



*Chennai Petroleum Corporation Limited*

(A Government of India Enterprise and Group Company of IOCL)

# **FACT BOOK 2023-24**

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# GENERAL INFORMATION

## ABOUT CPCL

### INTRODUCTION

Chennai Petroleum Corporation Limited (CPCL) (formerly known as Madras Refineries Limited) was formed as a joint venture of the Government of India (GOI), Amoco India Inc., U.S.A. and National Iranian Oil Company (NIOC), Iran with the initial equity contribution in the ratio of 74:13:13. The company was incorporated on 30.12.1965 as a Public Limited Company. Amoco Inc. disinvested its equity holding in favour of GOI in 1985. Later, Govt. of India transferred its equity share of 51.89% to Indian Oil Corporation Limited.

The Manali Refinery was originally designed for processing 2.5 MMTPA (Million Metric Tonnes Per Annum) of imported Darius crude from Iran. The construction of the refinery was completed in a record time of 27 months at a cost of Rs.43 Crores without any cost or time overrun. The Manali refinery was commissioned in 1969. CPCL's Manali refining capacity was increased from 2.5 MMTPA to 2.8 MMTPA in the year 1980 through debottlenecking. Subsequently, the refining capacity was doubled to 5.6 MMTPA in 1984-85 at a cost of Rs.170 Crores. The overall refining capacity at Manali was enhanced further to 6.5 MMTPA in March 1993. In order to meet the stringent product specifications, CPCL had set-up a 3.0 MMTPA expansion project in 2003, paving the way for upgrading the quality of products produced, improving the yield of Distillates and retaining emissions at the existing levels even at higher capacity at Manali. This 3.0 MMTPA unit was revamped to 4.0 MMTPA in the year 2010 thus raising the capacity of Manali Refinery to 10.5 MMTPA.

CPCL's Cauvery Basin Refinery (CBR) was commissioned in November 1993 with a capacity of 0.5 MMTPA as well head Refinery to process Narimanam crude. In addition to Narimanam Crude, the Off-shore PY-3 Crude was also allocated to CBR. CPCL completed the CBR expansion from 0.5 to 1.0 MMTPA in 2002 and a Jetty facility was commissioned in 2003. CPCL's CBR is

the first Indian Refinery to obtain ISO 9002 certification and first South Indian Refinery to obtain ISO 14001 certification. CPCL has obtained the following IMS certification from M/s.Bureau Veritas in "Manufacture and supply of petroleum products": ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018. However, the CBR plant was decommissioned in 2020 and a new project Cauvery Basin Refinery and Petrochemicals limited is coming up as a joint venture between Indian Oil Corporation Ltd and CPCL.

The main products of the company are LPG, Motor Spirit, Superior Kerosene, Aviation Turbine Fuel, High Speed Diesel, Naphtha, Bitumen, Lube Base Stocks, Paraffin Wax, Fuel Oil and Hexane. In addition, CPCL, as a mother industry, supplies Petrochemical feed stocks like Propylene, Butylene's streams for the manufacture of Propylene Oxide, Propylene Glycol, MEK, Polybutylene and Kerosene stream for the manufacture of Linear Alkyl Benzene, etc. CPCL has always strived to adhere to specifications and produce quality products. CPCL is producing BS Diesel and MS meeting BS-VI HSD requirements as per Fuel Policy-Road map of MoP&NG after implementing large scale projects.

CPCL has been signing annually, Memorandum of Understanding (MoU) with the Government of India since 1990-91 onwards and with the present parent company, Indian Oil from the year 2004-05.

All Fuel products including Bitumen and Lubes of the Manali Refinery and all the products of CBR are marketed through Indian Oil Corporation Limited. CPCL also does direct marketing of some of its special products from Manali Refinery, like Paraffin Wax, Propylene, Hexane, Naphtha, LAB and Petrochemical feedstock, Petcock, Sulphur etc.

CPCL has successfully implemented BS-VI Quality upgradation projects for BS-VI Quality products and RLNG projects inside CPCL to consume the RLNG in the process stream and also as Fuel.

## VISION AND MISSION

### VISION

- To be the most admired Indian Energy Company through world class performance, creating value for stakeholders

### MISSION

- To manufacture and supply petro products at competitive prices, meeting the quality expectations of the customer.
- To pro-actively fulfill social commitments, including environment and safety.
- To constantly innovate new products and alternate fuels.
- To recognize Human Resources as the most valuable asset and foster a culture of participation for mutual growth.
- To ensure high standards of business ethics and corporate governance.
- To maximize growth, achieve national pre-eminence and maximize stakeholder's wealth.

## HIGHLIGHTS - 2023-24

The company processed 11.642 Million Metric Tons (MMT) of crude oil in 2023-24 with the turnover of Rs.79207 Cr. and achieved CAPEX of Rs.611 Cr. The details of physical and financial performance for the year 2023-24 in comparison with 2022-23 are given below:

### PHYSICAL PERFORMANCE

Parameter	2023-24	2022-23
Crude Throughput – Manali in TMT	11642.2	11315.7
FCCU Throughput – Manali in TMT	1055.9	1071.0
OHCU Throughput – Manali in TMT	2384.7	2371.5

Total Secondary Throughput in TMT	5513	5417
Lube Production – CPCL in TMT	247.49	236
Wax Production – CPCL in TMT	25.18	28.1
Light Ends in TMT	2885.9	2587.3
Middle Distillates in TMT	6315.3	6217.0
Heavy Ends in TMT	1781.0	1754.4
Total Distillate - CPCL in %	76.2	76.0
Fuel & Loss – CPCL in %	8.81	9.06
MBN – Manali	72.2	74.2
High Sulphur % - Manali	61.5	66.3
Refinery Capacity Utilization Manali in %	111	107.8

## FINANCIAL PERFORMANCE

Parameter	2023-24	2022-23
Turnover (Rupees in Crores)	79207	90,801
GRM (in \$ per bbl)	8.64	11.91
Operating Cost (Rupees in Cr.) - as per PIS evaluation	691.4	1417.9
Profit Before Tax (Rupees in Cr.)	3600	4809
Profit After Tax (Rupees in Cr.)	2711	3534

## PROJECT

### COMPLETED PROJECTS

#### ISROSENE:

The maiden supply of indigenously produced 34.25 MT of ISROSENE fuel, was successfully supplied to ISRO Propulsion Research Complex (IPRC), Mahendragiri on 27 Mar 2024.

The procedure for manufacturing this product from the existing refinery stream with no involvement of additional CAPEX as an Atmanirbhar Bharat initiative, was developed in-house.

#### *JP-5:*

Specialty fuel for defense aircraft JP-5 fuel (3.0 TKL) was successfully dispatched through the Chennai-Bangalore pipeline to IOC-Terminal at Devanagonthi near Bangalore for the first time on 27 July 2023. This maiden supply improved logistics and operational flexibility to both CPCL & IOCL.

#### *JP-7*

Successfully produced and supplied JP-7(Jet Fuel) to Defense Research and Development Organization (DRDO).

#### *NEW SULPHUR RECOVERY BLOCK:*

As part of Fuel Quality Upgradation project and CPCL's commitment towards sustainability, CPCL has commissioned the new Sulphur Recovery Block consisting of SWS (Sour Water Stripper), ARU (Amine Regeneration Unit) & SRU (Sulphur Recovery Unit) in Apr' 23.

#### *DEMOUNTABLE FLARE:*

CPCL has commissioned all the Hydrocarbon flares of units FCC-GDS, FCCU, Ref-II, Ref-III, DHDT, DCU & Ref-I progressively enabling better flare monitoring and ease of maintenance leading to improved energy optimization.

#### *COKE HANDLING SYSTEM:*

CPCL has installed & commissioned an Automated Wagon loading system for Pet Coke loading. The first consignment of 3250 MT of pet coke was delivered to M/s. Sagar Cements, Telangana (Mattampally) through wagon loading. Pet coke dispatch through Rail has reduced dispatch through truck by 75%, enabled faster evacuation thereby avoiding traffic congestion inside

Refinery. Pet coke is being transported to cement factories located at a distance range of 350 to 750 Kms.

#### **VOC COLLECTION AND REMOVAL SYSTEM IN ETP-III UNIT**

CPCL commissioned the Volatile Organic Compound collection and removal system at ETP-III, thus becoming fully compliant with Minimal National Standards (MINAS) as notified for Oil Refineries.

#### **6 KW ROOFTOP WINDMILL IN CORPORATE OFFICE**

As a part of sustainable development and a step towards net zero, CPCL has set up a 6 kWh Rooftop wind mill plant in CPCL's Corporate Office premises. The power generated by these turbines will cater to the energy needs during the nighttime and will be complemented by our solar PV panels during the daytime. This one-of-a-kind, initiative symbolizes CPCL's commitment towards sustainability.

### **ONGOING PROJECTS**

As a part of growth strategy, CPCL is implementing the following projects aimed at capacity expansion, value addition, reliability improvement and quality Up-gradation.

#### **CBRPL PROJECT:**

Indian Oil Corporation Limited (IOCL), along with Chennai Petroleum Corporation Limited (CPCL) is implementing a 9.0 MMTPA Cauvery Basin Refinery & Petrochemicals Project (CBRPL) at Nagapattinam, on a joint venture basis at a revised estimated cost of around Rs. 36,350 Crore. The new refinery and petrochemical complex will be set up in an area of about 1300 acres. Land acquisition for the project is completed by Govt. of Tamil Nadu and subsequent handing over to CPCL was completed by 31 Oct 23. With the revised project cost capital structure, revised equity contribution (75% by IOCL & 25% by CPCL) and execution philosophy

(Change in BOO/BOOT Packages) was approved by CPCL Board and IOCL Board in the Board meetings held on 20 Feb'24 and 28 Mar'24 respectively. CCEA approval for the project is underway at Ministry level. PESO approval for Construction was obtained on 04 Apr'24. The project is scheduled to be completed in 39 Months from accordance of statutory approval. Meanwhile engineering activities are already underway with a project progress of 10% completion.

#### *7 MW SOLAR POWER PLANT:*

CPCL has also taken up installation of 7 MW solar power plant at the available land near CPCL polytechnic college, for which administrative approvals are in place and tendering process has started. The green power generated from the Solar PV panels will be connected to the TNEB grid for captive consumption through Wheeling arrangement.

#### **FUTURE PROJECTS:**

##### *GROUP II LOBS PROJECT:*

CPCL is planning to implement a project for production of Group II Lube Oil Base Stocks for improved LOBS production. First stage approval has been received from CPCL / IOCL Boards and pre-project activities are in progress.

#### CHAIRMAN & MANAGING DIRECTORS

As on 31-03-2024

<b>Name</b>	<b>Designation</b>	<b>Period</b>	
		<b>From</b>	<b>To</b>
Shri P.R.Nayak	Chairman	02-02-1966	18-02-1969

Shri M.Rama Brahmam	MD	02-02-1966	18-02-1969
	C&MD	18-02-1969	03-02-1972
	Chairman	03-02-1972	15-02-1978
Shri M.S.Nadkarni	MD	03-02-1972	17-11-1978
Shri S.Jagannathan	Chairman	22-05-1978	17-02-1979
		21-04-1979	07-02-1980
Shri S.Narayanaswamy	(Acting), MD	05-12-1978	21-11-1980
Shri A.J.A.Tauro	C&MD	21-11-1980	01-11-1982
Shri V.R.Deenadayalu	C&MD	01-11-1982	23- 05-1990
Shri H.Krishnamurthy	C&MD	02-07-1990	31-03-1993
Shri S.Ramalingam	C&MD	10-09-1993	28-02-1995
Shri K.Ravikumar	C&MD	10-04-1995	20-12-1996
Shri S.N.Mathur	C&MD (Addl. Charge)	18-10-1996	08-09-1997
Shri V.Shyam Sunder	C&MD	26-09-1997	25-11-1998
Shri C.R.Prasad	C&MD (Addl. Charge)	09-08-1999	13-10-1999

Shri S.Rammohan	C&MD	13-10-1999	30-09-2002
Shri M.S.Ramachandran	Chairman	01-10-2002	28-02-2005
Shri S.V.Narasimhan	MD	20-11-2002	30-06-2005
Shri S.Behuria	Chairman	01-03-2005	28-02-2010
Shri R.Sankaran	MD(In-Charge)	01-07-2005	19-01-2006
Shri K.K.Acharya	MD	20-01-2006	30-11-2009
Shri K.Balachandran	MD	01-12-2009	16-11-2011
Shri B.M.Bansal	Chairman	01-03-2010	27-02-2011
Shri R.S.Butola	Chairman	28-02-2011	31-05-2014
Shri S.Venkataramana	MD i/c	17-11-2011	05-07-2012
Shri A.S.Basu	MD	06-07-2012	31-05-2014
Shri B.Ashok	Chairman	24-07-2014	31-05-2016
Shri S.Venkataramana	MD i/c	01-06-2014	13-10-2014
Shri Gautam Roy	MD	14-10-2014	31-01-2018
Shri Sanjeev Singh	Chairman	01-06-2017	30-06-2020

Shri S.N.Pandey	MD	01-02-2018	31-01-2021
Shri. Shrikant Madhav Vaidya	Chairman	01-07-2020	Till date
Shri. Rajeev Ailawadi	MD i/c	01-02-2021	26-08-2021
Shri. Arvind Kumar	MD	27-08-2021	Till date

### IMPORTANT EVENTS

<b>2023-24</b>	
SAKSHAM 2023 was observed as per the directives of MoPNG with theme "Energy Conservation towards Net Zero".	24 April to 08 May 2023
The committee on subordinate legislation under the Chairmanship of Hon'ble Mr. Balashowry Vallabhaneni , Hon'ble Member of parliament, along with 8 Hon'ble Members of parliament met Shri Arvind Kumar, MD, CPCL in Coimbatore and discussed on the rules , regulations, by-laws etc., under various Central legislations being implemented by the Central Government ministries / Departments, organizations & CPSUs. The committee appreciated the efforts undertaken by CPCL in compliance of the various rules and regulations, especially in the area of CSR.	17 May 2023
The Parliamentary Committee on Social Justice and Empowerment chaired by Ms. Rama Devi along with 15 MPs called on CPCL at Ooty.	07 July 2023

Inauguration of Automated Wagon loading facility for Pet coke Loading by Smt. Sujata Sharma IAS, Joint Secretary (Marketing and Oil Refinery), Ministry of Petroleum & Natural Gas	13 July 2023
Smt. Sujata Sharma IAS, Joint secretary, (Marketing and Oil Refinery), MoP&NG inaugurated the two-day CHT activity committee organized by CPCL meet in the presence of Shri Arvind Kumar, MD, CPCL, Shri. Alok Sharma, ED, CHT and other Directors of CPCL.	13 July to 14 July 2023
Shri Arvind Kumar, MD, CPCL Inaugurated the C&I Clean Energy Meet 2023 organized by Chemical Industries Association (CIA) along with MERCOM India.	21 July 2023
Specialty fuel for defense aircraft JP-5 fuel (3.0 TKL) was successfully dispatched through the Chennai-Bangalore pipeline to IOC-Terminal at Devanagonthi	27 July 2023
CPCL signs MoU with IIT Madras as a significant move aimed to bolster industry-academia collaboration and foster the spirit of innovation	14 August 2023
Shri. Arvind Kumar, MD, CPCL inaugurated the VOC system of ETP III	24 August 2023
Stakeholders' Meet on Hydrogen Valley Innovation Cluster (HVIC) at IC&SR Building, IIT Madras	07 September 2023

Shri S.M. Vaidya, Chairman, IndianOil group companies visited CPCL's Manali Refinery	08 September 2023
CPCL signs MoU with M/s RGIPT for Industry Academia Collaboration at CPCL, Corporate office, Chennai	21 September 2023
Memorandum of Understanding was signed with IIT - Madras & VIT - Vellore on 06 Oct 2023, towards CHT Research Project titled "Zero Emission Catalytic pyrolysis of Multilayer Plastic Waste (MLP) to Value Added Products – Circular Economy Approach"	06 October 2023
Australian delegation led by the hon'ble Deputy Chief minister of the Government of the Northern Territory, Australia, Ms. Nicole Manison, and team had a formal discussion and meeting with Shri Arvind Kumar, MD, CPCL regarding collaborative opportunity	13 October 2023
Shri. Arvind Kumar, MD, CPCL inaugurated 3 X 2 kW (6kW combined) rooftop wind turbines, in the presence of other Directors of CPCL Corporate Office	21 October 2023
MD CPCL inaugurated the week-long observance of Vigilance Awareness Week 2023	30 October 2023
Shri. Arvind Kumar, Managing Director, CPCL donated AI enabled smart glasses to the visually challenged workers at ORBIT	03 November 2023
CPCL commemorated Constitution Day	26 November 2023

<p>Shri Arvind Kumar, MD, CPCL exchanged agreement with Industry Secretary, Govt of Tamil Nadu for the investment to the tune of Rs. 17,000 Crore in Cauvery Basin Refinery and Petrochemicals Limited, Nagapattinam during the Global Investors Meet 2024</p>	<p>07 January to 08 January 2024</p>
<p>The Parliamentary Committee on Welfare of Other Backward Classes (OBC), chaired by Hon'ble MP Mr.Rajesh Verma, along with 10 MPs reviewed with CPCL</p>	<p>08 January 2024</p>
<p>The Parliamentary Standing Committee on Petroleum and Natural Gas, chaired by Hon'ble Minister, Mr. Ramesh Bidhuri, Member of Parliament, along with 14 MPs, reviewed CPCL on safety, security and environment issues at Kochi.</p>	<p>19 January 2024</p>
<p>Russian Deputy Minister of Development of the Russian Far East and Arctic, Mr.Anatoly Bobrakov, visited CPCL to discuss about collaborative opportunity and Eastern Maritime Corridor</p>	<p>25 January 2024</p>
<p>Shri Arvind Kumar, MD, CPCL inaugurated the cutting-edge facility "Cyber Security Operations Centre" (SOC) for ensuring the safety and integrity of digital assets in collaboration with M/s. Bharati Airtel.</p>	<p>31 January 2024</p>
<p>MoP&amp;NG along with FIPI organized India Energy Week (IEW) 2024 during Feb 6 – 9 , 2024 at Institute of Petroleum Safety Health and Environment Management (IPSHEM) South Goa. CPCL showcased its presence by setting up an exhibition stall during the event, acquired</p>	<p>06 February to 09 February 2024</p>

enriching experience and invaluable insights in the emerging energy landscape.	
Commissioning of New petrochemical feed stock (Lean Butune) by Shri Rameswar Teli	21 February 2024
International Women's Day was celebrated on 8 March 2024, with Dr. Bhagyam Raghavan, Senior Consultant Radiologist from Apollo Hospitals, delivered an inspiring address as Chief Guest. Various events aimed at showcasing women's talents and fostering camaraderie were organized, drawing enthusiastic participation from a multitude of female employees	08 March 2024
Supply to Manali Downstream Industries	27 March 2024

*Important events-HISTORICAL (from 1965- 2022) is enclosed as Annexure-I*

# PROCESS DESIGN DATA & KEY HIGHLIGHTS

## CPCL - SPECIAL FEATURES

- Refinery-I was constructed in a Record Time of 27 Months
- First Refinery in India to have One of the Integrated Configurations of Process UNITS, Hydrogen Plant, Hydro Desulphurization Units for Naphtha, Kerosene, HSD & Vac. Distillates
- To Process High Sulphur Darius Crude Oil
- To Integrate Process Units for Total Energy Conservation
- Sulphur Recovery Plant
- Biturox for Production
- Retro Fitted Air-pre-heater in the Main Crude Furnace & Utility Boilers
- A Tertiary Treatment Plant for Converting the City Sewage into Valuable Utility Water
- R&D Attached to the Refinery to Assist Operations
- To Introduce Distributed Digital Control System
- To Implement Advanced Control and Computerized Process Optimization
- To Integrate Through Process Information Network
- To Use Set Point Optimization Technology
- To Market Software by Securing Consultancy Contract from Yokogawa Hokushin Electric
- Corporation for Development of Centum Software
- To use Indigenous Bi-Metallic Reforming Catalyst (IPCL / IIP) Successfully & Help in Commercialization
- To have Educational Institutions like ITI & Polytechnic

- 5.8 MGD Desalination Plant was commissioned in 2011 for meeting our water requirement.
- 17.6 MW Windmill meeting the power requirement of Desalination through wheeling.
- Commercialized IOC developed DHDS Catalyst
- Technology developed with EIL for Oxygen Enrichment Unit for SRU
- To install GSU/LRU at Cauvery Basin Refinery.
- To install Chidambaranar Oil Jetty facility at Nagapattinam to receive lower capacity Crude ship tankers.
- Successfully produced and supplied JP-7(Jet Fuel) to Defense Research and Development Organization (DRDO)

**TABLE 1 MANALI PROCESS UNITS DETAILS**

S. No.	Plant	Unit Description	Capacity	Unit of Measure	Year of Commissioning / Revamp
1	1	<b>Refinery – I</b>	2.8	MMTPA	1969
2	15	<b>Refinery - II</b>	3.7	MMTPA	1984 / 1989
3	201	<b>Refinery - III</b>	4.0	MMTPA	2004 / 2010
<b>MRL REFINERY PROJECT</b>					
1	1	CDU-I	2.8	MMTPA	1969
2	2	Vapor Recovery unit	475000	MTPA	1969

3	3	Naphtha Desulphurization and Platformer	90000	MTPA	Dismantled
4	4	Kero HDS	400000	MTPA	1969
5	5	Diesel HDS	240000	MTPA	Dismantled
6	6	Thermal cracker & Visbreaker	220000	MTPA	Dismantled
7	7	Biturox	100000	MTPA	1969/1994
8	8	Furfural Extraction Unit (product)	140000	MTPA	Dismantled
9	9	MEK Dewaxing Unit	320000	MTPA	1969/1994
10	10	Lube Oil Hydro finisher	270000	MTPA	1969/1994
11	11	Hydrogen Plant	11000	NM3/H	Dismantled
12	12	Amine Treating (Rich amine)	98	TPH	1969
13	12	Sulphur Recovery Unit	68	TPD	Dismantled
14	13	Vacuum Distillate HDS	320000	MTPA	1969
<b>REFINERY-II PROJECT</b>					
15	14	Wax Deoiling Unit (product)	30000	MTPA	1984/1998

