

Annexures



Annexure I
(Referred to in Paragraph 1.5)

Statement showing revision in configuration of processing units

Sl. No.	Units	Year 2006	Year 2008	Year 2009	Year 2010	Objective	Reasons for revision
1.	CDU III	Not envisaged	3.00 MMTPA	No change	No change	To increase the refining capacity.	To provide flexibility in processing low value high acid crudes
2	PFCCU	2.07 MMTPA	2.20 MMTPA	No change	No change	Additional throughput and production of Propylene. Operate on Low Sulphur feedstock and aromatic rich FCC Naphtha.	Based on revised & optimized LP runs for 5.5 MMTPA Mumbai High crude and 9.5 MMTPA Arab Heavy crude.
3.	DHDT	3.25 MMTPA	3.70 MMTPA	No change	No change	Upgrade High Sulphur & Low Cetane SR gas oil and cracked Diesel range streams into Diesel fuel of BS III & IV specifications.	Light Naphtha hydro treatment was also considered as a part of Diesel hydro treatment and hence increased.
4.	DCU	3.18 MMTPA	3.00 MMTPA	No change	No change	To minimize Fuel Oil production by upgrading the High Sulphur Short Residue into distillates and Naphtha.	Considering the increased capacity of DHDT.
5.	CHTU	Not planned	0.65 MMTPA	No change	No change	To process the HCGO stream from DCU and straight run VGO so as a feeder unit to PFCCU.	To overcome the high modifications with long shut down period of HCU revamping.
6.	HGU	47 KTPA	70 KTPA	No change	No change	To meet the requirement of Hydrogen in processing unit.	Based on the actual requirement as per Licensor data with margins, keeping in view the criticality of Hydrogen.

Sl. No.	Units	Year 2006	Year 2008	Year 2009	Year 2010	Objective	Reasons for revision
7.	SRU	315 TPD	555 TPD	No change	No change	To recover the Sulphur from Amine.	Considering the Hydro treating in CHTU the capacity increased.
8.	LOBS	0.25 MMTPA	Dropped	No change	No change	To produce Lube, Oil etc. from the unconverted Hydro cracker bottom stream by use of MH Crude VGO and Coker Heavy Gas Oil.	Deleted based on the feedback from the Licensor that desired quality was not possible and also lower long term market growth.
9.	PPU	Not envisaged	Not envisaged	0.44 MMTPA	No change	To produce Polypropylene from Propylene.	-
10.	SPM	Not envisaged	Not envisaged	Not envisaged	Included	To ensure smooth discharge of imported crude, through larger vessels at the nearby Mangalore Port	-

Annexure II
(Referred to in Paragraph 1.5)
Statement showing estimated cost in 2006 and further revisions

(₹ in crore)

Sl No	Details	2006	2008	2009	2010
1	Land	10	91	91	91
2	Site Development	30	192	192	192
3	Process know how/Basic Engineering	76	109	109	109
4	PMC/Det. Engg./etc.	456	828	828	828
5	Plant and Machinery	5,841	8,964	8,712	8,712
6	Water Supply & Public health	-	100	100	100
7	Buildings	30	50	50	50
8	Construction site facilities	29	45	45	45
9	Owners construction Period expenses	78	124	124	124
10	Start up and commissioning	58	108	108	108
11	Contingency 10%	661	1,061	1,061	1,061
12	Working Capital margin	120	153	153	153
13	Financing Charges	554	587	587	587
	Total	7,943	12,412	12,160	12,160
14	PPU	-	-	1804	1804
15	SPM	-	-	-	1044
	Total Cost	7,943	12,412	13,964	15,008

Annexure III

(Referred to in Paragraph 3.2)

