSA-AXS-BHL-1-B004-14-11C-HC	220	10/65	PGEL/MW	350	355.6	10	65	75	2.59	4	3.47	0.04	0.23	0.26	13.88	0.16	0.92	1.04
114	HSSA-AXS-BHL-1-B214-3-21C-HC	260	15/65	PGEL/MW	80	88.9	15	65	80	4.83	4	1.62	0.02	0.11	0.13	6.48	0.08	0.44	0.52
115	HSSA-AXS-BHL-1-B215-1.5-21C-HC	260	0/80	PGEL/MW	40	48.3	0	80	80	5.31	4	0.97	0	0.07	0.07	3.88	0	0.28	0.28
116	HSSA-AXS-BHL-1-B216-1.5-21C-HC	260	0/80	PGEL/MW	40	48.3	0	80	80	4.59	4	0.84	0	0.07	0.07	3.36	0	0.28	0.28
117	HSSA-AXS-BHL-1-B264-8-11C-HC	190	20/50	PGEL/MW	200	219.1	20	50	70	65.24	4	53.89	1.08	2.7	3.78	215.56	4.32	10.8	15.12
118	WBS-GS-BHL-1-T100-2-21C-HC		20/65	PGEL/MW	50	60.3	20	65	85	1	4	0.23	0	0.01	0.01	0.92	0	0.04	0.04
119	WBS-GS-BHL-1-T103-12-11B-HC		30/100	PGEL/MW	300	323.8	30	100	130	1.37	4	1.67	0.05	0.17	0.22	6.68	0.2	0.68	0.88
120	WBS-GS-BHL-1-T104-6-11B-HC		25/90	PGEL/MW	150	168.3	25	90	115	2.37	4	1.5	0.04	0.13	0.17	6	0.16	0.52	0.68
121	WBS-GS-BHL-1-T105-10-11B-HC		25/100	PGEL/MW	250	273.1	25	100	125	2.93	4	3.01	0.07	0.3	0.37	12.04	0.28	1.2	1.48
122	WBS-GS-BHL-1-T120-6-11B-HC		25/90	PGEL/MW	150	168.3	25	90	115	26.3	4	16.69	0.42	1.5	1.92	66.76	1.68	6	7.68
123	WBS-GS-BHL-1-T121-6-11B-HC		25/90	PGEL/MW	150	168.3	25	90	115	8.59	4	5.45	0.13	0.49	0.62	21.8	0.52	1.96	2.48
TOTAL												3113.9	71.26	267.2	338.5	7357.17	148.9	526.37	675.22