16	14	Wax HyFi Unit	30000	MTPA	1998
17	15	CDU-II	3.7	MMTPA	1984 / 1989 / 2012
18	16	FCCU	0.8	MMTPA	1984/2004
19	17	SR LPG Merox	66200	MTPA	1984
20	17	Cr LPG Merox	79100	MTPA	1984
21	17	Gasoline Merox	166800	MTPA	1984
22	17	Kero Merox	506500	MTPA	1984
23	18	LPG Amine Treater	66200	MTPA	1984
24	18	Cr LPG Amine Treater	79100	MTPA	1984
25	18	FCC Off gas Amine Treater	31300	MTPA	1984
26	19	Propylene Unit (product)	36000	MTPA	1988
27	19	Butylene Unit	50000	MTPA	1990
<b>LUBE EXPANSION PROJECT</b>					
28	71	Propane Deasphalting	620000	MTPA	1994/2019
29	72	Propane Recovery (product)	6000	MTPA	1994

30	73	NMP Extraction Unit	480000	MTPA	1994
31	74	Food Grade Hexane (product)	25000	MTPA	1994
32	75	Sulphur Recovery Unit	17	TPD	Dismantled

### DHDS PROJECT

33	76	Hydrogen Generation unit	22500	NM3/H	1999
34	77	DHDS	2.34	MMTPA	1999 / 2018
35	78	Sulphur Recovery Unit	2 X 45	TPD	1999
36	79	Amine Regeneration Unit	169.0	TPH	1999/2006
37	80	Sour Water Stripper	11.5	TPH	1999

### REFINERY-III PROJECT

38	201	CDU-III	4.0	MMTPA	2004/2010
39	202	LPG Merox	56000	MTPA	2004/2010
40	203	Kero Merox	600000	MTPA	2004
41	204	Visbreaker	1.15	MMTPA	2004
42	205	Hydrogen Generation Unit	79000	NM3/H	2004

43	205	PSA-II	19000	NM3/H	2004/2020
44	206	CCRU	304000	MTPA	2004/2010
45	207	OHCU	2.25	MMTPA	10th Mar 2017
46	208	Sour Water Stripper	60	TPH	2004
47	209	Amine Regeneration Unit	330	TPH	2004
48	210	Sulphur	2X100	TPD	2004

#### **EURO-IV PROJECT**

49	211	DHDT	2.40	MMTPA	21st May 2011
50	212	ISOM (product)	140000	MTPA	20th Jan 2011
51	213	Sour Water Stripper	13.5	TPH	30th Sep 2011
52	214	Hydrogen Generation Unit	29000	NM3/H	14th Jan 2013

#### **RESID UPGRADATION PROJECT**

53	86	Delayed Coker Unit	2.2	MMTPA	29th Nov 2017
54	87	LPG Treater	8.8	TPH	29th Nov 2017
55	88	Sour Water Stripper	60	TPH	29th Nov 2017
56	89	Amine Regeneration Unit	250	TPH	29th Nov 2017
57	90	Sulphur Recovery Unit	2X100	TPD	30th Mar 2018

#### **BS-VI PROJECT**

58	31	FCC GDS	0.6	MMTPA	17th Feb 2021
59	93	BS-VI SRU	2X100	TPD	08th Apr 2023

**TABLE 2 POWER AND UTILITIES DETAILS**

S. No.	Plant	Unit Description	Capacity	Unit	Year of Commissioning / Revamp
<b>POWER</b>					
1	21	TG A	1 X 8	MW	1969/2017
2	21	TG B	11	MW	1969
3	121	TG 1& 2 (Cogen)	2 X 20	MW	1995
4	230	GT I & II	2 X 22.5	MW	2004
5	230	GT-III	22.5	MW	2008
6	21	GT IV	22.5	MW	2012
7	21	GT V	22.5	MW	9th Sep 2019
<b>STEAM</b>					
7	21	Boiler 1, 2, 3, 4	4 X 85	TPH	Dismantled
8	121	Boiler 1, 2, 3 & 4 (Cogen)	4 X 130	TPH	1994/2005
9	21	Boiler 5	100	TPH	2006

10	21	Boiler 6	150	TPH	29 <sup>th</sup> Dec 2018
11	230	HRSG-I & II	2 X 45	TPH	2004
12	230	HRSG-III	45	TPH	2008
13	21	HRSG-IV	85	TPH	2012
14	21	HRSG-V	100	TPH	9th Sep 2019

#### DM WATER PLANTS

15	23	OPH DM Plant (Old)	2 X 125	M3/H	Dismantled
16	23	OPH DM Plant (New)	150	M3/H	1988
17	123	Cogen DM Plant	2 x 150	M3/H	1994
18	223	CPP DM Plant	3 x 150	M3/H	2003
19	123	Cogen DM Plant (Train C)	150	M3/H	2012
20	423	New DM Plant	2 x 150	M3/H	27 <sup>th</sup> Dec 2017

#### EFFLUENT TREATMENT PLANTS

21	100	ETP-I (Normal inlet flow)	150	M3/H	Dismantled
22	200	ETP-II	300	M3/H	1984 /1993 /2012

23	300	ETP-III	200	M3/H	2003
24	400	ETP-IV	450	M3/H	3 <sup>rd</sup> Dec 2018
<b>SEWAGE RECLAMATION PLANTS</b>					
25	600	Sewage Reclamation Plant-I	2.5	MGD	1991
26	600	Zero Discharge Plant-I	0.8	MGD	2001
27	600	Zero Discharge Plant II	1.0	MGD	2005
28	600	RO Reject Recovery Plant-I	0.4	MGD	2006
29	600	Sewage Reclamation Plant-II	2.5	MGD	2006
30	600	RO Reject Recovery Plant-II	0.5	MGD	2006
<b>DESALINATION PLANT</b>					
31	700	Desalination Plant	5.8	MGD	2011

## PROCESS HIGHLIGHTS

### 2023-24

- Highest Crude Throughput: CPCL achieved the highest ever Crude Throughput of 11.64 MMTPA for the year 2023-24 on par with MoU target, surpassing the previous best of 11.32 MTPA in 2022-23. Monthly highest Crude Throughput of 1072 TMT was processed in March'24, surpassing previous best of 1062 TMT in Mar '22.

- Lowest Fuel & Loss: Fuel and loss for FY23-24 was 8.81 % against target of 8.97 %, lowest ever achieved cumulative figure since commissioning of DCU.
- Best ever MBN: Best ever Specific Energy Consumption (MBN) of 72.2 achieved against target of 73.9 in FY 23-24.
- Best ever EII: Best ever Energy Intensity Index of 87.5% achieved against target of 87.6 % in FY 23-24.
- Implementation of ENCON Schemes: 22 Nos. of Energy Conservation Schemes with a potential savings of 28320 SRFT have been implemented in FY23-24.
- RLNG Maximization: RLNG consumption was maximized at 441 TMT against the previous best of 270 TMT in 2022-23.
- Highest ever Feed rate: Highest ever feed rate has been processed in many process units, namely, CDU-1, CDU-3, ISOM, CCR, OHCU, DHDS and PDA.
- HGU-214 capacity test run: HGU-214 capacity test run was carried out in May '23 after the catalyst replacement. During the capacity test run maximum hydrogen production achieved 30132 Nm<sup>3</sup>/hr (Design:29250 Nm<sup>3</sup>/hr)
- Highest-ever production of H<sub>2</sub> in Plant 76: H<sub>2</sub> Production for 2023-24 was 16648 MT (design capacity: 16222 MT per annum) as against previous best of 14152 MT in the year 2022-23.
- New unit commissioning: BS VI SRU Unit was commissioned in the month of April 23 as a part of BS VI project.
- Highest Product dispatch in CTMPL: Product pipeline CTMPL achieved highest ever single MS batch size of 45 TKL in Aug '23.
- HFHSD: Three parcels (40 TMT each) of HFHSD was exported for the first time in Oct '23.
- QRA study: Quantitative Risk Assessment study for the refinery has been completed and recommendations were provided.

- New products: New products ISRO Naphtha, ISROSENE, JP-5 were produced, collected in storage tanks and dispatched through tankers.
- Closed loop sampling skids: 53 nos of closed loop sampling skids were procured and installed for taking LPG /Naphtha samples across the Refinery.
- ATF Maximization during Russian Crudes Processing: ATF FBP trimming during Ural Crude processing and Recycle operation in Plant 203 during CPC blend crude processing to overcome the ATF Mercaptan Sulfur issue has resulted in maximization of ATF as well as processing of Russian Crudes.
- New crude Siberian Light and Varandey from Russia were successfully processed in CPCL in CDU-III during the month of Nov'23 and Jan' 24 respectively.
- Achieved highest ever OHCU throughput of 2385 TMT in 2023-24 against previous best of 2372 TMT in 2022-23
- Achieved highest ever DCU throughput of 2072 TMT in 2023-24 against previous best of 1975 TMT in 2022-23
- Achieved highest ever throughput of 2.44 MMTPA against the design of 2.34 MMTPA (previous best of 2.32 MMTPA in 2019-20).
- Distillate yield achieved the MoU target of 76.2% for 2023-24.
- MBN and EII of 72.2 and 87.5 were achieved in 2023-24 against 74.2 and 89.2 in 2022-23 respectively.
- Refinery's internal Fuel & Loss was at 8.81 wt% against the target of 9.19 wt%, the lowest ever achieved after DCU commissioning.
- Achieved highest ever BS-VI HSD Production of 5135 TMT in 2023-24 against previous best of 5041 TMT in 2022-23.
- Achieved highest ever Reformate Production of 472.9 TMT in 2023-24 against previous best of 443.9TMT in 2022-23. The highest ever feed rate of 40.8 TMT was processed in Aug' 23, surpassing the previous best of 40.5 TMT in May'23.

- Achieved highest ever Isomerate Production of 257.2 TMT in 2023-24 against previous best of 256.3 TMT in 2022-23. The highest ever feed rate of 24 TMT was processed in Mar'24, surpassing the previous best of 23.1 TMT in Sep' 22.
- Achieved highest ever BS-VI MS Production of 1191 TMT in 2023-24 against previous best of 1142 TMT in 2022-23.
- Achieved highest ever ATF Production of 1050 TMT in 2023-24 against previous best of 1039 TMT in 2022-23.
- Achieved highest ever Naphtha production of 1195 TMT in 2023-24 against previous best of 976 TMT in 2022-23.
- Achieved highest ever Hexane Dispatch of 28.1 TMT in 2023-24 against previous best of 27.8 TMT in 2022-23.
- Achieved highest ever Pet Coke Production of 550 TMT in 2023-24 against previous best of 539 TMT in 2022-23.
- Achieved highest ever MTO production of 40.2 TMT in 2023-24 against previous best of 31.4 TMT in 2022-23
- Achieved highest ever LOBS production of 247 TMT and dispatch of 243 TMT in 2023-24 (Best in 10 years)
- Achieved highest ever Bitumen production of 668 TMT against previous best of 564 TMT in 2015-16
- LOBS dispatch was 243 TMT, which is the highest ever in the last ten years.

**Note:** Process Highlights and Important Process Changes in plants - Historical Data is enclosed as **Annexure –II**

**TABLE 3: PHYSICAL PERFORMANCE**

	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24

<b>MBN</b>	83.1	81.4	86.5	82.6	74.2	72.2
<b>Energy Intensity Index, EII</b>	100.4	100.0	104.5	96.2	89.2	87.5

### NEW CRUDES PROCESSING

- New crude Siberian Light (API: 34.8, Sul: 0.59%, TAN: 0.08 mgKOH/gm) from Russia was successfully processed for the first time in CPCL during the month of Nov' 23.
- New Crude Varandey (API: 37.02 Sul: 0.48%, TAN: 0.04 mgKOH/gm) from Russia was successfully processed for the first time in CPCL during the month of Jan' 24.

### PROCESS IMPROVEMENTS

- During the months of Apr' 23 to Jul' 23. MS Pool VLI was maintained through blending optimization and continuous monitoring.
- Corrosion issues in CDU-1 OVHD were brought under control through normalization of chemicals dosing rate and stoppage of Plant 1 and 12 off gas (sour) to 1K2C, leading to stable performance of 1K2C and 2E1
- Additional make-up water to Desalter and hot feed to DHDS schemes were commissioned during FY 2023-24
- Plant 17 Kero Merox test run was carried out in Oct' 23 with maximum feed rate of 90 m3/hr with any major constraints.
- Scheme for conversion of Gasoline Merox reactors for ATF service as a part of ATF maximization was released in Jun' 23.

- Fuel Gas firing was maximized in Atmospheric and Vacuum furnaces (201 F1 and 201 F2) in Dec' 23. No major limitations were observed in F1 upto crude feed rate of 600 m<sup>3</sup>/hr and in F2 up to Vacuum feed rate of 315 m<sup>3</sup>/hr.
- Trial run to recycle part of the ATF product back to the feed surge drum was carried out in Plant 203 Kero Merox unit in Apr' 23 during CPC Blend Crude processing. This has enabled increasing the CPC Blend content from 25% to 40% in CDU-III feed mix.
- Trial run was taken in Jul' 23 by reducing Kero FBP during Urals Crude processing from the range of 250-260oC to less than 225oC, leading to reduction in RSH from the range of 20-30 ppm to less than 20 ppm in product ATF from Merox unit. Correspondingly, Merox unit throughput and subsequent ATF make could be increased by approximately 10 m<sup>3</sup>/hr.
- Scheme for routing 19C31 bottom stream to FCC main column overhead receiver was commissioned during Apr' 23, thereby reducing slop generation and reprocessing.
- Soft sensor for Propylene purity was developed and implemented in IP 21 in Jul' 23, thus helping to avoid quality giveaway in Propylene.
- Temperature Optimization trial was conducted for ISOM Lead Reactor in Sep' 23 to maximize Isomerate RON. By increasing the lead Reactor outlet temperature to 176oC, Isomerate RON improved by 0.5-1 unit.
- Process scheme issued for ISOM feed augmentation by utilizing Plant-205 PDS in Feb' 24 (Naphtha upgradation – 2.7 TMT/month)
- CCR Feed Augmentation by routing hot syn Naphtha from DHDS to CCR, helping to sustain feed rate during non-availability of OHCU HN or during its high FBP during high flas NATO Diesel production.
- Butner audit carried out in Plant 206 heater (206-F1/F2/F3/F4/F5/F6) in the presence of OEM M/s John Zink in May' 23 to improve efficiency.
- In-situ Rotor balancing of Wet Gas Compressor (WGC) was done by M/s BHEL, leading to reduction in vibration from 84 microns to 44 microns.

- Three hot feed augmentation schemes commissioned in DHDS, where feed temperature was increased from 42°C to 80°C and hot separator temperature increased from 85 to 110°C.

*Benefits:* Corrosion mitigation in Stripper system and Energy saving of around 2800 SRFT/annum.

- Plant 205 capacity test run was carried out.

# INDUSTRY HIGHLIGHTS

## INDUSTRY HIGHLIGHTS 2023-24

1. The refining capacity of India is 256.8 MMTPA as on 01-04-2024.
2. Total Indian Refinery Throughput was 256.8 MMTPA as against 253.9 MMTPA in 2022-23.
3. The consumption of petroleum products during the year 2023-24 was 234.2 MMT as against 223 MMT in 2022-23.
4. The country exported 62.59MMT of petroleum products in 2023-24 as against 61.0 MMT in 2022-23.
5. India imported about 282.9 MMT of crude oil and petroleum products in 2023-24 as against 277.2 MMT in 2022-23.
6. Average Crude Oil price (Indian basket) during the year 2023-24 was \$82.58 per bbl when compared to US \$ 93.15 per bbl for the year 2022-23
7. The cost of crude oil imports was \$ 132.4 Billion during 2023-24 as compared to \$ 157.5 Billion in 2022-23.
8. The natural gas production was 35.7 MMSCM during 2023-24 as against 33.7 MMSCM during 2022-23.
9. The overall gas consumption in India has increased to 66.6 BCM during the year 2023-24 when compared to 59.9 BCM during the year 2022-23.

## MAP OF REFINERIES IN INDIA

-  Indian Oil Corporation Limited (IOCL)
-  Hindustan Petroleum Corporation Limited (HPCL)
-  HPCL-Hindustan Mittal Energy Limited (HMEC) (JV)
-  Bharat Petroleum Corporation Limited (BPCL)
-  Chennai Petroleum Corporation Limited (CPCL)
-  Numaligarh Refineries Limited (NRL)
-  Oil & Natural Gas Corporation Limited (ONGC)
-  ONGC-Mangalore Refineries & Petrochemicals Limited (MRPL)
-  Reliance Industries Limited (RIL)
-  Nayara Energy Limited (NEL)



## Installed Refining Capacity (as on 01.04.2024)

TABLE 4: REFINING CAPACITY OF INDIA

COMPANY	REFINERIES	STATE	CAPACITY ('000MT)
Indian Oil Corporation Limited	IOC, Digboi	Assam	650
	IOC, Guwahati	Assam	1200
	IOC, Koyali	Gujarat	13700
	IOC, Barauni	Bihar	6000
	IOC, Haldia	West Bengal	8000
	IOC, Mathura	Uttar Pradesh	8000
	IOC, Panipat	Haryana	15000
	IOC, Bongaigaon	Assam	2700
	IOC, Paradip	Odisha	15000
Hindustan Petroleum Corporation Limited	HPC, Mumbai	Maharashtra	9500
	HPC, Visakh	Andhra Pradesh	13700
	BPC, Mumbai	Maharashtra	12000

Bharat Petroleum Corporation Limited	BPC, Kochi	Kerala	15500
	BPC, Bina	Madhya Pradesh	7800
Chennai Petroleum Corporation Limited	CPCL, Manali	Chennai	10500
	CPCL, Cauvery Basin*	Chennai	0
Numaligarh Refinery Limited	NRL, Numaligarh	Assam	3000
Oil And Natural Gas Corporation	ONGC, Tatipaka	Andhra Pradesh	66
Mangalore Refinery and Petrochemicals Limited	MRPL, Mangalore	Karnataka	15000
HPCL–Mittal Energy Limited	HMEL, GGSR	Punjab	11300
Reliance Industries Limited	RIL, Jamnagar	Gujarat	33000
	RPL (SEZ), Jamnagar	Gujarat	35200
Nayara Energy Limited	NEL, Vadinar	Gujarat	20000
<b>All India Total</b>			<b>256816</b>

\*Cauvery basin refinery is under capacity augmentation.

**TABLE 5: REFINERY AND CAPACITIES**

<i>Installed Refining Capacity</i>											
<b>REFINERIES</b>	<b>01.04.2014</b>	<b>01.04.2015</b>	<b>01.04.2016</b>	<b>01.04.2017</b>	<b>01.04.2018</b>	<b>01.04.2019</b>	<b>01.04.2020</b>	<b>01.04.2021</b>	<b>01.04.2022</b>	<b>01.04.2023</b>	<b>01.04.2024</b>
<b>PUBLIC SECTOR (PSU)</b>											
IOC, Digboi	650	650	650	650	650	650	650	650	650	650	650
IOC, Guwahati	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1200
IOC, Koyali	13700	13700	13700	13700	13700	13700	13700	13700	13700	13700	13700
IOC, Barauni	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
IOC, Haldia	7500	7500	7500	7500	7500	7500	8000	8000	8000	8000	8000
IOC, Mathura	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
IOC, Panipat	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
IOC, Bongaigaon	2350	2350	2350	2350	2350	2350	2350	2350	2700	2700	2700

IOC, Paradip			15000	15000	15000	15000	15000	15000	15000	15000	15000
IOC,Total	54200	54200	69200	69200	69200	69200	69700	69700	70050	70050	70250
HPC, Mumbai	6500	6500	6500	7500	7500	7500	7500	7500	9500	9500	9500
HPC, Visakh	8300	8300	8300	8300	8300	8300	8300	8300	11000	11000	13700
HMEL, GCSR	9000	9000	9000	9000	11300	11300	11300	11300	11300	11300	11300
HPC,Total	14800	14800	14800	15800	15800	15800	15800	15800	29100	31800	34500
BPC, Mumbai	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000
BPC, Kochi	9500	9500	9500	12400	15500	15500	15500	15500	15500	15500	15500
BPC, BORL- Bina	6000	6000	6000	6000	6000	7800	7800	7800	7800	7800	7800
BPC, Total	21500	21500	21500	24400	27500	27500	27500	27500	35300	35300	35300
CPCL,Manali	10500	10500	10500	10500	10500	10500	10500	10500	10500	10500	10500

CPCL, Cauvery Basin	1000	1000	1000	1000	1000	1000	1000	0	0	0	0
CPCL,Total	11500	11500	11500	11500	11500	11500	11500	10500	10500	10500	10500
NRL, Numaligarh	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
ONGC, Tatipaka	66	66	66	66	66	66	66	66	66	66	66
MRPL, Mangalore	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
TOTAL JVC /PSU	120066	120066	135066	138966	142066	142066	142566	141566	163016	163016	163016
PVT Total											
RIL, (DTA) Jamnagar	33000	33000	33000	33000	33000	33000	33000	33000	33000	33000	33000
RPL(SEZ), Jamnagar	27000	27000	27000	27000	35200	35200	35200	35200	35200	35200	35200
NEL EOL, Jamnagar	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000

PVT Total	95000	95000	95000	95000	105500	107300	107300	107300	88200	88200	88200
ALL INDIA TOTAL	215066	215066	230066	233966	247566	249366	249866	248866	2512156	253916	256816

<i>Crude Oil Processed by Refineries</i>											
OIL COMPANIES	2014-15	2015-16	2016-17	2017-18	2018- 19	2019- 20	2020-21	2021- 22	2022- 23	2023-24	
<b>Indian Oil Corporation Ltd.</b>											
IOCL-KOYALI, GUJARAT	13285	13820	13994	13811	13505	13075	11603	13474	15567	6618	
IOCL- MATHURA, UTTAR PRADESH	8515	8860	9230	9240	9737	8948	8926	9123	9573	15202	
IOCL-PANIPAT, HARYANA	14191	15282	15638	15654	15281	15038	13181	14849	13810	8060	
IOCL-HALDIA, WEST BENGAL	7650	7776	7689	7655	7965	6463	6759	7305	8506	9191	