Working of revenue loss due to export of excess products

Product	Average domestic sales value (₹ per MT)	Average export value (₹ per MT)	Average difference (₹ per MT)	Qty. exported (MT)	Less realisation (₹ in crore)	Cost (₹ per MT)	Difference (₹ per MT)	Cost not recovered (₹ in crore)
			[2]-[3]		[4]x[5]		[7]-[3]	
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
2011-12								
ATF	49,031	48,328	703	8,30,000	58.35	48,268		
Furnace Oil	36,075	32,307	3,768	16,10,000	606.65	32,270		
HSD	48,551	46,669	1,882	7,20,000		47,541	872	62.78
Naphtha	48,518	46,153	2,365	11,10,000		47,517	1,364	151.40
Total					665.00			214.19
2012-13								
ATF	55,382	54,314	1,068	11,40,000		54,354	40	4.56
HSD	53,761	51,258	2,503	11,80,000		53,762	2,504	295.47
Naphtha	53,202	48,949	4,253	13,40,000		51,233	2,284	306.06
Total					0.00			606.09
2013-14								
ATF	59,473	58,014	1,459	14,10,000	205.72	57,140		
HSD	56,696	57,253	-557	7,10,000		58,130	877	62.27
Naphtha	56,881	55,157	1,724	13,60,000	234.46	54,877		
Total					440.18			62.27
2014-15								
ATF	50,709	46,183	4,526	8,10,000		50,426	4,243	343.68
Furnace Oil	33,426	30,158	3,268	13,30,000	434.64	28,603		
HSD	41,590	42,190	-600	6,30,000		46,308	4,118	259.43
Naphtha	52,057	44,511	7,546	9,70,000	731.96	43,403		
Total					1,166.61			603.12
2015-16								
ATF	31,274	27,746	3,528	5,70,000		29,565	1,819	103.68
Furnace Oil	19,702	17,316	2,386	3,00,000	71.58	15,110		
HSD	29,319	24,925	4,394	3,80,000		26,965	2,040	77.52
MS BS III	39,415	34,856	4,559	20,000	9.12	28,838		
Naphtha	33,246	28,708	4,538	9,30,000	422.03	27,109		
Total					502.73			181.20
Grand Total					2,774.52			1,666.86

Annexure IV

(Referred to in Paragraph 3.3)

Loss of revenue due to non-achievement of Design Yield

HCU – I

Major Products	Design yield (percent)	Design Yield (MT)	Actual Production (MT)	Difference [4]-[3]	Sales realization per MT (₹)	Differential Amount (₹ in crore) [5]x[6]
[1]	[2]	[3]	[4]	[5]	[6]	[7]
2011-12 (Feed 13,58,308 MT)						
LPG	2.62	35,588	37,255	1,667	44,298	7.39
Naphtha	15.51	2,10,674	2,77,379	66,705	48,518	323.64
Kerosene & HSD	81.61	11,08,515	9,83,657	-1,24,858	48,551	-606.20
2012-13 (Feed 13,85,747 MT)						
LPG	2.62	36,307	40,938	4,631	52,543	24.33
Naphtha	15.51	2,14,929	3,15,252	1,00,323	53,202	533.74
Kerosene & HSD	81.61	11,30,908	8,52,407	-2,78,501	53,761	-1,497.25
2013-14 (Feed 14,64,476 MT)						
LPG	2.62	38,369	46,101	7,732	58,468	45.21
Naphtha	15.51	2,27,140	3,27,193	1,00,053	56,881	569.11
Kerosene & HSD	81.61	11,95,159	8,55,698	-3,39,461	56,696	-1,924.61
2014-15 (Feed 14,50,229 MT)						
LPG	2.62	37,996	29,597	-8,399	43,754	-36.75
Naphtha	15.51	2,24,931	2,59,564	34,633	52,057	180.29
Kerosene & HSD	81.61	11,83,532	10,12,214	-1,71,318	41,590	-712.51
Total loss of revenue - HCU I						-3,093.61

HCU – II

Major Products	Design yield (percent)	Design Yield (MT)	Actual Production (MT)	Difference [4]-[3]	Sales realization per MT (₹)	Differential Amount (₹ in crore) [5]x[6]
[1]	[2]	[3]	[4]	[5]	[6]	[7]
2011-12 (Feed 15,52,452 MT)						
LPG	2.55	39,588	23,861	-15,727	44,298	-69.67
Light Naphtha	7.11	1,10,379	1,61,145	50,766	48,518	166.90
Heavy Naphtha	13.60	2,11,133	1,94,768	-16,365		
Kerosene	27.60	4,28,477	2,57,272	-1,71,205	48,984	-838.63
Diesel	43.60	6,76,869	7,56,304	79,435	48,551	385.66
2012-13 (Feed 15,11,598 MT)						
LPG	2.55	38,546	36,295	-2,251	52,543	-11.83
Light Naphtha	7.11	1,07,475	1,38,306	30,831	53,202	-22.16
Heavy Naphtha	13.60	2,05,577	1,70,581	-34,996		
Kerosene	27.60	4,17,201	3,65,804	-51,397	55,034	-282.86
Diesel	43.60	6,59,057	5,46,771	-1,12,286	53,761	-603.66
2013-14 (Feed 15,46,985 MT)						
LPG	2.55	39,448	46,653	7,205	58,468	42.13
Light Naphtha	7.11	1,09,991	1,62,717	52,726	56,881	255.70
Heavy Naphtha	13.60	2,10,390	2,02,617	-7,773		
Kerosene	27.60	4,26,968	3,54,685	-72,283	58,133	-420.20
Diesel	43.60	6,74,485	5,60,714	-1,13,771	56,696	-645.04
2014-15 (Feed 16,67,480 MT)						
LPG	2.55	42,521	39,500	-3021	43,754	-13.22
Light Naphtha	7.11	1,18,558	1,44,672	26114	52,057	-44.07
Heavy Naphtha	13.60	2,26,777	1,92,198	-34579		
Kerosene	27.60	4,60,224	3,56,744	-103480	52,644	-544.76
Diesel	43.60	7,27,021	5,85,295	-141726	41,590	-589.44
Total loss of revenue - HCU II						-3,235.15
Grand Total – loss of revenue in HCI 1 and HCU 2						-6,328.76