IOCL-BARAUNI, BIHAR	5944	6545	6526	5819	6661	6516	5469	5620	6785	14305
IOCL- GUWAHATI, ASSAM	1006	904	864	1024	676	664	605	730	1080	1000
IOCL-DIGBOI, ASSAM	591	562	533	666	863	892	849	708	713	710
IOCL- BONGAIGAON, ASSAM	2403	2442	2486	2402	2513	2045	2450	2639	2775	3009
IOCL -PARADIP, ODISHA	-	1817	8230	12730	14616	15778	12508	13217	13599	15213
IOCL TOTAL	53586	58007	65191	69001	71816	69419	62351	67665	72408	73308
<b>HPCL</b>										
HPCL-MUMBAI, MAHARASHTRA	7412	8015	8510	8641	8671	8065	7374	5558	9804	9640
HPCL-VISAKH	7776	8767	9220	9335	9635	9773	9115	9050	9287	12689

HMEL-GCSR, BATHINDA,	9272	7344	10713	10521	8830	12473	12242	10072	12735	12648
HPCL-TOTAL	23522	27949	28367	27106	30917	29422	26497	26994	31826	34976
<b>BPCL</b>										
BPCL-MUMBAI, MAHARASHTRA	12821	13371	13541	14054	14773	15017	12941	14437	14546	15052
BPCL-KOCHI, KERALA	10356	10712	11820	14095	16051	16515	13282	15402	16017	17314
BPCL- BORL- BINA	6209	6402	6360	6708	5716	7913	6190	7410	7841	7133
BPCL-TOTAL	29385	30485	31722	34857	36539	39445	32412	37248	38404	39499
<b>NRL</b>										
Numaligarh Refinery Ltd. (NRL)- Numaligarh, Assam	2777	2520	2683	2809	2900	2383	2707	2624	3091	2510
<b>CPCL</b>										

CPCL-MANALI, TAMILNADU	10247	9099	9725	10289	10271	10161	8243	9040	11316	11642
CPCL- NARIMANAM, TAMILNADU	531	544	531	500	423	0	0	0	0	0
CPCL-TOTAL	10779	9643	10256	10789	10695	10161	8243	9040	11316	11642
<b>ONGC</b>										
ONGC- TATIPAKA, ANDHRA PRADESH	65	51	67	86	80	66	87	81	73	65
MRPL-	14589	14632	15532	15965	16130	16231	13953	11475	17116	16533
ONGC TOTAL	14683	15599	16051	16210	16297	14040	11556	14946	17189	16599
<b>Reliance Industries Ltd. (RIL)</b>										
RIL, JAMNAGAR, GUJARAT	30867	32428	32823	33153	31752	33019	34100	34757	34433	34390

RIL-(SEZ), JAMNAGAR, GUJARAT	37174	37133	37351	37317	37393	35876	26841	28264	27872	28300
RIL TOTAL	68042	69561	70174	70470	69145	68895	60941	63021	62305	62690
Nayara Energy LTD., VADINAR, GUJARAT	20491	19101	20919	20693	18896	20620	17067	20164	18692	20322
GRAND TOTAL	223264	232866	245362	251935	257205	254386	221773	241704	255232	261546
<i>Source: PPAC (P)=Provisional</i>										

TABLE 6 PRODUCTION OF PETROLEUM PRODUCTS BY REFINERIES &amp; FRACTIONATORS

<i>Major Products</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>	<i>2017-18</i>	<i>2018-19</i>	<i>2019-20</i>	<i>2020-21</i>	<i>2021-22</i>	<i>2022 - 23</i>	<i>2023-24 (P)</i>
LPG	9840	10568	11253	12364	12786	12823	12072	12238	12831	12779
Naphtha	17466	17861	19723	19993	19600	20577	19381	19994	17036	18274
MS	32233	35321	36581	37774	38039	38616	35779	40238	42817	45081
ATF	11086	11793	13806	14652	15479	15238	7092	10294	15039	17124
SKO	7634	7503	5978	4280	4056	3211	2393	1913	941	983

HSD	94337	98588	102106	108055	110556	111120	100441	107176	113776	115943
LDO	351	429	629	553	681	620	729	805	646	657
Lubes	887	1037	1030	1036	949	932	1069	1173	1445	1352
FO	11482	10317	11759	9768	9534	8858	7071	8509	9590	9698
LSHS	694	374	272	522	434	395	360	412	673	744
Bitumen	4690	5157	5185	5268	5564	4892	4902	5111	4914	5240
Others*	30377	32918	35192	40026	44678	45658	42225	46442	46831	48183
Total	221077	231866	243515	254289	262356	262940	233513	254306	266539	276058

P = Provisional

\* Others include products like Propylene, solvents (Hexane, Benzene, Toluene, Xylene and Specialty solvents), Reformate, Mineral Turpentine Oil, Carbon Black Feed Stock, Waxes, Sulphur, and pet coke etc.

TABLE 7 GROWTH RATE IN CONSUMPTION OF PETROLEUM PRODUCTS (FIGURES IN %)

PRODUCT	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
LPG	10.5	9.0	10.1	8.0	6.70	5.7	4.7	2.5	0.9	4.1

Naphtha	-2.0	19.8	-0.2	-5.2	9.64	1.0	-1.2	-6.1	-7.9	13.9
MS	11.4	14.5	8.8	10.1	8.06	6.0	-6.7	10.3	13.4	6.4
ATF	4.0	9.4	11.7	8.9	8.74	-3.6	-53.8	35.4	47.1	11.8
SKO	-1.1	-3.7	-20.9	-28.8	-10.01	-30.7	-25.0	-16.9	-67.2	-2.1
HSD	1.5	7.5	1.8	6.6	3.03	-1.1	-12.0	5.4	12.0	4.3
LDO	-5.4	11.5	10.3	16.6	14.12	5.0	36.2	19.0	-28.7	7.8
Lubricants & Greases	0.1	7.9	-2.8	8.9	-5.56	4.5	6.9	10.8	-15.8	9.4
FO & LSHS	-4.4	11.3	7.8	-5.5	-2.34	-4.0	-11.3	12.1	10.9	-6.3
Bitumen	1.3	17.1	0.0	1.2	10.22	0.2	12.0	3.9	-0.3	9.5
Petroleum coke	23.8	32.6	24.2	9.3	-16.80	1.7	-28.1	-8.6	25.3	10.8
Others	-1.4	8.2	3.8	7.0	40.58	-3.1	12.6	-3.9	27.8	-7.2
TOTAL	0.9	4.5	11.6	5.4	3.42	0.4	-9.3	3.8	10.2	5.0

**TABLE 8 CONSUMPTION OF PETROLEUM PRODUCTS**

<i>Figs in TMT</i> <b>PRODUCT</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
LPG	18000	19623	21608	23342	24907	26330	27558	28253	28504	29664
Naphtha	11082	13271	13241	12889	14131	14268	14100	13246	12127	13812
MS	19075	21847	23765	26174	28284	29975	27969	30849	34976	37219
ATF	5723	6262	6998	7633	8300	7999	3698	5008	7378	8247
SKO	7087	6826	5397	3845	3460	2397	1798	1493	490	479
HSD	69416	74647	76027	81073	83528	82602	72713	76659	85900	89626
LDO	365	407	449	524	598	628	855	1017	726	782
Lubricants & Greases	3310	3571	3470	3884	3668	3833	4097	4540	3737	4087
FO & LSHS	5961	6632	7150	6721	6564	6302	5586	6262	6958	6520
Bitumen	5073	5938	5935	6086	6708	6720	7524	781	8041	8807
Petroleum coke	14558	19297	23964	25657	21346	21708	15605	14255	18343	20319
Others	5870	6352	6593	8339	11723	11365	12791	12297	15842	14696
<b>TOTAL</b>	<b>165520</b>	<b>184674</b>	<b>194597</b>	<b>206166</b>	<b>213216</b>	<b>214127</b>	<b>194295</b>	<b>201697</b>	<b>223022</b>	<b>234259</b>

**NOTE:**

- *The source of information: PPAC*
- *The consumption estimates represent market demand and is aggregate of:*
- *actual sales by oil companies in domestic market, and*
- *actual consumption through direct imports by private parties*

**TABLE 9 DEMAND PROJECTION FOR PETROLEUM PRODUCTS (FIGURES IN TMT)**

PRODUCT	2020	2025	2030	2035	2040
LPG	27400	30300	33800	37800	40600
Naphtha	15600	18300	20900	21800	22000
MS	27900	37100	48900	63800	82900
ATF	7700	10300	13600	18100	23500
SKO	1100	650	500	200	190
HSD	98500	127400	163300	199400	239900

*Source: Sub-Group on Refining Capacity Expansion – PPAC3.8 Trend of Natural Gas Consumption in India (including internal consumption)*

<b>FINANCIAL YEAR</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Net production	32693	31129	30848	31731	32058	30257	27784	33131	33664	35717
LNG import	18607	21388	24849	27439	28740	33867	33031	31906	26304	30917
Total consumption										
Net production +LNG import	51300	52517	55697	59170	60798	64124	60815	65037	59969	66634

**TABLE 10 GUIDELINES FOR CONVERSION**

<b>FACTORS FOR CONVERTING WEIGHTS TO VOLUME AND VOLUME CONVERSION FACTOR FROM 29.5°C TO 15°C</b>		
<b>PRODUCT</b>	<b>Metric Tonne to Litre</b>	<b>29.5°C to 15°C</b>
	<b>Multiply by</b>	
AVIATION SPIRIT 100/130	1421	0.9827
AVIATION SPIRIT 114/145	1449	0.9820
AVIATION SPIRIT 73 CLEAR	1432	0.9824
ATF	1288	0.9862

MS 87	1411	0.9830
MS 93	1386	0.9836
HSD	1210	0.9879
SKO	1285	0.9864
LDO	1172	0.9877
FO	1071	0.9899
HEXANE	1457	0.9806
MTO LAWS	1302	-
AROMAX	1221	-
LUBE BASE OILS	1114	-

(Source: Indian Petroleum & Natural Gas Statistics, 2020-21 (MOP &NG)

#### **CONVERSION FACTOR FOR CRUDE OIL, NATURAL GAS & LNG**

##### **CRUDE OIL**

1 Metric Tonne = 1.165 Kiloliters = 7.33 Barrels

1 Barrel per day = 49.8 Tonnes per year

##### **NATURAL GAS**

*1 Billion Cubic Meter = 0.90 Million tone Oil equivalent (MTOE)*

*= 0.74 Million tones LNG*

**LNG**

*1 Million Tonne = 1.36 BCM Natural Gas = 1.22 Million tone Oil equiv (MTOE)*

**CONVERSION FACTOR FOR LPG, GASOLINE, KEROSENE, DIESEL, RFO**

<b>PRODUCT</b>	<b>Barrels</b>	<b>Tonnes</b>	<b>Kiloliters</b>	<b>Tonnes</b>
	<i>To Tonnes</i>	<i>To Barrels</i>	<i>To Tonnes</i>	<i>To Kiloliters</i>
LPG	0.086	11.6	0.542	1.844
Gasoline	0.118	8.5	0.740	1.351
Kerosene	0.128	7.8	0.806	1.240
Gas Oil/ Diesel	0.133	7.5	0.839	1.192
Residual fuel Oil	0.149	6.7	0.939	1.065

*(Source: BP Statistical Review of World Energy, June 2010*

# PRODUCTION PERFORMANCE

## PRODUCTION PERFORMANCE OF MANALI REFINERY

TABLE 11 CRUDE RECEIPT DETAILS - MANALI

<b>CRUDE (Fig in TMT)</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
ARAB MIX	2,846	2,834	2,148	1,415	2,325	1,965	2,052	1,495	947	1,501	1,913	1,638
ARAB LIGHT				143					543	272		
ARAB XTRA LIGHT				253								
ARAB HEAVY												
ARAB MEDIUM												
AL SHAHEEN				116								
BASHRA LIGHT	2,372	2,016	2,500	2,253	1,939	2,538	2,116	3,061	1,859	1,037		
BASHRA HEAVY							866	1,396	995	1,144	1,422	1,463

BASHRA MEDIUM								282	1,044	2,858	
KUWAIT		141	132	52			554				138
URALS										795	1,486
DAS			137	257				30	263	79	131
UPPER ZAKUM	587	1,114	693	660	743	668	697	136		540	
OMAN											
IRAN MIX	73				143	568	430				
AL SHAHEEN QATAR				126							
DUBAI											
LAVAN BLEND											
SOVIET BLEND											
FOROZAN BLEND											

FARCADOS											
SUEZ MIX											
BENCHAMA S											
TANTAWAN											
SAHARAN BLEND		134	391	397	399	267	267	215			
SIRI EXPORT											
ZEIT BAY											
UMM SHAIF	85	66									
LABUAN		56	317	141	339	279	126			40	
QATAR LAND											
QUIABOE	127										
BONNY LIGHT	28	97	292	371	273			410	128		
ESCRAVOS	1	257	640		258	520	130	645		386	126

AZERI	1,174	1,257	830	411	678	831	274	138		138		
LIGHT												
CPC BLEND										663	1310	
COCO												
CHAMPION							80					
EXPORT												
MIRI LIGHT						121	43			54		
ESSIDER	167											
HUNGO								126				
AMENAM								125	392	130		
BRENT												
BLEND												
MASILA	93											
BLEND												
ZUITINA												
SERIA LIGHT		77	46	16	151	77	157	78				
BREGA												
BONGA										134		

CABINDA							135				
BOMBAY HIGH	767	805	1,358	1,575	1,285	1,144	1,198	1,238	1,166	1,181	1,432
RAVAA		521	442	384	320	422	399	227	236	288	209
KG D-6							55				
PY-1										1	
PY-3											
NARIMANA M								384	419	335	313
MADHANA M										0	69
MARIB LIGHT		60									
MURBAN	68		139	45	321	200	130	266			399
NEMBA							251			254	632
GIRASSOL	142	3				145			132		
PLUTONIO									143		414
SAXI BLEND									122		

EA BLEND					132	132						
ESPO										100	299	
SOKOL										95	96	
MELLITAH												
NKOSSA										128		
SARIR	182	91										
ZARZAITINE												
AGBAMI		204	55	121	243	122		607	243			
ESPOIR												
KIKEH		76				63						
KISSANJE	386	125		125	126		265			132		
BLEND												
KOLE										140		
OKWUIBOM		136	0									
E												
BRASS RIVER			128		124	122		127		131		
AKPO				252								

SAPINHOA										138		
TUPI										136		
OKONO						117						
SIBERIAN LIGHT											180	
VARANDEY											143	
SLOP	4	(3)	4									
<b>TOTAL</b>	<b>9,102</b>	<b>10,065</b>	<b>10,251</b>	<b>9,114</b>	<b>9,798</b>	<b>10,301</b>	<b>10,224</b>	<b>10,294</b>	<b>8,152</b>	<b>9,123</b>	<b>11,329</b>	<b>11,653</b>

TABLE 12 PRODUCTION DETAILS - MANALI

Parameter	CHENNAI PETROLEUM CORPORATION LIMITED											
	PRODUCTION DATA -Manali Refinery											
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	
REF I THRUPUT	1937.1	2623.2	2407.3	2400.0	2358.4	2470.3	2004.1	2545.2	2616.0	2798.1	3026.7	
REF II THRUPUT	3991.7	3812.9	3480.4	3310.9	4026.4	3634.7	4165.6	1945.4	3277.4	4245.5	4060.3	
REF III THRUPUT	4136.1	3814.7	3212.5	4014.4	3904.1	4166.4	3991.0	3752.2	3147.0	4272.2	4555.2	
CBR RCO	21.6	94.4	93.7	89.8	85.2	72.9	8.1	0.0				
NAPHTHA									3.5			
REFORMATE				19.9					41.1			
RLNG						1.9	163.8	260.3	283.2	269.6	440.6	
<b>TOTAL Crude T'Put</b>	<b>10,064.</b>	<b>10,250.</b>	<b>9,100.1</b>	<b>9,725.3</b>	<b>10,288.</b>	<b>10,271.</b>	<b>10,160.</b>	<b>8,242.9</b>	<b>9,040.4</b>	<b>11,315.</b>	<b>11,642.</b>	
	<b>9</b>	<b>8</b>			<b>8</b>	<b>3</b>	<b>6</b>		<b>7</b>	<b>2</b>		

<b>TOTAL Input</b>	10,086. 5	10,345. 2	9,193.8	9,835.0	10,374. 0	10,346. 1	10,332. 6	8,503.3	9,368.3	11,585. 3	12,082. 8
<b>FCCU THRUPUT</b>	<b>1064.8</b>	<b>1074.7</b>	<b>983.5</b>	<b>1006.3</b>	<b>1084.5</b>	<b>906.9</b>	<b>1055.8</b>	<b>967.9</b>	<b>971.2</b>	<b>1071.0</b>	<b>1055.9</b>
<b>OHCU</b>	<b>2006.7</b>	<b>1924.9</b>	<b>1450.9</b>	<b>1995.7</b>	<b>2163.8</b>	<b>2214.2</b>	<b>2306.7</b>	<b>1882.6</b>	<b>1781.5</b>	<b>2371.5</b>	<b>2384.7</b>
<b>DCU</b>					<b>250.0</b>	<b>1225.8</b>	<b>1405.4</b>	<b>1081.1</b>	<b>1298.0</b>	<b>1974.9</b>	<b>2072.1</b>
<b>Products</b>											
LPG	348.56	327.44	282.43	288.92	315.89	310.65	360.29	330.54	295.53	377.66	404.49
PROPYLENE	35.83	37.07	28.58	26.06	30.12	24.36	33.18	32.52	34.57	34.33	35.09
PBFS	7.64	8.86	7.97	9.40	11.97	9.36	12.68	12.38	11.69	10.31	12.55
BUTENE				9.54	10.22	7.73	9.54	9.35	8.53	9.40	8.95
LEAN BUTENE											0.66
MEKFS	8.16	10.92	7.42	17.79	10.44	9.57	11.69	11.09	11.15	9.98	11.39
HEXANE	10.78	7.56	6.38	2.80	3.79	14.87	19.73	22.47	26.71	28.40	27.78
MS	996.71	1050.34	954.93	1105.1 7	1107.28	997.44	1084.26	1036.6 1	1000.5 6	1141.75	1190.51
Naphtha	639.54	568.18	580.15	513.15	558.04	617.41	814.83	587.85	788.77	975.52	1194.47
<b>L.D. TOTAL</b>	<b>2047.25</b>	<b>2010.29</b>	<b>1877.2 7</b>	<b>1972.7 9</b>	<b>2047.75</b>	<b>1991.37</b>	<b>2346.08</b>	<b>2042.9 1</b>	<b>2177.5 5</b>	<b>2587.29</b>	<b>2885.88</b>
<b>% ON CRUDE</b>	<b>20.34</b>	<b>19.43</b>	<b>20.42</b>	<b>20.10</b>	<b>19.74</b>	<b>19.25</b>	<b>22.71</b>	<b>24.02</b>	<b>23.24</b>	<b>22.33</b>	<b>23.88</b>
JP-5	3.20	0.00	2.94	2.48	6.17	3.11	3.25	0.00	0.00	3.04	2.46
JP-7											0.05
ISROSENE											0.03
ATF	673.27	704.28	642.95	694.23	794.56	748.54	1015.92	516.39	703.67	1039.30	1049.71
LABFS	42.02	45.18	47.41	49.22	69.14	64.71	66.30	75.46	78.88	66.32	57.26
MTO										8.13	31.39
SK	315.39	380.50	300.22	318.01	167.17	141.33	121.59	114.57	77.93	36.09	30.33
HSD	4007.79	4237.18	3669.2 0	3991.3 6	4418.90	4677.25	4464.04	3747.4 5	3973.0 7	5040.85	5135.26
LVFO				21.30							
LDO	0.00	3.24				2.96					
<b>M.D. TOTAL</b>	<b>5062.69</b>	<b>5386.18</b>	<b>4683.6 9</b>	<b>5076.6 0</b>	<b>5455.93</b>	<b>5637.90</b>	<b>5671.09</b>	<b>4453.8 7</b>	<b>4841.6 8</b>	<b>6217.03</b>	<b>6315.28</b>
<b>% ON CRUDE</b>	<b>50.30</b>	<b>52.06</b>	<b>50.94</b>	<b>51.62</b>	<b>52.59</b>	<b>54.49</b>	<b>54.89</b>	<b>52.38</b>	<b>51.68</b>	<b>53.66</b>	<b>52.27</b>
<b>Total Distil %</b>	<b>70.64</b>	<b>71.50</b>	<b>71.36</b>	<b>71.72</b>	<b>72.33</b>	<b>73.74</b>	<b>77.59</b>	<b>76.40</b>	<b>74.93</b>	<b>76.00</b>	<b>76.15</b>

LVFO					-18.74	35.52	2.97			2.48	
FO	1333.57	1282.17	921.67	1137.29	1028.08	439.00	180.63	104.05	191.44	235.55	102.96
LSHS	0.00									3.67	7.20
ASPHALT	481.77	427.62	564.15	521.84	472.07	509.45	461.43	473.22	443.29	533.09	668.78
EXTRACT	30.40	43.70	40.84	46.74	37.82	40.44	26.80	30.85	39.30	43.96	55.38
CBFS	0.39	0.02									
MATCH WAX	4.19	5.12	4.52	3.70	5.16	3.83	0.88	-0.47			
P.W & F.G. WAX	18.79	19.79	16.21	17.58	18.32	16.54	22.18	18.95	22.59	28.15	25.18
SULPHUR	49.65	44.87	34.31	36.24	40.64	88.67	99.25	77.73	83.75	129.29	123.70
PETCOKE					74.77	347.49	413.59	299.66	376.35	538.66	550.35
LUBE	140.88	200.80	187.79	160.25	169.27	143.32	103.98	152.32	194.92	235.84	247.50
B.Y. TOTAL	2059.64	2024.07	1769.49	1923.64	1827.39	1624.27	1311.72	1156.32	1351.65	1750.71	1781.05
% ON CRUDE	20.46	19.57	19.25	19.56	17.62	15.70	12.70	13.60	14.43	15.11	14.74
FUEL & LOSS	905.98	911.89	876.53	912.70	1010.91	1063.18	1035.94	907.87	909.29	1049.34	1064.47
% ON CRUDE	9.00	8.81	9.53	9.30	9.74	10.28	10.03	10.68	9.71	9.06	8.81
ISD	10.90	12.73	-13.15	-41.11	32.02	29.43	-32.27	-57.69	88.16	-19.09	36.14
% ON CRUDE	0.11	0.12	-0.14	-0.42	0.31	0.28	-0.32	-0.70	0.98	-0.17	0.31
Total	10086.5	10345.2	9193.8	9844.6	10374.0	10346.1	10332.6	8503.3	9368.3	11585.3	12082.8

TABLE 13 DISPATCH DATA MANALI REFINERY

CHENNAI PETROLEUM CORPORATION LIMITED											
DISPATCH DATA - Manali Refinery											
PRODUCTS	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24

LPG PACK	-	-	-	-	-	-	-	-	-	-	-
LPG BULK	3,48,46 3	3,27,41 0	2,83,55 2	2,88,05 3	3,15,52 1	3,09,66 8	3,60,91 1	3,30,42 5	2,94,58 7	3,77,88 6	4,04,81 3
PROPYLEN E	35,643	37,095	27,962	25,744	30,125	24,530	33,626	32,404	34,068	34,706	35,121
PROPANE	40	57	-	-	-	-	-	-	-	-	-
PBFS	7,637	8,856	7,970	9,396	11,969	9,358	12,680	12,385	11,695	10,311	12,552
BUTENE	-	-	9,347	9,572	10,211	7,736	9,550	9,297	8,587	9,340	8,904
LEAN BUTENE			-								656
MEKFS	8,192	10,948	7,385	8,244	10,441	9,569	11,691	11,094	11,148	9,985	11,388
F.G. HEXANE	10,590	8,505	5,471	3,559	3,171	14,917	19,364	23,272	26,570	27,817	28,083
MS III	7,52,72 3	8,26,52 7	7,31,13 4	6,67,57 0	-	-					
MS IV	2,65,07 6	2,25,99 2	2,13,14 6	4,53,36 0	10,94,5 12	9,85,37 5	8,47,77 3	-	-	-	-
MS VI			-				2,41,72 9	10,39,7 13	10,00,8 92	11,50,4 84	11,81,5 00
MS TOTAL	10,17,7 98	10,52,5 19	9,44,27 9	11,20,9 30	10,94,5 12	9,85,37 5	10,89,5 02	10,39,7 13	10,00,8 92	11,50,4 84	11,81,5 00

NAPHTHA			13	(14,309)	(234)	(30)	(0)	0	0	33	57,835
MFL	2,08,970	1,54,578	1,80,313	2,09,523	1,94,178	1,77,371	-	-	-	-	-
MAPHTHA											
NAPHTHA EXPORT	3,36,309	3,74,134	3,97,032	3,22,778	3,54,548	4,18,429	8,56,268	5,59,324	7,56,236	10,14,816	11,15,336
SPIC NAPHTHA	-	-	-	-	-	-	-	-	-	-	-
NAPHTHA TOTAL	6,37,311	5,91,380	5,77,358	5,17,992	5,48,492	5,95,770	8,56,268	5,59,324	7,56,236	10,14,850	11,73,171
L.D. SUB TOTAL	20,65,673	20,36,771	18,63,324	19,83,491	20,24,442	19,56,924	23,93,592	20,17,913	21,43,782	26,35,378	28,56,187
JP-7			-							50	-
JP-5	3,198	-	2,943	2,483	6,165	3,108	3,249	-	-	3,039	2,461
ISOSRENE			-								34
ATF	6,73,699	7,00,717	6,40,545	6,95,236	7,99,512	7,48,743	9,96,286	5,31,810	7,13,136	10,23,388	10,53,536
LABFS	37,602	42,156	49,844	57,604	64,183	65,299	63,792	77,878	77,141	68,065	56,287
MTO			-						8,131	31,390	40,225

<b>SK</b>	3,20,06 6	3,69,74 1	3,11,83 5	3,05,51 2	1,78,13 0	1,39,85 3	1,23,02 6	1,10,42 1	67,638	46,733	31,229
<b>HSD BS III</b>	31,12,1 13	33,67,4 35	28,54,2 34	22,18,7 38	-	-	-	-	-	-	-
<b>HSD BS IV</b>	8,76,38 6	8,80,13 5	7,62,75 8	18,14,5 86	39,89,9 78	44,04,1 90	33,02,4 28	-	-	-	-
<b>HSD BS VI</b>			-					9,90,19 0	37,31,5 77	38,88,8 98	50,04,7 29
<b>LSHF HSD Navy Grade</b>	30,602	23,331	10,247	4,543	9,464	-	2,059	4,793	-	20,259	38,071
<b>High Flash HSD Export</b>			-						1,06,15 0	39,791	4,94,66 1
<b>HSD Export</b>	-	-	-	-	3,46,38 1	2,63,81 8	1,53,88 0	-	-	-	-
<b>HSD</b>	40,19,1 01	42,70,9 01	36,27,2 40	40,37,8 67	43,45,8 23	46,68,0 08	44,48,5 57	37,36,3 70	39,95,0 48	50,64,7 80	50,76,4 88
<b>LDO</b>	-	3,244	-	-	-	2,959	-	-	-	-	-
<b>LVFO</b>	21,017	15,797	20,960	-							
<b>M.D. SUB TOTAL</b>	50,74,6 83	54,02,5 57	46,53,3 67	50,98,7 02	53,93,8 13	56,27,9 69	56,34,9 10	44,56,4 79	48,61,0 93	62,37,4 44	62,60,2 61
<b>LVFO</b>			-	-	2,554	35,521	2,969	-	-	2,481	-

FO -180	5,20,82 4	3,97,03 9	4,13,55 1	4,89,68 3	4,82,58 5	3,48,32 6	1,43,91 1	11,491	2,04,56 5	2,31,74 8	1,19,67 1
MFO -0.5%S			-						4,166	-	-
FO -380	8,09,13 3	8,86,15 5	5,02,08 8	93,414	65,760	80,110	45,599	14,261	14,274	17,653	3,596
FO EXPORT	-	-	-	5,37,72 3	5,37,62 8	69,045	-	-	-	19,995	-
LSHS	-	-	-	-	-	-	-	-	-	3,675	7,197
TOTAL FO/LSHS	13,29,9 57	12,83,1 94	9,15,63 8	11,20,8 20	10,88,5 27	4,63,95 7	1,92,47 9	25,752	2,23,00 5	2,75,55 2	1,30,46 4
ASPHALT- PACK	-	-	-				-	-	-	-	-
ASPHALT- BULK	-	-	-				-	-	-	-	-
ASPHALT 60/70 (VG- 30)	2,94,47 8	2,39,84 2	3,49,97 5	3,55,17 0	3,19,10 4	3,51,14 9	3,14,16 8	3,24,81 0	2,90,99 6	3,21,11 5	3,95,45 1
ASPHALT 80/100 (VG- 10)	1,86,66 2	1,86,75 3	2,01,86 5	1,53,64 5	1,23,44 1	1,19,43 7	87,485	78,597	60,105	76,335	87,428

ASPHALT VG-40			9,316	19,103	31,853	34,801	51,062	74,835	94,903	1,36,69 7	1,83,83 8
ASPHALT TOTAL	4,81,14 1	4,26,59 5	5,61,15 5	5,27,91 9	4,74,39 8	5,05,38 7	4,52,71 5	4,78,24 3	4,46,00 5	5,34,14 8	6,66,71 7
LUBE	1,57,79 6	18,80,5 77	1,95,11 0	1,82,12 9	1,71,35 6	1,33,46 5	95,706 1	1,68,50 3	1,93,25 2	2,40,91 7	2,43,02
INTERMEDI ATES			-				-	-	-	-	-
EXTRACTS	31,569	44,739	39,169	42,051	42,590	37,584	28,231	31,760	38,335	45,399	56,370
CBFS	-	-	-	-	-	-	-	-	-	-	-
SLACK WAX	-	-	-	-	-	-	-	-	-	-	-
MATCH WAX	4,889	4,938	4,620	3,923	5,129	4,007	475	12	-	-	-
MATCH WAX-BULK	-	-	-				-	-	-	-	-
PARAFFIN WAX	18,125	19,914	15,775	19,299	16,738	17,521	20,761	19,408	23,494	28,916	25,327
PARAFFIN WAX-BULK	-	-	-				-	-	-	-	-

PETCOKE			-		60,373	3,55,43	4,09,38	3,03,08	3,49,34	5,62,30	5,31,10
SOFO OIL	-	-	-	-	-	-	-	-	-	-	-
SULPHUR	50,375	44,503	34,238	37,057	39,881	88,316	98,763	78,878	82,506	1,27,56	1,23,80
HVY ENDS	20,73,8	20,11,9	17,65,7	19,33,1	18,98,9	16,05,6	12,98,5	11,05,6	13,55,9	18,14,8	17,76,8
<b>TOTAL</b>	<b>52</b>	<b>41</b>	<b>07</b>	<b>97</b>	<b>92</b>	<b>73</b>	<b>13</b>	<b>39</b>	<b>47</b>	<b>03</b>	<b>11</b>
<b>TOTAL MANALI DESPATCH</b>	<b>92,14,2</b>	<b>94,51,2</b>	<b>82,82,3</b>	<b>90,15,3</b>	<b>93,17,2</b>	<b>91,90,5</b>	<b>93,27,0</b>	<b>75,80,0</b>	<b>83,60,8</b>	<b>1,06,87,</b>	<b>1,08,93,</b>
	<b>08</b>	<b>69</b>	<b>97</b>	<b>90</b>	<b>47</b>	<b>66</b>	<b>15</b>	<b>31</b>	<b>22</b>	<b>625</b>	<b>260</b>

## COMPOSITE PRODUCTION PERFORMANCE OF MANALI + CBR

TABLE 14 COMPOSITE PRODUCTION DATA (MANALI + CBR)

	2019-20		2020-21		2021-22		2022-23		2023-24	
	MoU	ACTUAL								
<b>REF I THRUPUT</b>	2,437.0	2,004.1	2,510.0	2,545.2	2,635.8	2,616.0	2,680.1	2,798.1	3,020.0	3,026.7
<b>REF II THRUPUT</b>	4,093.7	4,165.6	4,050.0	1,945.4	3,459.3	3,277.4	4,109.2	4,245.5	4,315.0	4,060.3

<b>REF III</b>	3,869.3	3,991.0	3,730.0	3,752.2	2,984.9	3,147.0	3,940.7	4,272.2	4,305.0	4,555.2
<b>THRUPUT</b>										
<b>CBR</b>	-	-	-	-	-	-	-	-	-	-
<b>CBR RCO</b>	-	8.1	-	0.0	-	-	-	-	-	-
<b>Naphtha</b>						3.5		-		-
<b>Reformate</b>	-	-	-	-	-	41.1	-	-	-	-
<b>RLNG</b>	-	163.8	240.0	260.3	290.0	283.2	290.0	269.6	290.0	440.6
<b>TOTAL</b>	10,400.0	10,160.6	10,290.0	8,242.9	9,080.0	9,040.4	10,730.0	11,315.7	11,640.0	11,642.2
<b>NET GAS INTAKE</b>	-	-	-	-	-	-	-	-		
<b>FCCU THRUPUT</b>	996.4	1,055.8	1,059.5	967.9	946.8	971.2	1,089.0	1,071.0	1,075.5	1,055.9
<b>OHCU THRUPUT</b>	2,230.5	2,306.7	2,185.3	1,882.6	1,850.4	1,781.5	2,240.2	2,371.5	2,490.3	2,384.7
<b>DCU THRUPUT</b>	1,467.1	1,405.4	1,502.2	1,081.1	1,372.4	1,298.0	1,626.9	1,974.9	1,874.5	2,072.1
<b>LPG</b>	369.3	360.3	389.5	330.5	314.5	295.5	364.9	377.7	386.9	404.5
<b>PROPYLENE</b>	36.0	33.2	31.8	32.5	34.7	34.6	38.9	34.3	36.6	35.1

<b>PBFS</b>	12.0	12.7	11.8	12.4	11.6	11.7	14.8	10.3	12.7	12.6
<b>BUTENE</b>	-	9.5	-	9.3	9.6	8.5	9.7	9.4	9.5	8.9
<b>MEKFS</b>	12.0	11.7	11.8	11.1	11.6	11.1	12.2	10.0	10.2	11.4
<b>HEXANE</b>	12.0	19.7	20.0	22.5	24.0	26.7	30.4	28.4	23.1	27.8
<b>MS</b>	1,011.2	1,084.3	1,017.3	1,036.6	971.3	1,000.6	1,146.4	1,141.8	1,115.4	1,190.5
<b>LAN</b>	635.4	814.8	889.6	587.9	741.4	788.8	937.4	975.5	1,038.1	1,194.5
<b>PROPANE</b>	-	(0.1)	-	0.1	-	0.0	-	(0.1)	-	0.0
<b>L.D.TOTAL</b>	2,087.8	2,346.1	2,371.7	2,042.9	2,118.7	2,177.6	2,554.7	2,587.3	2,632.5	2,885.9
<b>% ON CRUDE</b>	20.1	22.7	22.5	24.0	22.6	23.2	23.2	22.3	22.1	23.9
<b>JP-5</b>	-	3.2	-	-	-	-	-	3.0	-	2.5
<b>ATF</b>	908.8	1,015.9	1,070.3	516.4	751.0	703.7		0.0		-
<b>LABFS</b>	75.0	66.3	80.0	75.5	79.2	78.9	929.5	1,039.3	944.5	1,049.7
<b>MTO</b>					-	8.1	72.8	66.3	64.9	57.3
<b>SK</b>	120.8	121.6	96.0	114.6	94.6	77.9	12.2	31.4	24.0	40.2
<b>HSD</b>	4,586.7	4,464.0	4,553.2	3,747.4	4,072.7	3,973.1	49.1	36.1	47.2	30.3
<b>LVFO</b>							4,757.0	5,040.8	5,377.5	5,135.3

<b>LDO</b>	-	-	-	-	-	-				
<b>M.D.TOTAL</b>	5,691.3	5,671.1	5,799.6	4,453.9	4,997.5	4,841.7	5,820.6	6,217.0	6,458.2	6,315.3
<b>% ON CRUDE</b>	54.7	54.9	55.1	52.4	53.3	51.7	52.8	53.7	54.1	52.3
<b>Total Distillate %</b>	74.8	77.7	77.6	76.4	75.9	74.9	76.0	76.0	76.2	76.2
<b>LVFO</b>	-	3.0	-	-	-	-	-	2.5		
<b>FO</b>	246.4	183.6	20.2	104.1	59.0	191.4	232.2	241.7	228.7	103.0
<b>LSHS</b>	-	-	-	-	-	-	-	3.7	-	7.2
<b>ASPHALT</b>	500.0	461.4	460.0	473.2	463.2	443.3	506.3	533.1	590.0	668.8
<b>EXTRACT</b>	42.0	26.8	45.8	30.9	46.5	39.3	44.2	44.0	55.4	55.4
<b>CBFS</b>	-	-	-	-	-	-	-	-		
<b>MATCH WAX</b>	7.0	0.9	5.7	(0.5)	5.7	-	5.8	-		
<b>P.W &amp; F.G. WAX</b>	20.0	22.2	23.4	18.9	24.3	22.6	21.1	28.1	23.2	25.2
<b>SOFO OIL</b>	-	-	-	-	-	-	-	-	-	-
<b>SULPHUR</b>	143.0	99.3	134.1	77.7	112.2	83.8	129.8	129.3	137.5	123.7

<b>LUBE</b>	180.0	104.0	175.8	152.3	208.0	194.9	228.5	235.8	236.0	247.5
<b>PET COKE</b>	453.3	413.6	490.8	299.7	418.8	376.4	463.8	538.7	498.4	550.3
<b>B.Y. TOTAL</b>	1,591.7	1,311.7	1,355.7	1,156.3	1,337.7	1,351.6	1,631.8	1,750.7	1,769.2	1,781.0
<b>% ON CRUDE</b>	15.3	12.7	13.2	13.6	14.7	14.5	15.2	15.1	15.2	14.7
<b>FUEL &amp; LOSS</b>	1,029.2	1,035.9	1,003.0	907.9	916.1	909.3	1,012.9	1,049.3	1,070.1	1,064.5
<b>% ON CRUDE</b>	9.9	10.03	9.5	10.68	9.8	9.71	9.2	9.06	9.0	8.81
<b>ISD</b>	-	(32.3)	-	(57.7)	-	88.2	-	(19.1)	-	36.1
<b>% ON CRUDE</b>	-	(0.3)	-	(0.7)	-	1.0	-	(0.2)	-	0.3
<b>Fuel Gas CBR</b>	-	-	-	-	-	-	-	-	-	-
<b>Other inputs</b>										-440.6
<b>TOTAL</b>	10,400.0	10,332.6	10,530.0	8,503.3	9,370.0	9,368.3	11,020.0	11,585.3	11,930.0	11,642.2

*CBR Refinery not in operation since April 2019*

TABLE 15: THROUGHPUT AND CAPACITY UTILIZATION

CPCL - THROUGHPUT AND CAPACITY UTILISATION (%)										
Manali				CBR			Manali + CBR			
Year	Design	Actual	Capacity Utilization	Design	Actual	Capacity Utilization	Design	Actual	Capacity Utilization	

	TMT	TMT	%	TMT	TMT	%	TMT	TMT	%
<b>2014-15</b>	10,500	10,251	97.6	1,000	531	53.1	11,500	10,782	93.8
<b>2015-16</b>	10,500	9,100	86.7	1,000	544	54.4	11,500	9,644	83.9
<b>2016-17</b>	10,500	9,725	92.6	1,000	531	53.1	11,500	10,256	89.2
<b>2017-18</b>	10,500	10,289	98.0	1,000	500	50.0	11,500	10,789	93.8
<b>2018-19</b>	10,500	10,271	98.0	1,000	423	42.0	11,500	10,695	93.0
<b>2019-20</b>	10,500	10,161	96.7	NOT IN OPERATION			10,500	10,161	96.77
<b>2020-21</b>	10,500	8,243	78.5				10,500	8,243	78.5
<b>2021-22</b>	10,500	9,040	86.0				10,500	9,040	86.0
<b>2022-23</b>	10500	11316	108				10500	11316	108
<b>2023-24</b>	10500	11642	111				10500	11642	111

TABLE 16 CPCL DISTILLATE YIELD

Manali				CBR			MANALI+CBR		
Year	LD	MD	TD	LD	MD	TD	LD	MD	TD
<b>2013-14</b>	20.3	50.3	70.6	39.7	45.4	85.1	21.4	50	71.4

<b>2014-15</b>	19.4	52.1	71.5	26.8	47	73.8	20	52.1	72.1
<b>2015-16</b>	20.4	50.9	71.4	39.3	40	79.3	21.7	50.8	72.5
<b>2016-17</b>	20	51.6	71.6	40	38.2	78.2	21.2	51.3	72.6
<b>2017-18</b>	19.7	52.6	72.3	40.4	38.6	79.1	20.9	52.3	73.2
<b>2018-19</b>	19.2	54.5	73.7	34.4	43	77.3	20	54.4	74.4
<b>2019-20</b>	22.7	54.9	77.6	Not in Operation			22.7	54.9	77.6
<b>2020-21</b>	24	52.4	76.4				24	52.4	76.4
<b>2021-22</b>	23.2	51.7	74.9				23.2	51.7	74.9
<b>2022-23</b>	22.3	53.7	76				22.3	53.7	76
<b>2023-24</b>	23.9	52.3	76.2				23.9	52.3	76.2

Abbreviation	LD	Light Distillates
	MD	Middle Distillates
	TD	Total Distillates

**TABLE 17 CPCL FUEL & LOSS**

<b>CPCL - FUEL &amp; LOSS</b>			
<b>Year</b>	<b>Manali</b>	<b>CBR*</b>	<b>Manali + CBR</b>
<b>2013-14</b>	9	4.8	8.8

<b>2014-15</b>	8.8	4.1	8.6
<b>2015-16</b>	9.5	4.4	9.3
<b>2016-17</b>	9.3	4.2	9.1
<b>2017-18</b>	9.7	4.6	9.5
<b>2018-19</b>	10.3	4.6	10.1
<b>2019-20</b>	10	NA*	10
<b>2020-21</b>	10.7	NA*	10.7
<b>2021-22</b>	9.7	NA*	9.7
<b>2022-23</b>	9.06	NA*	9.06
<b>2023-24</b>	8.81	NA*	8.81

*CBR Refinery not in operation*

## UTILITIES DATA – MANALI REFINERY

TABLE 18 TOTAL STEAM GENERATION MANALI REFINERY

	Equipment	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
<b>1 OPH</b>	<b>BOILER III</b>	Scrap	Scrap ped	Scrap ped	Scrap	Scrap	Scrap	Scrap	Scrap	Scrap	Scrap
	<b>BOILER IV</b>	Scrap	Scrap ped	Scrap ped	Scrap ped	Scrap ped	Scrap ped	Scrap	Scrap	Scrap	Scrap
	<b>BOILER V</b>	3595 65	45318 5	24357 3	49221 7	646914 4	6637 4	4638 8	3107 5	1177 71	4014 72

	<b>BOILER VI</b>					50279	9979 84	7423 36	9187 95	6244 58	8158 47
	<b>HRSG IV OPH</b>	4246 48	44129 8	41859 6	38423 1	569432	3294 90	3096 48	3515 97	4010 86	4692 36
	<b>HRSG V OPH</b>							4475 85	4351 78	4098 54	5096 78
<b>2 NCCP</b>	<b>BOILER1</b>	7190 71	63164 6	73387 2	62333 2	578795	5613 47	7303 63	6885 15	6146 52	2002 53
	<b>BOILER 2</b>	4817 90	63724 6	56918 7	69224 9	565604	5468 17	6536 91	5368 76	6449 94	3036 78
	<b>BOILER 3</b>	7056 39	60424 6	56480 6	69503 9	606565	6020 41	4853 36	7734 95	5384 81	2885 25
	<b>BOILER 4</b>	4997 27	41241 3	65878 1	74991 3	917284	7829 52	5825 34	3229 63	5184 90	5243 59
<b>3 CPP</b>	<b>HRSG-1 CPP</b>	2909 68	24146 05	31012 3	30899 9	329180	2255 91	2371 97	2234 05	2893 92	3218 25
	<b>HRSG-2 CPP</b>	2892 98	29409 0	25949 6	34155 1	384298	2721 93	3112 66	2175 44	2797 18	2648 18
	<b>HRSG-3 CPP</b>	2553 34	27057 1	31470 1	27431 7	263782	3383 57	1732 30	2427 57	3055 99	3630 14
<b>4 WHB</b>	<b>CO BOILER</b>	1538 12	13885 67	14443 0	17840 2	127997	1660 74	1495 61	1657 86	1479 49	1369 37
	<b>WHB-REF II</b>	1924 27	17603 6	18084 3	16790 8	155017	1784 53	1622 99	1214 40	1814 46	1820 72
	<b>DHDS</b>	4255 0	67845	48044	41008	164161	2290 91	4479 4	5333 8	4562 3	1626 58*
	<b>DCU</b>					88751	1841 97	1589 43	1663 12	2298 69	1482 41