Note: Average sales realisation for Naphtha considered for both Light and Heavy Naphtha as separate rates not available.

Annexure V A

(Referred to in Paragraph 3.6.2)

Loss due to delay in commissioning of Poly Propylene unit resulting in avoidable diversion of Propylene into LPG pool (August 2014 to May 2015)

Period	Quantity fed in PFCCU (MT)	Actual Yield (MT)	
		LPG	Propylene
August 2014 to March 2015	5,16,050	2,27,614	2,413
April 2015	81,002	24,657	1,306
May 2015	99,870	30,623	232
Total	6,96,922	2,82,894	3,951
Actual yield of Propylene in percentage (Actual Yield MT/Total Quantity fed x 100)		[A]	0.57%
Design yield (in percent)		[B]	20.60%
Lower yield of propylene (in per cent) [B]-[A]		[C]	20.03%
Propylene shortage (MT) (C x Quantity fed in PFCCU)		[D]	1,39,615
Propylene actually produced (MT)		[E]	3,951
Propylene which should have been produced (MT) [D]+[E]		[F]	1,43,566
Design yield of Propylene to Poly Propylene		[G]	99.60%
Quantity of Poly Propylene not achieved (MT) [F]x[G]		[H]	1,42,992

Product	Margin ₹/MT	Qty (MT)	Loss (₹)
Poly Propylene less produced	31,005	1,42,992	4,43,34,66,960
Less: LPG produced	4,215	1,43,566	(60,51,30,690)
Loss of margin			3,82,83,36,270

Annexure V B

(Referred to in Paragraph 3.6.3)

Loss due to low yield of Propylene in PFCCU after commissioning of PPU (June 2015 to March 2016)

Period	Quantity fed in PFCCU (MT)	Yield (MT)	
		LPG	Propylene
June 2015 to March 2016	14,14,595	3,90,263	154611
Yield in percentage (Yield/Quantity fed x 100)		[A]	10.93%
Design yield (in percent)		[B]	20.60%
Lower yield of Propylene [B]-[A]		[C]	9.67%
Propylene shortage [C] x Quantity fed		[D]	136791
Design yield of Propylene to Poly Propylene		[E]	99.60%
Quantity of Poly Propylene not achieved [E] x [D]		[F]	1,36,244

Product	Margin ₹/MT	Quantity (MT)	Loss (₹)
Poly Propylene less produced	31,005	1,36,244	4,22,42,45,220
Less: LPG produced	4,215	1,36,791	(57,65,74,065)
Loss of margin			3,64,76,71,115

Annexure VI
(Referred to in Paragraph 4.3.2)
Details of unit-wise total shutdown hours

(in Hours)

Sl. No.	Unit	2012-13	2013-14	2014-15	2015-16
1.	Crude Distillation Unit-1				30
2.	Crude Distillation Unit-2		25	28	9
3.	Crude Distillation Unit-3		563	720	326
4.	Hydrocracker Unit-1	30	99	32	99
5.	Hydrocracker Unit-2		128		67
6.	Diesel Hydro Desulphurisation Unit		309	362	73
7.	Coker Heavy Gas Oil Hydrotreater			235	173
8.	Petro-Fluid Catalytic Cracking Unit			272	166
9.	Delayed Coking Unit			395	52
10.	Poly Propylene Unit				63
11.	Gas Oil Hydro Desulphuriser Unit		42		73
12.	Isomerization Unit		36		146
13.	Continuous Catalytic Reforming-1		34		70
14.	Continuous Catalytic Reforming-2		17		34
	Total	30	1,253	2,044	1,381