<b>5 REF-III</b>	<b>WHB-REF III</b>	1720 313	14018 50	16199 93	18342 97	194415	1722 35	1615 64	1594 87	2037 545	1966 780
<b>TOTAL STEAM GENERATION</b>		6135 142	57707 432	60664 45	67834 63	739221	7358 98	6850 81	6843 94	6339 09	7059 393
<b>CRUDE PROCESSED (TMT)</b>		1025 1	12583	9835	10373	10694	1018 8	8243	9040	9102	1164 2
<b>SP. STEAM CONSUMPTION (MT STEAM/ MT CRUDE)</b>		0.60	0.65	0.62	0.65	0.69	0.72	0.83	0.78	0.70	0.60 6

\*Includes steam generation from BS-VI SRU and DHDS

**TABLE 19 TOTAL POWER GENERATION MANALI REFINERY**

SL.NO	EQPT	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
<b>OPH</b>	<b>TGA</b>				29	9259	2588 7	4687 6	3431 2	2185 7	4825 8
	<b>TGB</b>	911	6549		0	0	0	0	0	0	0
	<b>GT 4</b>	123,0 18	1358 42	1321 8	9910 70	1515 16	1143 16	9479 9	1125 62	1328 35	1522 09
	<b>GT 5</b>								1144 17	1227 68	1542 65

<b>NCCP</b>	<b>TG1</b>	1408 51	1301 25	1324 41	1402 64	9099 9	1589 21	1635 73	1308 33	1510 86	8302 4
	<b>TG2</b>	7994 1	6411 3	7556 2	1414 04	1257 33	5038 7	2329 0	7329 4	4213 3	1651
<b>CPP</b>	<b>GT-1</b>	1099 17	9178 8	1169 22	1126 98	1299 37	8855 0	9573 5	8838 0	1131 42	1285 83
	<b>GT-2</b>	1077 49	1120 87	9844 6	1348 46	1552 83	1112 79	1203 52	8693 8	1101 15	1058 13
	<b>GT-3</b>	9716 1	1031 05	1227 51	1033 91	9547 7	1385 76	7320 3	9774 3	1150 17	1374 47
<b>TOTAL POWER GENERATED</b>		6595 36	6435 85	6782 64	7317 40	7582 58	7670 40	7234 96	7384 79	8089 54	8112 50
<b>POWER IMPORT</b>		2884 3	3772	2637	2285	1370 8	1731 9	3006	650	1691 9	1737 1
<b>POWER EXPORT</b>		2974	2152	4168	8117	9633	7410	1002 1	1020 2	2923	63
<b>NET POWER CONSUMED</b>		6687 74	6862 27	6431 89	6727 84	7243 92	7645 56	7790 35	7289 27	8034 18	8077 54

**TABLE 20 WATER CONSUMPTION MANALI**

Description	2014 -15	2015 -16	2016 -17	2017 -18	2018 -19	2019 -20	2020 -21	2021 -22	2022 -23	2023 -24
<b>RO water, M<sup>3</sup></b>	46,98,218	45,73,642	40,49,747	42,91,228	39,32,593	3931475	2892887	2645889	2903357	3164288

<b>TTP water, M<sup>3</sup></b>	14,65,707	14,16,892	13,80,061	13,87,998	17,04,688	1274778	740077	1251347	1570213	1581479
<b>Raw Water Consumed (CMWSSB) in M<sup>3</sup></b>	11,48,451	18,23,318	27,30,201	21,12,813	25,46,169	294697	444097	582127	515121	330018
<b>Desal water, M3</b>	38,27,824	40,64,948	42,55,877	40,14,070	49,51,175	5018018	4741303	4484220	4523954	4052096
<b>ETP-4 DMRO</b>					4,60,931	1840753	2100078	1626504	1948684	
<b>CMWSSB TTRO water</b>						523703	1896521	2544977	2211059	1791874
<b>Total consumption (in m<sup>3</sup>)</b>	1,11,40,200	1,18,78,800	1,24,15,886	1,18,06,109	1,35,95,556	12883424	12814963	13135064	13672388	6885881
<b>Total consumption (in MGD)</b>	6.71	7.15	7.49	7.12	8.19	7.74	7.72	7.92	8.24	7.65
<b>Specific Consumption (in m<sup>3</sup> Per MT of Crude</b>	1.09	1.3	1.28	1.15	1.31	1.27	1.29	1.27	1.21	0.95

**TABLE 21 WINDMILL GENERATION ACTUAL CAPACITY UTILIZATION FACTOR**

<b>YEAR</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016 - 2017</b>	<b>2017 - 2018</b>	<b>2018-19</b>

MONT H	UNITS	CUF (%)								
APR	696729	5.50	403884	3.20	275432	2.20	631172	5.00	731820	5.80
MAY	1442285	11.00	215660	1.60	498584	3.80	987712	7.50	710624	5.40
JUN	6076649	48.00	1491930	11.80	2975792	23.50	3729380	29.40	2134456	16.80
JUL	7172816	54.80	5266264	40.20	5248400	40.10	6603612	50.40	6165940	47.10
AUG	3852275	29.40	5058652	38.60	4317480	33.00	7160768	54.70	8159708	62.30
SEP	2973799	23.50	2572000	20.30	5408304	42.70	3469900	27.40	6544396	51.60
OCT	506404	3.90	1534144	11.70	4274768	32.60	2041652	15.60	1524988	11.60
NOV	279975	2.20	197770	1.60	545892	4.30	716828	5.70	324408	2.60
DEC	273492	2.10	92196	0.70	419292	3.20	349292	2.70	365012	2.80
JAN	315361	2.40	260668	2.00	422792	3.20	441904	3.40	891501	6.80
FEB	376269	3.20	366500	3.00	616044	5.20	534640	4.50	606668	5.10
MAR	585811	4.50	598120	4.60	642796	4.90	703740	5.40	647132	4.90
TOTAL	2455186	15.90	1805778	11.70	2564557	16.60	2737060	17.60	2880665	18.70
YEAR	2019-20		2020-21		2021-22		2022-23		2023-24	

<b>MONT H</b>	<b>UNITS</b>	<b>CUF (%)</b>								
<b>APR</b>	601510	4.70	1751526	13.80	712112	5.60	493885	3.90	468803	3.70
<b>MAY</b>	2114862	16.20	1751526	13.40	2266088	17.30	3340086	25.50	1259324	9.62
<b>JUN</b>	4068679	32.10	4751300	37.50	4206687	33.20	4315255	34.00	5275424	41.63
<b>JUL</b>	5443706	41.60	3766538	28.80	6152205	46.90	6219874	47.50	7691197	58.74
<b>AUG</b>	5090702	38.90	5065539	38.70	5117845	39.00	4258979	32.50	4275612	32.65
<b>SEP</b>	2994842	23.60	3372053	26.60	3872010	30.50	3446469	27.20	4442656	35.06
<b>OCT</b>	330917	2.50	2636771	20.10	871972	6.60	1081698	8.20	807517	6.17
<b>NOV</b>	316860	2.50	241737	1.90	350405	2.70	175464	1.30	272067	2.15
<b>DEC</b>	432590	3.30	254073	1.90	389752	2.90	402212	3.00	476740	3.64
<b>JAN</b>	690178	5.30	371823	2.80	512871	3.90	478137	3.60	530757	4.05
<b>FEB</b>	971671	7.90	576290	4.90	584472	4.90	416162	3.50	871846	7.37
<b>MAR</b>	522648	4.00	748891	5.70	644181	4.90	722060	5.50	514859	3.93
<b>TOTAL</b>	2357916	15.20	2399517	15.50	2568060	16.60	2535028	16.40	2688680	17.44
	5		6		0		1		2	

Location Palghat pass Pushpathur



# DIRECT MARKETING

TABLE 22: PRODUCT SALES

PRODUCT	UNIT	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
NAPHTHA	MT	20619 2	20897 0	15650 4	18031 4	20941 0	19417 8	17735 8	0	0	0	0	258
LABFS	MT	52979	40562	45687	54047	58112	64445	65299	63792	77965	77141	68065	5628 7
PBFS	MT	6929	7637	8856	8104	7143	11990	6148	12680	7054	11695	10311	7160
PIB	MT	0	0	0	0	0	0	3209	0	0	0	0	0
PROPYLENE	MT	27894	35643	37095	27962	26056	30129	24530	33711	32404	34068	34706	3511 5
MEKFS	MT	7524	8192	10948	15783	16167	19940	9719	21241	20391	19802	19325	1138 8
LOBS(NPS U)	MT	0	0	6973	8033	8044	6631	6328	3985	0	1563	0	0
SULPHUR	MT	45526	49935	44057	33907	36765	39423	56096	98763	77091	81125	12516 8	1212 91
SLACK WAX	MT	0	0	0	0	0	0	7736	0	0	0	0	0
BITUMEN (IOC)	MT	0	0	0	0	0	0	0	0	0	0	0	0
CRMB (IOC)	MT	0	0	0	0	0	0	0	0	0	0	0	0
WAX	MT	20902	23014	24852	20385	23221	21868	21088	21236	19420	23494	28909	2532 5
EXTRACTS	MT	0	0	0	0	0	0	0	0	0	0	0	0

<b>FG HEXANE</b>	MT	7613	7075	5789	5460	3554	2452	12308	16175	19657	21876	22762	2808 3
<b>PETCOKE</b>	MT	0	0	0	0	0	60373	35543 7	40938 3	30308 4	34934 9	56230 8	5291 12
<b>PROPANE</b>	MT	1426	580	72	47	0	0	0	0	0	0	0	0
<b>MTO</b>	MT	0	0	0	0	0	0	0	0	0	8159	31390	4026 3
<b>FURNACE OIL</b>	MT	0	0	0		1124	2862	8867	3497	3570	4030	4007	197
<b>HYDROGE N</b>	NM <sup>3</sup>	20789 5	57995	38732	35605 6	293	0	137	76	32	0	0	0
<b>TOTAL *</b>		37698 5	38160 6	34083 4	35404 2	38988 9	45429 1	75412 3	68446 3	56063 6	63230 2	90695 9	8714 59

# SAFETY

## 1. STATISTICS OF FIRE INCIDENTS AND ACCIDENTS

TABLE 23: STATISTICS OF FIRE INCIDENTS

<b>Year</b>	<b>No of fires</b>
2016-17	Nil
2017-18	Nil
2018-19	Nil
2019-20	1
2020-21	Nil
2021-22	Nil
2022-23	Nil
2023-24	Nil

TABLE 24: STATISTICS OF ACCIDENTS

<b>Year</b>	<b>Employees</b>		<b>Contract Men</b>	
	<b>Reportable Injuries</b>	<b>Fatality in Nos</b>	<b>Reportable Injuries</b>	<b>Fatality in Nos</b>
2016-17	5	Nil	3	1
2017-18	1	Nil	2	1
2018-19	1	Nil	4	Nil
2019-20	Nil	Nil	3	1

<b>2020-21</b>	Nil	Nil	1	Nil
<b>2021-22</b>	Nil	Nil	Nil	Nil
<b>2022-23</b>	Nil	Nil	Nil	Nil
<b>2023-24</b>	Nil	Nil	Nil	Nil

## 2. SAFETY AUDITS: MANALI REFINERY

### 1. OIL INDUSTRY SAFETY DIRECTORATE (OISD)

Oil Industry Safety Directorate (OISD) carry out structured safety audit of the Refinery once in 2 – 3 years with experts drawn from other oil companies. 11 External Safety Audits (ESA) & 12 Surprise Safety Audit (SSA) have been conducted and recommendations of the audit committees are implemented on time bound schedule.

#### 6.2.1 OISD teams carry out External Safety Audit (ESA) in the Refinery

The details of the External Safety Audits (ESA) conducted are as follows.

External Safety Audit	ESA-VI	ESA-VII	ESA-VIII	ESA-IX	ESA-X	ESA-XI
<b>Year</b>	2002	2007	2010	2013	2018	2022
<b>No of recommendations</b>	85	65	78	127	153	98
<b>Complied/completed</b>	85	65	78	127	153	96

#### 6.2.2 OISD teams carry out External Safety Audit (ESA) in IOT bottling plant.

The details of the External Safety Audit (ESA) conducted are as follows.

<b>External Safety Audit</b>	<b>ESA-I</b>
<b>Year</b>	<b>2018</b>
<b>No of recommendations</b>	<b>114</b>
<b>Complied/completed</b>	<b>114</b>

#### 6.2.3 OISD teams carry out Surprise Safety Audit (SSA) in the Refinery.

Details of the Surprise Safety Audits (SSA) conducted are as follows:

<b>Surprise Safety check</b>	<b>SSA-V</b>	<b>SSA-VI</b>	<b>SSA-VII</b>	<b>SSA-VIII</b>	<b>SSA-IX</b>	<b>SSA-X</b>	<b>SSA-XI</b>	<b>SSA-XII</b>
<b>Year</b>	2002	2003	2005	2012	2015	2018	2021	2023
<b>No of recommendations</b>	34	49	16	17	45	153	23	58
<b>Complied/completed</b>	34	49	16	17	45	153	23	55

#### Best Safety Record:

1. Best previous records at CPCL, Manali, Chennai
2. Year 2015: Longest Spell of incident free days - 137 days
3. Year 2016: Longest spell of incident free days – 122 days
4. Year 2017: Longest spell of incident free days – 175 days
5. Year 2018: Longest spell of incident free days – 249 days
6. Year 2019: Longest spell of incident free days – 180 days

7. Year 2020: Longest spell of incident free days – 365 days
8. Year 2021: Longest spell of incident free days – 365 days
9. Year 2022: Longest spell of incident free days – 365 days
10. Year 2023: Longest spell of incident free days – 365 days

#### **6.2.4 Safety awards received at CPCL, Manali, Chennai**

1. Golden peacock award received in June 2009
2. Safety appreciation award received in August-2009 from Institute of Engineers India.
3. Continued Patronage award received from National safety council, Tamil Nadu in February-2010
4. Manali Refinery received the prestigious State Safety Award – First prize for the year 2008, under the category of Industries –Chemicals, of Group A in Scheme III from Govt. of Tamil Nadu in recognition of better safety performance.
5. Fire Service medal for gallantry conferred by His Excellency, the President of India on three
6. Fire & Safety Personnel for the remarkable job done by them during firefighting in OCHU on
7. 22-09-2011.
8. Tamil Nadu Safety Award under Group A (Chemical Industries) for the year 2011 for two categories Scheme I – Highest Reduction in Weighted Frequency rate over previous year - Scheme III –Longest Accident-Free period in man-hour in Group A.
9. 12th Annual Green Tech – Occupation Health Safety Award 2013 in Silver Category in
10. Petroleum Refining Sector.
11. Golden Peacock Occupational Health & Safety Award for year 2013 among the Indian
12. Refineries, by the Institute of Directors (OID), New Delhi.

13. CPCL was awarded Safety Star Award for 2012 by NSC, T.N. Chapter in appreciation for high level of safety measures exercised by Company. Award was presented on 18-12-2014 by the Hon. Labour Minister, T.N.Govt.
14. Manali Refinery received the prestigious State Safety Award (First Prize) under Chemical Industries Category during December 2012 from the T.N. Govt. The award was presented by Hon. Labour Minister on 26-11-2014.
15. Award of honour for excellence in occupational health, safety, and environment by National Safety Council – Tamilnadu Chapter in 2023.
16. SKOCH Gold Award 2023 for Technology Enablement – Utilization of Caged Drones for Inspection in Refineries
17. Prestigious “Gold Award” for Excellence in EHS (Environment, Health, and Safety) by the Confederation of Indian Industry – Southern Region (CII-SR)

# RESEARCH AND DEVELOPMENT

## MAJOR ACTIVITIES 2023-24

### 1. Quality improvement of Group-1 LOBS

Lab scale aromatic extraction and dewaxing studies have been conducted to evaluate the quality improvement of Group-1 LOBS by doping a suitable refinery stream (UCO) in Inter Neutral (IN) Distillate.

Outcome:

- ✓ The quality of IN LOBS has improved significantly.
- ✓ Plant trial has been completed successfully.
- ✓ To sustain the LOBS business in the market, the quality of IN LOBS has been improved.

### 2. Diesel Reduction Methodology

Pilot plant studies have been conducted to evaluate the feasibility of production of valuable products (ATF, PCK, MTO) from diesel streams aimed at minimization of diesel production.

Outcome:

- ✓ Fractionation of value- added products like ATF, PCK and MTO from diesel streams without affecting product diesel specifications.
- ✓ Potential strategy for diesel reduction through recovery of value-added products.

### 3. Identification of Alternate crude source for Wax production

Lab scale de-oiling studies have been conducted on five different crude sources for identification of appropriate crude for wax production.

Outcome:

- ✓ Ravva crude has wax potential and the same was considered as an alternate feedstock for wax plant.
- ✓ Plant trial has been completed successfully.
- ✓ To increase the throughput in wax plant and to avoid dependency on Mumbai High crude.

#### **4. Collaborative Research Projects**

- a) Two collaborative research projects have been taken up with Rajiv Gandhi Institute of Petroleum technology (RGIFT) on sustainable development.

**Project-1: Development of Corrosion Inhibitor (CI) formulations for mitigating the corrosion led by ethanol blended petrol.**

**Project Cost:** Rs.62.31 Lakhs

**Benefit:** Provides new avenues to expand CPCL's business portfolio. An initiative towards sustainability development.

**Project-2: Production of Microcellulose (MC), Nanocellulose (NC) from Rice Straw and Green Coconut Shells. Project Cost:** Rs.100.30 Lakhs

**At RGIFT:** Pilot plant for 2 kg/batch production of MC and 0.25 kg/batch production of NC

**Benefit:** An initiative towards sustainability development. Creates revenue for farmers.

- b) Memorandum of Understanding (MoU) with Indian Institute of Technology Madras (IITM) and Vellore Institute of Technology (VIT)

CPCL has expanded its collaborative efforts towards Industry Academia by signing a Memorandum of Understanding (MoU) with Indian Institute of Technology Madras (IITM) and Vellore Institute of Technology (VIT) in Oct'2023 towards a CHT Research Project titled "Zero Emission Catalytic Pyrolysis of Multilayer Plastic Waste (MLP) to Value-Added Products - Circular Economy Approach". This collaborative project exemplifies CPCL's commitment to sustainability and circular economy principles.

### **5) Crude Assay Evaluation of various crude processed in the refinery.**

Crude assay data generation was carried out for the following crude samples.

- Mumbai High (C-7 FPSO)
- ESPO
- Olombendo
- Escravos
- Siberian Light
- Varandey

### **6) Creation of additional facility**

Installation and commissioning has been completed for Flame Photometer and Programmable Muffle Furnace. Procurement of Nitrogen Sulphur Analyser has been initiated and purchase order has been placed.

### **7) Patent Filing**

Patent filing on "Composition and method for inhibiting corrosion in steel in ethanol blended fuel environment" is in progress. The patent application has been completed and patent grant is pending.

**TABLE 25: R&D EXPENDITURE**

<b>R&amp;D EXPENDITURE</b>			
<b>(Rs. in Crores)</b>			
<b>Period</b>	<b>Capital</b>	<b>Recurring</b>	<b>Total</b>
2015-16	0.29	6.69	6.97
2016-17	0.60	3.94	4.54
2017-18	3.70	7.81	11.51
2018-19	0.41	5.91	6.32
2019-20	0.32	4.49	4.81
2020-21	0.62	5.64	6.26
2021-22	1.46	5.69	7.15
2022-23	3.28	6.44	9.72
2023-24	3.75	6.97	10.72

**Note:** Historical data is enclosed as **Annexure – IV**

## FINANCIAL PERFORMANCE

TABLE 26 WHAT WE EARNED AND WHAT WE SPENT

	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
<b>WHAT WE EARNED</b>										
<b>Income</b>										
Turnover	47878	34954	40586	44135	52177	48624	41814	60402	90801	79207
Interest	26	16	16	19	29	18	14	14	7	10
Miscellaneous Receipts	29	38	46	73	54	88	178	82	115	68
Change in inventories	(1321)	(209)	(105)	607	410	(990)	892	1227	(979)	832
Prior period Income / (Expense)	(4)	-	-	-	-	-	-	-	-	-
<b>Sub-Total</b>	<b>46608</b>	<b>34799</b>	<b>40543</b>	<b>44834</b>	<b>52670</b>	<b>47740</b>	<b>42898</b>	<b>61725</b>	<b>89945</b>	<b>80117</b>
<b>WHAT WE SPENT</b>										
<b>Expenditure</b>										
Raw Materials	39558	23107	24442	29728	39634	36698	20013	40108	67626	60963

Excise Duty	6010	9125	12916	11661	10863	11533	19454	17099	14174	12887
Manufacturing Expenses	277	310	315	322	448	447	345	415	508	541
Employee Benefits Expense	339	357	513	582	461	508	565	555	556	547
Other Expenses	536	515	378	418	688	633	401	801	1368	691
Finance Costs	404	352	273	321	420	413	375	412	330	223
Depreciation and Amortization	226	274	279	340	453	468	466	504	573	606
Impairment on Property, Plant & Equipment / CWIP	-	-	62	4	1	54	2	0	0	0
<b>Sub-Total</b>	<b>47350</b>	<b>34040</b>	<b>39178</b>	<b>43376</b>	<b>52968</b>	<b>50754</b>	<b>41621</b>	<b>59894</b>	<b>85136</b>	<b>76457</b>
<b>Profit Before T ax</b>	<b>(742)</b>	<b>759</b>	<b>1365</b>	<b>1458</b>	<b>(298)</b>	<b>(3016)</b>	<b>1277</b>	<b>1832</b>	<b>4809</b>	<b>3660</b>
Provision for Taxation	(703)	17	335	545	(85)	(938)	1039	489	1275	949
<b>Profit After T ax</b>	<b>(39)</b>	<b>742</b>	<b>1030</b>	<b>913</b>	<b>(213)</b>	<b>(2078)</b>	<b>238</b>	<b>1342</b>	<b>3534</b>	<b>2711</b>

<b>Other Comprehensive Income</b>	-	(2)	(6)	6	(2)	(40)	(5)	23	(13)	3
<b>Total Comprehensive Income</b>	<b>(39)</b>	<b>740</b>	<b>1024</b>	<b>919</b>	<b>(215)</b>	<b>(2117)</b>	<b>232</b>	<b>1366</b>	<b>3521</b>	<b>2714</b>
Dividend including Dividend Distribution Tax	-	72	376	332	-	-	-	30	402	819

<b>Details</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
<b>Sale of Products</b>	47878	34953	40586	44135	52177	48624	41814	60402	90801	79207
<b>Transfer for own consumption</b>	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>47878</b>	<b>34953</b>	<b>40586</b>	<b>44135</b>	<b>52177</b>	<b>48624</b>	<b>41814</b>	<b>60402</b>	<b>90801</b>	<b>79207</b>

**TABLE 27 VALUE ADDED STATEMENT**

<b>Details</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
<b>Value of Production</b>	46557	34745	40481	44742	52587	47634	42706	61629	89822	80039
<b>Less: Cost of Direct Materials</b>	46091	32667	37676	41788	51193	48845	39762	57795	83026	74549
<b>Value Added</b>	466	2078	2805	2953	1394	-1211	2944	3834	6797	5490
<b>Interest income</b>	26	16	16	20	29	18	14	18	7	10
<b>Miscellaneous Receipts</b>	29	33	36	73	53	88	91	78	115	65
<b>Profit on Sale of Assets</b>	0	5	0	0	0	0	0	0	0	0
<b>Total</b>	521	2131	2857	3046	1477	-1104	3049	3930	6919	5565
<b>Applied Towards</b>										
<b>Operating Expenses</b>	634	747	879	922	902	976	930	1182	1206	1076
<b>Interest</b>	404	352	273	321	420	413	375	412	330	223
<b>Depreciation</b>	226	274	340	345	453	523	467	504	573	606

<b>Income Tax (Net of deferred tax)</b>	-703	17	335	545	-85	-938	1039	489	1275	949
<b>Dividend</b>	-	-	72	376	332	-	-	30	402	819
<b>Corporate Dividend Tax</b>	-	-	0	0	0	-	-	-	-	-
<b>Retained Earnings</b>	-39	742	958	537	-545	-2078	238	1313	3132	1892
<b>Total</b>	521	2131	2857	3046	1477	-1104	3049	3930	6919	5565

**TABLE 28 EXPENDITURE ON EMPLOYEE WELFARE**

<b>Details</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
<b>Salaries and Allowances</b>										
<b>Salaries and Allowances</b>	222	261	302	366	340	348	402	383	429	425
<b>VRS</b>	-	-	-	-						
<b>Provision for Retirement Benefits - AS 15</b>	30	16	13	22	21	33	34	20	25	27

(Leave Encashment)										
Sub-Total	252	277	315	387	361	381	436	403	454	452
<b>Contribution to Employees' Provident, Family Pension and Other Funds</b>										
Provident and Other Funds	16	16	16	19	20	21	31	22	23	34
Provision for Retirement Benefits - AS 15	16	32	93	134	41	36	43	67	28	27
(Gratuity and Superannuation)										
Sub-Total	32	48	110	154	61	57	74	89	50	61
Staff Welfare Expenses										
Canteen	9	7	9	12	11	10	8	9	10	11
Clothing and Uniform	0	1	1	0	1	1	2	0	1	2
Medical	20	17	22	12	13	14	18	25	12	3
Awards	-	0	22	0	2	1	1	1	1	12

<b>LTA/LTC/Holiday Home</b>	21	(0)	27	1	1	1	15	15	17	15
<b>Others</b>	5	7	7	16	12	43	11	13	11	14
<b>Sub-Total</b>	<b>55</b>	<b>31</b>	<b>88</b>	<b>41</b>	<b>39</b>	<b>70</b>	<b>55</b>	<b>63</b>	<b>52</b>	<b>33</b>
<b>Total</b>	<b>339</b>	<b>357</b>	<b>513</b>	<b>582</b>	<b>461</b>	<b>508</b>	<b>565</b>	<b>555</b>	<b>556</b>	<b>547</b>

TABLE 29 WHAT WE OWE AND WHAT WE OWN

		<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	
<b>What We Owe</b>												
Equity Capital	Share	149	149	149	149	149	149	149	149	149	149	149
Reserves		1506	2212	3165	3708	3161	1043	1276	2641	6132	8444	
<b>Net worth</b>		1655	2361	3314	3857	3310	1192	1425	2790	6281	8593	
Preference Capital	Share	-	1042	1080	1080	547	572	606	639	533	533	
Borrowings		5399	3567	4501	3411	6121	8126	8561	8584	3701	2229	
Deferred Liability	Tax	-	-	24	206	121	-	104	563	765	814	

<b>Total</b>	7054	6970	8919	8554	10099	9890	10696	12576	11280	12169
<b>What We Own</b>										
Fixed Assets	8176	4379	4456	6829	8341	8889	9408	9635	10817	11281
Less: Depreciation & Impairment	4106	265	578	940	1387	1876	2311	2710	3221	3814
<b>Fixed Assets (Net WDV)</b>	<b>4070</b>	<b>4114</b>	<b>3878</b>	<b>5889</b>	<b>6954</b>	<b>7013</b>	<b>7097</b>	<b>6925</b>	<b>7596</b>	<b>7468</b>
Intangible Assets	49	6	7	28	28	28	55	56	57	58
Less: Amortization	42	1	2	3	5	6	10	13	16	20
<b>Intangible Assets (Net WDV)</b>	<b>7</b>	<b>5</b>	<b>5</b>	<b>25</b>	<b>23</b>	<b>22</b>	<b>45</b>	<b>43</b>	<b>41</b>	<b>39</b>
Capital WIP	840	1753	2843	1439	1221	1603	1553	1210	334	213
Investments	25	12	12	12	12	12	12	12	12	12
Deferred Tax Asset	-	-	-	-	-	934	-	-	-	-
Assets held for transfer	-	-	-	-	-	-	-	593	857	1036

Working Capital	2112	1085	2181	1190	1889	306	1989	3793	2441	3402
<b>Total</b>	<b>7054</b>	<b>6970</b>	<b>8919</b>	<b>8554</b>	<b>10099</b>	<b>9890</b>	<b>10696</b>	<b>12576</b>	<b>11280</b>	<b>12169</b>

TABLE 30 RESERVES AND SURPLUS

Details	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
<b>Capital</b>	-	200	400	600	600	600	600	700	1000	1000
<b>Redemption Reserve</b>										
<b>Share Premium Reserve</b>	250	250	250	250	250	250	250	250	250	250
<b>Debenture Redemption Reserve</b>	-	150	200	250	-	-	-	-	-	-
<b>General Reserve incl. Retained Earnings</b>	1256	1612	2315	2607	2311	193	426	1691	4882	7165
<b>Total</b>	<b>1506</b>	<b>2212</b>	<b>3165</b>	<b>3708</b>	<b>3161</b>	<b>1043</b>	<b>1276</b>	<b>2641</b>	<b>6132</b>	<b>8444</b>

**TABLE 31 CONSOLIDATED LOAN STATEMENT**

<b>Accounting Year</b>	<b>Opening Balance</b>	<b>Loan Received</b>	<b>Loan Repaid</b>	<b>Closing Balance</b>
<b>2013-14</b>	5905	1000	1306	5600
<b>2014-15</b>	5600	-	201	5399
<b>2015-16</b>	5399	1000	1832	4567
<b>2016-17</b>	4567	-	(934)	5501
<b>2017-18</b>	5501	-	1010	4491
<b>2018-19</b>	4491	3630	1453	6668
<b>2019-20</b>	6668	2381	350	8698
<b>2020-21</b>	8698	988	519	9167
<b>2021-22</b>	9167	524	468	9223
<b>2022-23</b>	9223	0	4988	4235
<b>2023-24</b>	4235	0	1473	2762

**TABLE 32 INVENTORY**

<b>Details</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
<b>Stores, Spares, Chemicals and Catalysts in stock, in transit and with Others</b>	236	207	211	231	237	270	305	290	305	316
<b>Raw materials in stock and in transit and with others</b>	1939	1545	1679	2605	2277	747	1969	3780	3185	4199
<b>Finished Products</b>	1171	1145	992	1442	1700	1062	1935	2456	1682	2310
<b>Intermediate Products</b>	459	277	325	481	633	281	300	1006	802	1006
<b>Total</b>	<b>3805</b>	<b>3175</b>	<b>3207</b>	<b>4759</b>	<b>4847</b>	<b>2361</b>	<b>4509</b>	<b>7533</b>	<b>5974</b>	<b>7831</b>

**TABLE 33 CHANGES IN WORKING CAPITAL**

<b>Details</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
<b>A. CURRENT ASSETS</b>										
<b>1. Interest accrued on investments</b>	0.47	0.49	0.02	0.04	0.05	-	-	-	-	-
<b>2. Inventories</b>	3805	3175	3207	4759	4847	2361	4509	7533	5974	7831
<b>3. Sundry Debtors</b>	1828	762	1040	1569	327	124	200	252	299	462
<b>4. Cash and Bank Balances</b>	40	39	17	9	10	4	5	12	9	94
<b>5. Loans and Advances &amp; other current assets</b>	339	472	493	464	561	598	618	795	711	931
<b>Sub-Total</b>	<b>6013</b>	<b>4447</b>	<b>4758</b>	<b>6801</b>	<b>5745</b>	<b>3086</b>	<b>5332</b>	<b>8592</b>	<b>6992</b>	<b>9318</b>
<b>B. CURRENT LIABILITIES &amp; PROVISIONS</b>										
<b>Working Capital (A - B)</b>	2112	1085	2181	1190	1889	306	1989	3793	2441	3402
<b>Changes in Working Capital</b>	(1232)	(1027)	1096	(992)	699	(1582)	1682	1805	(1353)	961

**TABLE 34 FINANCIAL INDICATORS**

<b>Details</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
<b>Debt Equity Ratio (as per Companies Act)</b>	3.26	1.05	1.02	0.69	1.59	4.60	4.22	2.50	0.54	0.24
<b>Earnings per share (₹)</b>	(2.62)	49.82	69.15	61.31	(14.33)	(139.52)	15.95	90.15	237.29	182.07
<b>Profit After Tax to Average Net worth (%)</b>	(2.31)	36.94	36.29	25.46	(5.95)	(92.30)	18.16	63.70	77.92	36.46
<b>Dividend (%)</b>	-	40	210	185	-	-	-	20	270	550
<b>Dividend Payout (%)</b>	-	8.03	30.37	30.18	-	-	-	2.22	11.38	30.21

**TABLE 35 DIVIDEND HISTORY**

<b>Accounting Year</b>	<b>Rate %</b>	<b>Amount</b>	<b>To GOI</b>	<b>To IOC</b>	<b>To NIOC</b>	<b>To Others</b>
<b>2013-14</b>	-	-	-	-	-	-
<b>2014-15</b>	-	-	-	-	-	-

<b>2015-16</b>	40.0	59.56	-	30.91	9.17	19.48
<b>2016-17</b>	210.0	312.71	-	162.27	48.16	102.29
<b>2017-18</b>	185.0	0.00	-	0.00	0.00	0.00
<b>2018-19</b>	-	-	-	-	-	-
<b>2019-20</b>	-	-	-	-	-	-
<b>2020-21</b>	-	-	-	-	-	-
<b>2021-22</b>	20.0	29.8	-	15.45	4.59	9.74
<b>2022-23</b>	270.0	402.1	-	208.63	61.92	131.51
<b>2023-24</b>	550.0	819.0	-	424.98	126.13	267.90

Note: Dividend amount does not include Corporate Dividend Tax

TABLE 36 CONTRIBUTION TO CENTRAL / STATE EXCHEQUERS

<b>Accounting Year</b>	<b>Income Tax</b>	<b>Customs Duty</b>	<b>Excise Duty, Dividend Tax and</b>	<b>GST</b>	<b>Total to Central Exchequer</b>	<b>Sales-tax to State Exchequer</b>	<b>Grand Total</b>
2014-15	-	47.04	5937.48	-	5984.52	738.33	6722.85
2015-16	20.44	55.70	8805.92	-	8882.06	444.12	9326.18
2016-17	288.00	122.25	12859.89	-	13270.13	436.22	13706.35
2017-18	401.10	50.41	11609.83	509.75	12571.09	14.21	13285.30
2018-19	35.65	56.37	10947.17	633.51	11672.69	744.72	12417.41

2019-20	44.66	54.10	11439.19	492.38	12030.33	609.65	12639.98
2020-21	3.35	47.85	19314.95	353.63	19719.78	485.20	20204.98
2021-22	24.80	45.23	17372.15	681.93	18124.11	798.28	18922.39
2022-23	1044.61	61.54	14200.85	1146.06	16453.06	1274.96	17728.02
2023-24	955.34	77.72	12663.30	993.48	14689.84	1049.29	15739.13

TABLE 37 SALARIES ALLOWANCES AND PERSONAL CHARGES

PARTICULARS	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
<b>A. SALARIES &amp; ALLOWANCES</b>	252.06	277.35	314.84	387.34	361.10	380.96	435.76	402.90	453.76	451.91
<b>B. PF, GRATUIT Y, SUPERANNUATION</b>	31.56	48.34	109.81	153.61	60.68	57.33	73.64	89.07	50.097	61.446
<b>C. PERSONNEL CHARGES</b>										
<b>Canteen</b>	9.34	7.07	8.97	11.70	10.64	10.13	7.99	9.01	9.5351	10.834
<b>Clothing &amp; Uniform</b>	0.12	0.78	1.31	0.18	1.03	0.99	1.73	0.24	1.1243	2.349
<b>Medical exp (Incl. First Aid)</b>	19.94	17.13	21.72	11.86	12.58	13.72	18.35	24.79	12.331	3.2622

<b>Employee Welfare</b>	-	-	-	-	-	-	-	-	-	0	0
<b>Awards to employees</b>	-	0.11	21.99	0.29	1.98	1.02	0.87	1.12	1.2923	-11.771	
<b>LT C, LFA, Holiday Home</b>	20.68	(0.31)	26.86	1.05	0.88	0.57	14.68	15.25	16.752	14.585	
<b>Other Staff Welfare Expenses</b>	5.01	6.54	7.39	15.72	11.64	43.10	11.48	12.88	11.42	14.09	
<b>TOTAL(C)</b>	55.09	31.32	88.24	40.80	38.74	69.54	55.10	63.29	52.45	33.35	
<b>(A) + (B) + (C)</b>	<b>338.71</b>	<b>357.00</b>	<b>512.88</b>	<b>581.76</b>	<b>460.52</b>	<b>507.83</b>	<b>564.51</b>	<b>555.26</b>	<b>556.31</b>	<b>546.70</b>	

TABLE 38 CAPITAL EXPENDITURE FOR THE PAST 10 YEARS

Year	Plan			Non Plan			JV			Total		
	Target (BE)	Target (RE)	Actuals									
2014-15	1102.00	617.00	465.90	146.30	61.00	59.10	-	-	-	1248.30	678.00	525.00
2015-16	1300.00	1250.00	1272.00	92.30	66.60	70.70	-	-	-	1392.30	1316.60	1342.70

	2016-17	2016-17	1238.0	1150.0	1134.	79.00	79.00	134.	-	-	-	1317.0	1229.0	1268
	2017-18	2017-18	780.00	800.00	932.0	65.00	62.00	88.0	-	-	-	845.00	862.00	1020
	2018-19	2018-19	950.00	1130.0	1165.	60.00	60.00	148.	-	-	-	1010.0	1190.0	1313
	2019-20	2019-20	1005.0	1005.0	825.6	100.00	100.00	135.	-	-	-	1105.0	1105.0	960.
	2020-21	2020-21	484.00	-	423.2	85.00	-	159.	-	-	-	569.00	-	583.
	2021-22	2021-22	168.00	168.00	169.8	216.00	216.00	190.	-	175.00	275.	384.00	559.00	636.
	2022-23	2022-23	128.00	128.00	164.0	106.00	106.00	222.	350.00	350.00	253.	584.00	584.00	638.
2023-24			35	98	146.5	66	132	231.	350	238	233.	548	548	611.
					7			3			28			15

\*Inv in JV Including 9MMTPA Project..

**TABLE 39 REFINING COST**

	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
<b>Stores, Chemicals, Catalysts and Packing material consumed</b>	80	62	64	84	93	91	79	96	136	145
<b>Power and Water charges</b>	55	47	50	54	81	70	58	66	78	79
<b>Repairs and Maintenance</b>	142	202	204	206	277	288	210	254	296	317
<b>Salaries &amp; Benefits to Employees</b>	339	357	513	582	461	508	565	555	556	547
<b>Administration and other expenses (including prior period expenses/income)</b>	541	515	378	418	689	633	401	801	1368	691
<b>Sub-Total</b>	1157	1183	1209	1344	1600	1590	1312	1772	2434	1779
<b>Depreciation</b>	226	274	279	340	453	468	466	504	573	606
<b>Total</b>	1383	1457	1488	1684	2052	2058	1778	2276	3007	2385

## MOU PERFORMANCE & RATING

TABLE 40 MoU RANK FOR 2013-2014

<b>Year</b>	<b>MoU Rank</b>	<b>Rating</b>
2013-14	2.32	Very Good
2014-15	1.47	Excellent
2015-16	74.4	Very Good
2016-17	92.15	Excellent
2017-18	93.95	Excellent
2018-19	59.8	Good
2019-20	59.93	Good
2020-21	77.89	Very Good
2021-22	98.12	Excellent
2022-23	99	Excellent
2023-24	98.21	Excellent

## HUMAN RESOURCES & CSR

TABLE 41 MANPOWER AS ON 31ST MARCH EVERY YEAR

<b>YEAR</b>	<b>SUPERVISORY</b>	<b>NON-SUPERVISORY</b>	<b>WOMEN EMPLOYEES</b>	<b>TOTAL</b>
2013	805	900	89	1,705
2014	778	910	88	1,688
2015	744	884	88	1,628
2016	804	833	86	1,637
2017	805	840	86	1,645
2018	832	877	87	1,709
2019	855	871	87	1,726
2020	849	835	88	1,684
2021	789	804	86	1,593
2022	694	713	79	1,407
2023	732	734	76	1,466
2024	734	688	75	1,422

**TABLE 42 CSR EXPENDITURE**

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2015-16	NIL	1.33
2016-17	NIL	1.88
2017-18	9.09	9.18
2018-19	18.88	18.89
2019-20	16.72	16.72
2020-21	1.61	1.96
2021-22	NIL	8.06
2022-23	5.43	6.04
2023-24	12.73	20.11

**TABLE 43 MAJOR CSR & SD EXPENDITURE DETAILS 2023-24**

S.No	<b>CSR Project / Activity</b>	<b>Amount</b>	<b>Total</b>
	<b>Animal Welfare</b>		
1	Endangered animal protection (2 elephants)	25.92	25.92
	<b>Armed Forces Welfare</b>		
2	Contribution of Armed Forces Flag Day Fund	1.00	1.00
	<b>Community Development</b>		
3	Avadi Night Marathon	4.60	178.44

4	Community Hall at Ramanathapuram	50.00	
5	Construction of MTC Bus Depot at Kathivakkam, Ennore	45.00	
6	Construction of Compound Wall, Arch Provision and toilet in Pattinathar Modern Gasifier Crematorium	25.00	
7	Construction of Anganwadi at KKD Nagar, Thiruvottiyur	15.00	
8	Construction of Community Hall at Kargil Nagar	15.00	
9	Donation of Solar Lantern to CBR Panangudi People 960 Nos.	9.38	
10	Donation of Sintex Water Tank 3000 Ltrs., 50 Nos. to Madhavaram MW	14.46	
<b>Disability Welfare</b>			
11	Distribution of AIDS to the disabled people	99.00	107.90
12	Smart vision Glass	8.90	
<b>Education &amp; Skill Development</b>			
13	Neet & Jee	4.48	
14	Skill Development – contribution towards stipend payable to apprentices	137.44	799.27
15	Sponsorship of prizes and food for Oratical competition at Nagai Dist	2.20	

16	Sponsor towards Conducting 2nd Mega Book Fair - 2023 at Nagai dist	10.00	
17	Energy Consortium Project	75.00	
18	Construction of Anganwadi at Manali	15.00	
19	Additional Classrooms for Corporation Middle School at Tsunami Quarters, Thiruvottiyur	49.00	
20	Smart Class Arrangements and Infrastructural Facilities at Gurukulam Govt. Girls. Hr. Sec. Scl	10.00	
21	Sponsorship for Infrastructure facility at Jaigopal Garodia Govt.Hr.Sec. School, Thiruvottiyur	10.00	
22	Sponsorship for Infrastructure facility at Govt.Arts & Science College, Thiruvottiyur	6.60	
23	Smart Class Arrangements at Govt.Chennai Primary School, Poonthottom,Thiruvottiyur	3.40	
24	Smart Class Arrangement at Corporation Middle School at Kathivakkam	3.00	
25	CIPET	37.03	
26	Construction of Dining and Multipurpose Hall GHS Manali	70.00	
27	Toilet for Boys & Girls in GHS Manali	10.00	

28	Engineering Entrance Exam	53.12	
29	CPCL Polytechnic College	75.00	
30	Repair works to CPCL Polytechnic	228.00	
<b>Health &amp; Nutrition</b>			
31	Pediatric Surgeries CSR Appollo Hospitals Charity	10.00	
32	Cardiac Ambulance Full Setup	34.40	
33	CMC Charges for PSA Plants - 2nd & 3rd Quarter (Aluva & Pathanamthitta)	22.70	
34	Akam - Mega Eye Camp at CBR, at CPCL - CBR Housing Complex, Nagor, Narimanam, Sikkal, kilverlur, Nagapattinam. - From 26 <sup>th</sup> June to 4 <sup>th</sup> July 2023.	36.59	752.09
35	Operation and Maintenance of Mobile Medical Unit in Nagapattinam District	45.93	
36	O&M of CHC at Manali	22.64	
37	MMU - Ramanathapuram & Manali	60.74	
38	CMC charges for PSA Plants (Trident)	37.32	
39	Robotic Scavenging Machine to CWSSWB	52.74	

40	Support for infrastructural facilities for Autism and Down Syndrome Affected Children to Saksham Trust, Madurai.	5.00	
41	Medical Equipment's to Rajiv Gandhi Hospital	38.58	
42	Health/ edn & training assistance Aurobindo	16.25	
43	Anganwadi @ Devarajan St, Manali	10.93	
44	Anganwadi @ Namakkara Muniyan St, Manali	10.93	
45	Water hyacinth Removal in rivers, in Nagapattinam	42.01	
46	Michaung Flood Relief	190.22	
47	Palmyra Seed Plantation	1.94	
48	Construction of Anganwadi	57.55	
49	Welfare activities in Virudhunagar	19.58	
50	Treatment for children born with clubfoot	36.00	
<b>Rural Sports Development</b>			
51	Sports Competition at Sithapur, UP GOONJ Dev. Foundation	3.00	
52	Renovation of badminton Indoor Stadium, Nagai	5.80	31.30
53	Construction of modern GYM at Officer's Club in Nagapattinam	19.50	

54	Coast Guard Sports	3.00	
<b>Swach Bharat Mission</b>			
55	Financial assistance to repair under pass at Nagoor	7.00	19.96
56	Manjappai Vending Machine	1.88	
57	Swachh Pakwada Programme - 1 <sup>st</sup> July to 15 <sup>th</sup> July - 2023	11.08	
<b>Administrative Overheads</b>			
58	Administrative Overheads (Staff Salary upto 5%)	95.79	95.79
	<b>Net CSR Spent for the FY 20230-24</b>		

## SECRETARIAL

**TABLE 44 MONTHLY CLOSING PRICE OF SHARES OF CPCL IN NATIONAL STOCK EXCHANGE (IN RS.)**

MONTH	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
JAN	64.8	77.4	186.2	329.8	413.7	242.2	124.70	90.75	110.55	248.30	854
FEB	58.5	74.9	172.3	379.9	364.7	228.3	101.20	100.05	100.35	224.60	886.30
MAR	68.5	68.4	199.2	363.1	327.4	273.3	60.55	100.15	127.65	237.50	906.80
APR	79.7	91.3	213.8	381.0	321.1	253.55	62.45	110.55	279.25	303.75	1022.85
MAY	90.6	117.4	200.4	381.0	283.4	220.85	54.75	131.05	281.25	375.60	917.65
JUN	96.2	170.4	197.4	354.0	304.1	208.10	77.60	145.80	313.60	387.75	985
JULY	84.5	191.9	266.9	387.0	315.1	197.40	79.70	114.20	276.00	403.4	996.95
AUG	89.2	230.9	289.1	448.4	314.7	192.85	80.35	107.35	291.95	419.65	975.40
SEP	102.0	222.9	287.3	403.0	278.4	173.80	68.95	122.15	234.90	510.20	934.45
OCT	102.2	214.5	283.5	468.8	256.1	158.20	77.00	122.65	208.70	575.20	639.70
NOV	90.2	196.4	278.9	425.0	274.3	125.70	85.50	104.55	215.80	665.45	626.75
DEC	70.5	200.5	273.9	428.6	296.5	123.55	106.65	102.65	206.80	696	625.80

**TABLE 45 MONTHLY CLOSING PRICE OF SHARES OF CPCL IN BOMBAY STOCK EXCHANGE**

<b>MONTH</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
JAN	64.8	77.1	186.1	335.0	413.5	241.6	124.70	90.25	110.45	248.30	853.50
FEB	58.3	75.2	172.1	378.9	364.5	227.5	100.95	100.35	100.50	224.35	883.85
MAR	68.5	68.6	199.2	362.8	328.5	272.8	60.60	100.10	127.70	237.90	906.65
APR	79.6	91.1	213.8	380.3	320.8	253.55	62.40	110.55	279.05	303.65	1021.90
MAY	90.5	117.4	200.0	376.5	283.7	220.60	54.75	131.00	281.60	375.45	918.00
JUN	96.4	170.1	137.3	353.9	302.5	208.50	77.60	145.50	313.60	387.45	982.85
JULY	84.7	191.5	267.0	387.4	314.0	197.35	79.60	114.30	275.40	403.60	997.00
AUG	89.1	230.2	288.8	446.7	313.7	193.50	80.25	107.30	291.65	418.95	976.40
SEP	102.0	222.6	286.8	402.3	279.5	173.15	68.85	122.10	234.90	510.60	934.30
OCT	102.3	214.5	283.7	470.2	255.1	158.25	76.95	122.75	208.65	575.10	639.95
NOV	90.3	196.0	278.1	426.2	272.7	125.80	85.40	104.55	215.65	667.60	626.60
DEC	70.5	201.4	273.8	429.0	297.4	123.85	106.65	102.60	206.65	695.45	626.60

**TABLE 46 SUBMISSION OF ACCOUNTS**

<b>Accounting Year</b>	<b>Date of approval by Board</b>	<b>Date of approval by AGM</b>
2013-2014	24-May-14	20-Aug-14
2014-2015	25-May-15	07-Sep-15
2015-2016	25-May-16	07-Sep-16
2016-2017	15-May-17	24-Aug-17
2017-2018	10-May-18	24-Aug-18
2018-2019	08-May-19	21-Aug-19
2019-2020	20-May-20	11-Sep-20
2020-2021	28-Apr-21	20-Aug-21
2021-2022	27-Apr-22	23-Aug-22
2022-2023	27- Apr-23	22- Aug-23
2023-2024	24-April-24	07-Aug-24

## ANNEXURE – I

**TABLE 47 IMPORTANT EVENTS - HISTORICAL DATA**

<b>1965 – 2001</b>	
Date of Incorporation	Dec 1965
Groundbreaking by Prime Minister, Smt. Indira Gandhi	Jan 1967
Appointment of IOC as sole selling agent	Mar 1968
FIRST Crude Oil Tanker & pipeline commissioning	Feb 1969
Commercial Operation Commenced	Jun 1969
First Batch of Products to IOC	Jun 1969
Commissioning of Wax Plant	Mar 1984
Formation of R&D at Manali	Jul 1984
Refinery II commissioned	Oct 1984
AMOCO relinquishing their share	Oct 1985

Dedication of Expansion by Prime Minister, Shri Rajiv Gandhi	Dec 1985
Formation of Indian Additives Ltd (IAL) in JV (60:40) with Chevron	Jul 1989
Partial Disinvestment by GoI	May 1992
Commissioning of CBR	Nov 1993
Public Issue Launching	Mar 1994
ISO 9002 to CBR	Sep 1994
Commissioning of Lube Expansion	Nov 1994
Commissioning of Co-Gen Plant	Nov 1994
ISO 14001 to CBR	Sep 1998
Commissioning of DHDS at Manali	Oct 1999

IAL becomes 50:50 Venture	Jan 2000
Changing name from Madras Refineries Limited (MRL) to CPCL	Apr 2000
IOC buys the share of GoI	Mar 2001
<b>2002-03:</b>	
Commissioning of Chidambaranar Oil Jetty at CBR by Minister of MOP&NG Shri Ram Naik	Mar 2003
<b>2003-04</b>	
Visit of the Committee on Public Undertakings (COPU)	Apr 2003
Visit of Parliamentary Committee on Welfare of SC/ST	May 2003
Commissioning of CDU/VDU of Refinery III	Mar 2004
<b>2004-05</b>	
Commissioning of once thro Hydrocracker of Ref - III	Aug 2004

Commissioning of TTP revamp	Oct 2004
Commissioning of revamped FCCU	Oct 2004
Visit of the Standing Committee on Petroleum and Natural Gas	Oct 2004
Visit of the Committee on Government Assurances, Rajya Sabha	Nov 2004
Visit of the Sub-Committee III of the Standing Committee on Industry	Nov 2004
Contribution of Rs. 2.5 Crores to the Prime Minister's Relief Fund towards tsunami relief	Dec 2004
Commenced production and supply of Euro III Grade of Motor Spirit (MS) and High-Speed Diesel (HSD)	Jan 2005
Started producing and supplying Euro III grade of MS & HSD	Jan 2005
<b>2005-06</b>	
Visit of Shri Mani Shankar Aiyar, Hon'ble Union Minister for Petroleum & natural Gas and Panchayat Raj to CBR	Apr 2005
Inauguration of new refinery model at 3.0 MMTPA Refinery Control Room by Shri M.S.Srinivasan, Secretary to Govt. of India	May 2005

Visit of His Excellency The President of India, Dr.A.P.J.Abdul Kalam to the Tsunami affected areas in Nagapattinam	Jun 2005
Two CPCL employees received the NPMP Awards for Excellence in recognition for their innovative suggestions	Jun 2005
Shri Talmiz Ahmad, Additional Secretary to Govt. of India visited CPCL	Aug 2005
Visit of the Committee on Estimates of Tamilnadu Legislative Assembly	Aug 2005
Visit of the Sub-Committee of Parliament on Official Language	Sep 2005
Received Greentech Environment Excellence Award for 2005	Oct 2005
Received Social Responsibility Award from His Excellency the Governor of Tamil Nadu	Oct 2005
Visit of the Standing Committee on Labour	Nov 2005
Commissioning of New Zero Discharge Project by the then Secretary to Govt. of India, MOP&NG	Dec 2005
Installation of Crude Storage Tank at Cauvery Basin Refinery	Dec 2005

Visit of the House Committee under the Chairmanship of Hon'ble Shri Raju Parmer	Feb 2006
Replacement of existing two boilers with new 100 TPH Boiler	Mar 2006
Replacement of existing DCS and PLC of Old Powerhouse (OPH)	Mar 2006
<b>2006-07</b>	
Received the 5th Annual Greentech Safety Award 2006 for CBR from National Safety Council, Tamil Nadu Chapter	Apr 2006
The Standing committee on Petitions visited CPCL	Apr 2006
The Committee on Public Undertakings visited CPCL	Jun 2006
The Standing Committee on Petroleum & Natural Gas visited CPCL	Jul 2006
Completion of Off-site Automation Project	Aug 2006
Contribution of Rs.10 lakhs to University of Madras for the Renovation of the Senate House	Aug 2006

Won first and second prize of State Level Safety Award for 2003&04 for longest accident-free man-hours from Hon'ble Minister for Labour, GO TN	Sep 2006
Commissioning of 2.5 MGD capacity Sewage Reclamation Plant	Dec 2006
Received Jawaharlal Nehru Centenary Award for Energy Performance from Hon'ble Union Minister of State for Petroleum & Natural Gas	Dec 2006
Contributed Rs. 50 lakhs to the Tamilnadu Sports Development Authority towards Chennai Open Tennis Tournament	Jan 2007
The Parliamentary Standing Committee on Personnel, Public Grievances, Law and Justice visited CPCL	Jan 2007
Shri Murali Deora, Hon'ble Union Minister for Petroleum and Natural Gas released the "Petro Saga Continues. Story of CPCL"	Mar 2007
<b>2007-08</b>	
Parliamentary Committee on Welfare of SC/ST under the Chairmanship of Shri Ratilal Kalidas, Hon'ble Member of Parliament visited CPCL on representations of SCs/STs in services	Jun 2007
The Estimates Committee under the chairmanship of Shri C.Kuppusami, Hon'ble Member of Parliament visited CPCL on Environmental Management	Jul 2007

Shri M.S.Srinivasan, IAS, Secretary to GOI, MOP&NG visited CPCL	Aug 2007
Dr.N.Sundaradevan, IAS, Chairman, TNPCB visited Manali Refinery	Sep 2007
Windmill Farm with a capacity of 17.6 MW was dedicated by Shri M.S.Srinivasan, IAS, Secretary to GOI, MOP&NG	Oct 2007
Committee on Govt. Assurances under the Chairmanship of Shri A.Vijayaraghavan, Hon'ble Member of Parliament, visited CPCL on LPG Subsidy and production of alternative fuels	Oct 2007
Dr.Buta Singh, Hon'ble Member, National Commission for SC, New Delhi visited CPCL	Oct 2007
The Parliamentary Committee on Personnel, Public Grievances, Law and Justice visited CPCL	Nov 2007
Shri. L.K.Singhvi, IRS (Retd.), Member Commercial, Petroleum and Natural Gas Regulatory Board visited Manali	Jan 2008
The Department related Parliamentary Standing Committee on Industry visited CPCL	Jan 2008
Group of Ethiopian Govt. Audit Personnel visited Manali	Feb 2008

Received Top Duty Paying Assesse Award	Feb 2008
Two CPCL employees have been awarded the Prime Minister's Shram Bhushan Award	Mar 2008
Won second prize of State Level Safety Award for 2005 for longest accident-free man-hours	Mar 2008
<b>2008-09</b>	
CBR was selected for the Star award from National Safety Council of India, Tamil Nadu Chapter, Chennai for 2007 under the NSCI Safety Awards Scheme of NSC, TN chapter, Chennai.	Jan 2009
CPCL was shortlisted as one of the top 25 companies adopting good Corporate Governance Practices in the year 2008 by Institute of Company Secretaries of India (ICSI); CPCL has achieved this excellence for the third time in a row.	Apr 2009
The Parliamentary Standing Committee on Industry under the Chairmanship of Mr. V. Hanumantha Rao, Hon'ble Member of Parliament	Jun 2008
The Parliamentary Standing Committee on Personnel, Public Grievances, Law and Justice under the chairmanship of Dr. E.M.Sudarsana Natchiappan, Hon'ble Member of Parliament.	Jun 2008
Shri M.S.Srinivasan, Secretary to Govt. of India, Ministry of Petroleum & Natural Gas visited CPCL's Desalination Site	Jul 2008

Shri L.N.Gupta Jt.Secy. (R), MOP&NG visited CPCL Corporate Office and Refinery on 25.7.2008.	Jul 2008
Shri L.Mansingh, Chairman, Petroleum & Natural Gas Regulatory Board (PNGRB) visited CPCL Manali Refinery	Sep 2008
Mrs. Lata Mallikarjunha, Principal Director of Commercial Audit cum Member Audit Board along with Shri D.K.Sekar, Director (Admn.), Govt. Audit visited CPCL	Sep 2008
Mr. Dependra Pathak, Director (R&A), MoP&NG visited CPCL Manali Refinery.	Sep 2008
Visit of the Parliamentary Committee on Subordinate Legislation under the Chairmanship of Dr. (Smt.) Najma A. Heptullah, Hon'ble Member of Parliament.	Sep 2008
Shri Sundareshan, Addl. Secretary, MOP&NG visited CPCL	Nov 2008
CBR was awarded 3rd level Safety Award (Suraksha Puraskar (Bronze Trophy and Certificate) for 2007 by National Safety Council of India, Mumbai.	Jan 2009
The Committee on Public Undertakings under the Chairmanship of Shri Rupchand Pal, Hon'ble Member of Parliament visited Manali refinery	Jan 2009
CPCL has been awarded the prestigious Mother Teresa Award for Corporate Citizen 2008, instituted by Loyola Institute of Business Administration (LIBA), Chennai.	Mar 2009

CPCL has been honoured with Exim Achievements Award by Tamil Chamber of Commerce.	Mar 2009
<b>2009-10</b>	
Shri Naresh Narad, Chairman, Mr.Chowdhury Phunsog, Member and Mr.V.S.Jain, Member Public Enterprises Selection Board (PESB) visited CPCL	Apr 2009
Golden Peacock Award for OHS and Safety for the year 2009 by Institute of Directors.	Jun 2009
Inauguration of Desalination Plant by Shri Murali Deora, Hon'ble Minister of P&NG, Shri Jitin Prasada, Hon'ble Union Minister of State for P&NG, Shri Praful Patel, Hon'ble Union Minister of State Independent Charge – Civil Aviation, Shri M.K.Stalin, Deputy Chief Minister of Tamilnadu and other Ministers.	Jul 2009
Shri K.S.Ramasubban, I.A.S., Secretary, Central Vigilance Commission visited CPCL.	Jul 2009
Dr.U.Sridharan, Additional Director, Ministry of Environment & Forest, Southern Region visited CPCL.	Aug 2009
Rural Development and Panchayat Raj Dept. Tamil nadu's Prestigious Corporate Social Responsibility (CSR) Award for 2008-09, received from the Hon'ble Dy.Chief Minister of Tamilnadu	Oct 2009
Annual Green tech Environment Excellence Award 2009 in gold category in Petroleum Refinery Sector from Green Tech Foundation	Oct 2009
Parliamentary Committee on Official Language visited CPCL	Oct 2009

Shri S.Sundareshan, I.A.S., Addl. Secretary, MOP&NG inaugurated Euro IV HT sub-station	Nov 2009
Best Employer Brand Award – Petrochemicals from Employer Branding Institute at Hyderabad	Dec 2009
Shri S.S.Kahatriya, I.A.S. Municipal Commissioner of Greater Mumbai along with team officials visited CPCL Desalination Plant	Jan 2010
Highest Excise duty payer award in the large tax payer category by Central Excise Department.	Feb 2010
CBR received NSC Tamilnadu Chapter Star Award under the category Safety Awards 2007	Feb 2010
Euro IV Auto Fuel Projects (NHT/ISOM/DHDT) at estimated cost of Rs.2815. 69 Crores	Feb 2010
Japan Institute of Plant Maintenance (JIPM) awarded "TPM Excellence Award Category "A" for CBR during ceremony held in KYOTO Conference in Japan	Mar 2010
Revamp of Ref III capacity from 3 to 4 MMTPA at a cost of Rs.200.41 Crores	Mar 2010
Mr.Ramadoss, Refinery Operator, CPCL, CBR has been awarded Petrotech's Best Innovator Award	
<b>2010-11</b>	

Shri Ashok Chavan, Hon'ble Chief Minister of Maharashtra and Shri Murali Deora, Hon'ble Union Minister for Petroleum & Natural Gas visited CPCL's Desalination Plant at Kattupalli	May 2010
The Dept. Related Parliamentary Standing Committee on Industry under the Chairmanship of Dr.K.Malaiswamy, Hon'ble MP, visited CPCL and held discussions with CPCL officials.	Jun 2010
Standing Committee on P&NG under the chairmanship of Mr.Aruna Kumar Vundavalli, Hon'ble MP, visited CPCL Manali Refinery on 08.06.2010 and held discussions with CPCL officials on Implementation of upgradation Projects.	Jun 2010
Mr.P.K.Singh, Director (R&A), MOP&NG and Director on the Board of CPCL visited CPCL	Sep 2010
Mr.K.Srinivasan, Principal Director of Commercial Audit cum Member Audit Board and Mr.D.Sekar, Director, Commercial Audit visited CPCL	Oct 2010
Committee on Government Assurances under the chairmanship of Mr.Pyarimohan Mahapatra, Hon'ble MP held discussions with CPCL officials on 10.2.2011.	Feb 2011
Shri Raju Parmar and Smt. Latha Priyakumar, Hon'ble Members, National Commission of Scheduled Castes visited CPCL and held discussions with the Senior Officials of CPCL	Mar 2011
TPM – Excellence award by Japan Institute of Plant Maintenance (JIPM) has been given to CPCL – Manali Refinery for implementing all the 8 Pillars of TPM	Mar 2011

CPCL adjudged amongst the top 3 Companies in Manufacturing Category in AIMA-IOCL Award for Best Motivational Practices in Manufacturing & Services – 2010	
CPCL bagged the coveted FIRST PRIZE - Best Enterprise Award for 2011 constituted by Forum of Women in Public Sector (WIPS) - under the aegis of SCOPE, in MINI RATNA Category.	Feb 2011
CPCL was awarded the "Highest Taxpayer Award-2010" for the seventh time in succession by the Central Excise Department for the contribution of Excise Duty in Chennai Zone.	Feb 2011
Petrofed Award 2010 - CPCL has won Special Commendation award "Petrofed Award 2010: Environmental Sustainability: Company of the Year	Mar 2011
CPCL has been jointly awarded with IOC R&D, the Innovator of the year (Team) Award by Petrofed for commercializing the Ultra-Low Diesel Hydro-de-program sulphurisation Catalyst	May 2011
<b>2011-12</b>	
CPCL has been adjusted as the "Significant Turnaround PSU" at the 3rd DSII PSU Awards function.	Apr 2011
CPCL has received two PSE Excellence Awards for 2011 in the Mini Ratna Category for "Environmental Excellence and Sustainable Development" and "Good Corporate Governance" by Department of Public Enterprises, GOI and Indian Chamber of Commerce.	Sep 2011

<p>Shri C.Ramadoss, a Refinery Operator of CPCL's Cauvery Basin Refinery (CBR) has been conferred for the Sharam Vir Award (2009) for his outstanding contributions through many suggestion and innovation resulting in improvement in productivity and quality. Mr.C.Ramadoss also won the coveted Petro Fed "Innovator of the year 2008" and 36 number of suggestion awards in CPCL.</p>	Nov 2011
<p>CPCL, CBR received a prestigious National Safety Award, instituted by the Director General, Factory Advice Services &amp; Labour Institutes (DGFASLI), Ministry of Labour &amp; Employment, GOI for the year 2009 under the category of Manufacturer of Coke &amp; Refined Petroleum Products for "Factories/Construction sites working for one million man-hours and more".</p>	Nov 2011
<p>CPCL received the prestigious Rajbhasha Shield (Second prize) instituted by Town Official Language Implementation Committee, Chennai under the category of Public Sector Unit (Big) in Chennai.</p>	Dec 2011
<p>The Parliamentary Committee for the Welfare of Scheduled Castes and Scheduled Tribes visited CPCL</p>	Jan 2012
<p>An Off-site Mock Drill Exercise was conducted at the Manali Refinery of CPCL.</p>	Jan 2012
<p>CPCL has received the Best Enterprise Award in Mini Ratna Category, instituted by the Forum of Women in Public Sector, under the aegis of SCOPE.</p>	Feb 2012
<p>Shri. Thol Thirumavalavan, Hon'ble Member of Parliament (Lok Sabha) and Member of Standing Committee on Petroleum and Natural Gas, visited CPCL, Manali.</p>	Mar 2012

Mr.R.S.Butola, Chairman, IOCL, paid a visit to CPCL's Corporate Office and reviewed the environment issue pertaining to CPCL's projects at Manali namely, Resid Upgradation and 42" Crude Oil Pipeline.	Mar 2012
CBR received the "Excellence in Consistent TPM commitment Award" for 2011 in a function held at Tokyo on 22nd March 2012	Mar 2012
<b>2012-13</b>	
The Department Related Parliamentary Standing Committee on Home Affairs visited the Manali Refinery of CPCL.	Jun 2012
The National Commission for Scheduled Tribes under the Chairmanship of Dr.Rameshwar Oraon along with Smt. K. Kamala Kumari, Member (NCST), Mr. B.L.Meena, Member (NCST) and other officials visited Manali Refinery.	Jul 2012
As part of CSR activities, CPCL handed over a cheque for an amount of Rs.9.00 lakhs for undertaking CEC Program to Dr.S.Bhaskaran, Chairman, Medical Research Foundation of Sankara Nethralaya.	Aug 2012
CPCL has been awarded the "Best Business Partner" Award among Public Sector during 2011-12, by Chennai Port Trust.	Aug 2012
Shri S. Krishnan, Chairperson, Petroleum & Natural Gas Regulatory Board (PNGRB) visited CPCL's Manali Refinery.	Aug 2012
Dr. Archana S. Mathur, Economic Adviser, MoP&NG visited CPCL's Manali Refinery.	Sep 2012

The Parliamentary Committee on Welfare of Other Backward Classes (OBCs) meet the senior officials of CPCL in Chennai.	Sep 2012
CPCL entered a 'Memorandum of Agreement' (MOA) with EIL for carrying out process studies, implementing various energy improvement schemes and other engineering activities.	Dec 2012
His Excellency the President of India approved the award of "Fire Service Medal For Gallantry" to CPCL employees Mr.R.M.Kshir Sagar, SM (F&S), Shri R.N.Thakre, Manager (F&S) and Shri M.Natraj, Yardman, for the remarkable job done by them during OHCU firefighting on Sep 22, 2011.	Dec 2012
Mr. L.N.Gupta, Joint Secretary, MoP&NG, Govt. of India, paid a visit to CPCL's Corporate Office.	Jan 2013
Memorandum of Settlement (LTS-I) under section 12(3) on the revision of pay and allowances for Workmen under the Industrial Disputes Act 1947, was signed.	Jan 2013
The Parliamentary Committee on Petroleum and Natural Gas met senior officials of CPCL in Chennai.	Feb 2013
CPCL has won the Best Enterprise Award in Mini Ratna Category for 2013.	Feb 2013
The Department-related Parliamentary Committee on Industry met senior officials of CPCL in Chennai.	Feb 2013

Mr. Sudhir Bhargava, Special Secretary, MoP&NG, Govt. of India, paid a visit to CPCL's Manali Refinery.	Mar 2013
<b>2013-14</b>	
New Hydrogen plant of CPCL was inaugurated by Ms.Panabaka Lakshmi, Hon'ble Union Minister of States for Petroleum and Natural Gas and Textiles, at CPCL's Manali Refinery.	May 2013
The Committee on Papers Laid on the Table, Rajya Sabha met and senior officials of CPCL and IOCL in Chennai.	May 2013
PetroFed has endowed prestigious Special Commendation Award for "Innovator of the year Team" to CPCL and EIL jointly for their outstanding achievement in conceptualization, development and successful commercialization of Oxy Enrich process technology for capacity enhancement for Sulphur Recovery Units.	Jun 2013
Mr. R. Gopalan, Member, Public Enterprises Selection Board (PESB), paid a visit to CPCL's Manali Refinery.	Jul 2013
CPCL has been adjudged the Winner of the "Golden Peacock Occupational Health & Safety Award" for the year 2013, by the Institute of Directors (IOD), New Delhi.	Jul 2013
CPCL has been awarded "12th Annual Greentech Occupational Health Safety Award 2013" in silver category in Petroleum Refining Sector.	Sep 2013
The First Sub-Committee of Parliament on Official Language met senior officials of CPCL in Chennai.	Sep 2013

CPCL received the prestigious Rajbhasha Shield (Third prize) instituted by Town Official Language Implementation Committee, Chennai under the category of Public Sector Undertaking (Big) in Chennai.	Oct 2013
Mr.S.K.Singh, I.A.S., Chief Vigilance Officer, IOCL, paid a visit to CPCL's Manali Refinery.	Oct 2013
The Department-related Parliamentary Standing Committee on Industry met senior officials of CPCL in Chennai.	Mar 2014
<b>2014-15</b>	
Mrs. P. Kamalamma, Member, National Commission for Scheduled Castes visited CPCL to conduct review meeting on Service Safeguards provided to SC employees in CPCL.	May 2014
CPCL CBR has been awarded the Green Award for Industries by the TN Pollution Control Board (TNPCB), for the Unique measures adopted by the Company for the preservation of environment.	Jun 2014
The Memorandum of Settlement (LTS-II) on the revision of work-related allowances for Workman and Memorandum of Settlement of Cafeteria approach was signed between the Management and the recognized Union of our Company on June 2011 under Sec 18 (1) and 2 (D) of the Industrial Disputes Act, 1947.	Jun 2014
Mr. Saurabh Chandra, Secretary to Govt of India, MoP&NG, met the officials of Oil Industry at CPCL's Corporate Office in Chennai.	Jun 2014

The "PetroFed Innovator of the Year-Team award" for the year 2013 was bagged by CPCL jointly with IOCL.	Sep 2014
CPCL-CBR has been awarded with "Prashansa Patra" by NSC Mumbai for the year 2013 under group "A" category (Manufacturing sector)	Oct 2014
Mr. Sandeep Poundrik, Joint Secretary (Refineries), MoP&NG visited CPCL's Manali Refinery.	Nov 2014
CPCL's Manali Refinery and CBR have been selected for the "Safety Star Award" and "Safety Appreciation Award" for 2012 respectively by the National Safety Council, Tamilnadu chapter.	Dec 2014
Manali Refinery received the prestigious State Safety Award (First Prize) under Chemical Industries Category during 2012 from the T.N.Govt. The award was presented by Hon'ble Labour Minister	Nov 2014
The Parliamentary Committee on Petroleum and Natural Gas, under the Chairmanship of Hon'ble Member of Parliament Dr.Bhola Singh, met the officials of CPCL in Chennai	Feb 2015
<b>2015-16</b>	
The Memorandum of Understanding (MOU) on revision of Medical Rules in line with IOCL was signed between Management & CPEU.	Mar 2015
Shri. M.Shivanna, Chairman, National Commission for Safai Karamcharis visited our Corporate Office.	Apr 2015

The Parliamentary Committee on Empowerment of Women, under the Chairmanship of Hon'ble Member of Parliament Smt. Bijoya Chakravarty, met Senior Officials of Chennai Petroleum Corporation in Chennai and discussed the issues related to Women Empowerment in CPCL.	Apr 2015
LIQUID PARAFFIN WAX" Marketing was inaugurated at the newly constructed facility in,CPCL by the Managing Director Shri.Gautam Roy.	Jul 2015
Mr.B.Ashok, Chairman, IndianOil Group Companies, announced the financial and physical performance results of Chennai Petroleum Corporation Limited at a Press Meet in Chennai.	Aug 2015
Shri Sanjiv Singh, Director (Refineries), IOCL, Shri B.P.Das, Executive Director (R & D), IOCL visited Cauvery Basin Refinery (CBR) of CPCL at Nagapattinam.	Aug 2015
CPCL signed a MoU with Govt. of Tamilnadu for its Resid Upgradation Project for realising the structured package of benefits in the form of fiscal and other Incentives. The MoU was signed by Mr.Gautam Roy, Managing Director, and Mr.C.V.Shankar, I.A.S., Additional Chief Secretary to Government of Tamilnadu, Industries Department.	Sep 2015
CPCL increased its authorized Share Capital from Rs.400 Crores to Rs.1, 400 Crores raising Rs.1, 000 Crores through Preference Share Capital. The capital infusion was through subscription of 100 Crores Non-convertible cumulative redeemable preference shares of RS.10/- each to IOCL on private placement preferential allotment basis on 24-09-2016.	Sep 2015

The Parliamentary Standing Committee on Labour under the Chairmanship of Dr.Virendra Kumar, Hon'ble Member of Parliament met senior officials of CPCL in Chennai.	Oct 2015
CPCL has been adjudged the best and awarded with "Governance Now PSU Award" for "Green Initiatives" and "Research Innovation" in the Miniratna Category I of CPSEs. This award is instituted by Governance Now magazine published fortnightly from Delhi and is awarded exclusively for Central Public Sector Enterprises recognizing its excellence.	Dec 2015
CPCL was selected for Rajbhasha Shield 2014-15 for having secured CONSOLATION position among Public Sector Undertaking (Bigger) category for the best performance in the progressive use of Official Language during the year 2014-15.	Dec 2015
CPCL has contributed a sum of Rs.1, 32, 72,560/- for Chief Minister's Public Relief Fund (Rupees One Crore on behalf of CPCL and Rs.32, 72,560 being the contribution by the employees).	Dec 2015
CPCL DAY was celebrated	Dec 2015
The first Butylene Mounded Bullet - 771 was commissioned at CPCL's Manali Refinery.	Feb 2016
The Golden Jubilee Logo of CPCL was unveiled by Mr.B.Ashok, Chairman, IndianOil Group Companies, at CPCL's Corporate Office.	Apr 2016

2016-17	
The Golden Jubilee Logo of CPCL was unveiled by Mr.B.Ashok, Chairman, IndianOil Group Companies, at CPCL's Corporate Office on April 4.	Apr 2016
A long-term agreement for sale of 10,000 KL of LOBS (SN-150) was signed between CPCL and M/s Indian Additives Limited., on 01.03.2016 at CPCL-Refinery, Manali, Chennai.	Apr 2016
Cauvery Basin Refinery (CBR) has been awarded the prestigious GREEN AWARD for the second consecutive year by Tamilnadu Pollution Control Board (TNPCB). Honorable Minister of Environment, Government of Tamilnadu,	Jun 2016
Chairman Shri B.Ashok made a visit to CPCL-Cauvery Basin Refinery on 09.07.2016. He was accompanied by Director (Refineries), IOCL and Managing Director, Directors of CPCL.	Jul 2016
Golden Jubilee Celebrated. Shri Dharmendra Pradhan, Minister of State (Independent Charge), Ministry of Petroleum & Natural Gas, Government of India, Shri Pon.Radhakrishnan, Minister of State, Ministry of Road Transport, Highways & Shipping, Govt. of India, Shri M.C.Sampath, Minister of Industries, Government of Tamil Nadu, Dr. P.Venugopal, Hon'ble Member of Parliament, Thiruvallur: Shri T.G.Venkatesh Babu, Hon'ble Member of Parliament, North Chennai, and Shri K.P.P.Samy, Hon'ble Member of Legislative Assembly, Thiruvottiyur constituency participated in the Golden Jubilee Celebrations of CPCL at CPCL's Manali Refinery on 23.07.2016.	Jul 2016

<p>Chennai Petroleum Corporation Limited (CPCL) has received the FIEO Southern Region Top Export Award for its active role in Exports. The award was received by Mr.S.Venkataramana, Director (Operations) and Mr. S.Krishnaprasad, Director (Finance) CPCL from Smt. Nirmala Sitharaman, Honble Minister of State (Independent charge) for Commerce &amp; Industry, at the FIEO's Golden Jubilee Celebrations in Chennai on 08.10.2016.</p>	Oct 2016
<p>Smt.P.M.Kamalamma, Hon'ble Member, National Commission for Scheduled Castes, New Delhi, had a review meeting with the Management and MRL SC/ST Employees' Welfare Association on service safeguards provided to SC employees in CPCL, on 02.11.2016 at Corporate Office.</p>	Nov 2016
<p>Chairman and Director (Refineries) visit CPCL-Manali Refinery's Resid Project Sites</p>	Nov 2016
<p>An agreement was entered into between CPCL and IAL on 10.11.2016 for sale of Furnace Oil to their plant through a dedicated pipeline. The agreement is for supply of 3000 KL/ annum of Furnace Oil which enables CPCL to earn additional margin of about Rs. 1Crore/ Annum.</p>	Nov 2016
<p>Supply of additional quantity of MEK FS to M/s Cetex Petrochemicals Limited.</p>	Nov 2016
<p>Shri S.K.Kharventhan, Hon'ble Member, National Commission for Backward Classes, New Delhi, had a review meeting with the Management and the Office Bearers of CPCL OBC Employees' Welfare Association, on 02.12.2016 at Corporate Office.</p>	Dec 2016

<p>Largest Reactor for CPCL's DHDS Revamp Project arrives at Chennai Port. As a part of DHDS Project, the largest Reactor with a size of 5.5 m diameter, 36.2 m overall length, 127 mm thick shell of alloy steel material with stainless steel overlay, arrives at Chennai Port. The shipment weight is about 673 MT.</p>	Feb 2017
<p>20kW Solar Power plant was installed on the roof-top of CPCL's Corporate Office at Teynampet at a project cost of Rs 15.9 lakhs. The project was inaugurated on 24.02.17 by Mr.Gautam Roy, Managing Director, and CPCL.</p>	Feb 2017
<p>CPCL was awarded the "Highest Taxpayer Award – 2015-16" by Central Excise Department. This honor was conferred on CPCL for being the top Assessee in Chennai Zone, and in a larger way for its contribution towards revenue and industrial growth.</p>	Feb 2017
<b>2017-18</b>	
<p>CPCL won the award "Winner for the Boilers and Furnaces efficiency under Group II Category (Fired Duty 500-1000 mm Kcal per hour)" at the 21st Refinery Technology Meet held at Visakhapatnam on April 20, 2017.</p>	Apr 2017
<p>Microcrystalline Wax, a new product, was introduced in the market during June 2017, as Import substitute, generating additional revenue and saving foreign exchange.</p>	Jun 2017
<p>The Parliamentary Committee on Government Assurances, under the Chairmanship of Dr.Ramesh Pokhriyal "Nishank", Hon'ble Member of Parliament discussed regarding Euro VI Norms with CPCL on 24.08.2017.</p>	Aug 2017

CPCL is planning to set up a 9.0 MMTPA Refinery at CBR, Nagapattinam at an estimated project cost of Rs 27460 cr. Approval was accorded for preparation of DFR at an estimated cost of Rs 270 Cr which is expected to be completed by March 2019.	Sep 2017
FIEO SR Export Award CPCL received "Top Exporter - Southern Region Export Excellence Award (Gold) for the year 2016-17 and (Silver) for the year 2015-16 from Federation of Indian Export Organizations (FIEO) for outstanding performance in the category of Public Sector	Oct 2017
Successful commissioning of DCU in and production started	Nov 2017
Micro, Small Enterprises (MSE) - Vendors Development meet was conducted by CPCL jointly with MSME – Development Institute, Ministry of MSME, GOI, Chennai and NSIC, Chennai on 08.12.2017 at CPCL RESOT. MSE vendors from across the country were invited and around 35 Vendors participated in the meet	Dec 2017
The Parliamentary Standing Committee on Industry, under the Chairmanship of Shri Ram Chandra Prasad Singh, Hon'ble Member of Parliament discussed regarding Professionalization of Boards of CPSEs with CPCL on 18.1.2018	Jan 2018
CPCL's Resid Upgradation Project was dedicated to the nation by Shri Dharmendra Pradhan, Honorable Minister for Petroleum & Natural Gas & Minister for Skill Development and Entrepreneurship, Government of India, at Manali refinery on 27th Feb 2018.	Feb 2018

Successful commissioning of the revamped DHDS in Feb-18	Feb 2018
Successful commissioning of SRU with 200 TPD capacity in Mar-18.	Mar 2018
<b>2018-19</b>	
Agreement was entered with downstream industries- MPL & Cetex for supply of petrochemical feed stocks	April 2018
First ever berthing of VLCC (partly loaded) in any Indian port was successfully carried out in Chennai port for importing crude oil	Aug 2018
CPCL CBR received “Star” award from National Safety Council –Tamilnadu chapter	Sep 2018
Collaboration with Central Leather Research Institute (CLRI) and National Agro Foundation (NAF) for pilot project – Converting Animal hair waste to bio-compost.	Oct 2018
“Heroes of Chennai Award-2018” was awarded to CPCL for various CSR activities that created a positive impact on the lives of the people	Nov 2018
Coastal movement of MS to Ennore was carried out for the first time	Dec 2018
Processed three new crude oils namely Nemba, Basrah heavy & Champion Export in 018-2019 and with these crudes CPCL crude basket contain 100 grades of Crudes.	Dec 2018

An MOU was signed with the Government of Tamilnadu for availing structured package of incentives for 09 MMTPA CBR project, announced at the Tamilnadu Global investors meet in Chennai	Jan 2019
Madras school of Social work, Chennai, conferred the "Certificate of Appreciation" for CPCL's CSR activities like providing access to quality healthcare services, Swachh Bharath Mission, Upgradation of Anganwadi buildings, skill training for visually impaired and natural disaster relief work in Thiruvallur district.	Jan 2019
HVGO collection for wax production was established in Ravva crude	Jan 2019
CPCL hosted 56th HR summit of Oil and Gas PSU's with the theme "Industry 4.0- Redesigning HR in the Digital era"	Feb 2019
New crude oil pipeline from Chennai port to Manali Refinery was commissioned during December 2018 and dedicated to nation by Honorable Prime Minister through video conferencing on 10th Feb 2019	Feb 2019
MOU for long term product supply was signed with IOC	Feb 2019
Tripartite agreement with IOC, BPCL & HPCL for product supply was signed	Feb 2019
Effluent Treatment plant -IV, Boiler VI and Gas Turbine – V along with HRSG was commissioned during Dec 2018 to Mar 2019	Mar 2019

Rotary club of Chennai Towers awarded "Excellence in CSR" for CPCL's contribution to Swachh Bharath, healthcare, skill development, vocational training, responding to natural calamities, etc.,	Mar 2019
<b>2019-20</b>	
Performance MOU with IOCL was signed by CPCL for the targets on Crude Throughput, Total Distillate yield, Operational Availability etc.,	May 2019
World Environment day celebration: Tree plantation drive was taken up as a mark of developing Green belt in Amullavoyal (about 40 Acres ) of CPCL with the assistance of Tamilnadu Forest Dep	Jun 2019
Agreement signed between CPCL and IOCL for the Integrated Servo Lube Complex	Jun 2019
CPCL Team has won DIAMOND Award in the competition held by ABK-AOTS in Chennai for KAIZEN competition	Jun 2019
CPCL Sixth Board strategy meet was conducted at Mysuru	Jul 2019
CPCL conducted its 53rd AGM to inform physical performance during 2018-19 and highlighted the major achievements	Aug 2019
Interaction meeting with Hon'ble Union Minister for Finance was attended and took up the points related to taxation (GST and CST)	Sep 2019
CPCL cauvery Basin Refinery was awarded four prizes in the state safety award under Group A cat	Sep 2019

Food waste composting Machine for Canteen & Plastic shredding Machine was inaugurated in Employees canteen at Manali Refinery.	Oct 2019
Two-wheeler parking shed at Manali Refinery was inaugurated at Manali Refinery	Oct 2019
CPCL's chairman visited Refinery site along with Director (Refineries)-IOCL and Director (Technical) –CPCL during the 334th Board meeting of CPCL	Oct 2019
Agreement was signed between CPCL and IAL for Sale / Supply of LOBS (SN-150) & FO through a dedicated pipeline for a period of two years	Nov 2019
Electric Buggy, an Eco-friendly mode of travel was inaugurated to be used by Employees inside Refinery	Nov 2019
Parliamentary committee on the welfare of SCs/STs held discussion with CPCL	Jan 2020
Parliamentary committee on the study visit of the committee on subordinate legislation of Rajya sabha held discussions with CPCL.	Jan 2020
CPCL conferred with "Best practices in CSR awards 2020"	Jan 2020
CPCL honoured by Hon'ble CM of Tamilnadu for CSR activities	Jan 2020
CPCL Internal Strategy meet was conducted at Mahabalipuram	Feb 2020
CPCL conferred with Global CSR Excellence award by Fun and Joy at Work, Mumbai, and ET.	Feb 2020

Agreements were signed between CPCL and Kothari Petrochemicals for sale/supply of PBFS & LPBFS through a dedicated pipeline for a period of two years.	Feb 2020
Inauguration of New Building for Process Engineering department.	Feb 2020
CPCL conferred with Golden Peacock award for Corporate Social Responsibility	Mar 2020
<b>2020-21</b>	
CPCL has been certified for the new International standard ISO 45001:2018 for Occupational Health & safety Management system by BV.	Mar 2020
World Environment Day was celebrated at CPCL Green Belt Development Area, Amullavoyal with the theme “Celebrate Bio-Diversity”	5 <sup>th</sup> Jun 2020
The Memorandum of Settlement under Section 12 (3) of the Industrial Disputes Act 1947 was signed between Management and CPEU in presence of Shri. Muthu Manickam, Deputy Chief Labour Commissioner (Central), Chennai & Conciliation Officer	10th Jun 2020
“Nil” Comments were received from C&AG for the financial year 2019-20, 17th year in succession.	22nd Jun 2020
Shri S M Vaidya has taken over as Chairman, IndianOil & IndianOil Group Companies	1st Jul 2020

CPCL Commemorated the Swachhata Pakhwada 2020, with the theme Swachhata with Covid19 precautions and ban on plastics.	1-15th Jul 2020
50KW Roof Top Solar Plant was successfully erected and commissioned at West Gate-1 near New Car Shed. The same was inaugurated by Mr. R. Srikanthan, Director Technical	28th Aug 2020
54th Annual General Meeting of CPCL held through Video Conference amid the pandemic	11th Sep 2020
Shri H.Shankar has taken over as Director (Technical), CPCL	1st Oct 2020
Process Simulaton Centre on BASIC Refinery Operations, CDU, VDU, FCCU and CCR at HRD Centre was inaugurated by Shri S.Krishnan, Dir(Operations)	5th Oct 2020
Mrs. Sobha Surendran, Independent Director on the Board of CPCL visited CPCL's Manali Refinery	8th Oct 2020
CPCL observed Vigilance Awareness Week -2020, highlighting the theme "Vigilant India, prosperous India"	27th Oct 2020
Shri S.N Singh, DIG, CISF SZ-I HQrs Chennai visited our Refinery for formal inspection of CISF unit Manali	16th Nov 2020

Re-Certification Audit for Quality Management System (QMS) based on ISO 9001:2015 for CPCL CISF Unit was conducted by M/s. TUV India Pvt Ltd. Without having any non-conformance	16th Dec 2020
55th CPCL Day was celebrated with gaiety through Zoom platform	30th Dec 2020
SAKSHAM 2021 was observed as per directives of MoP&NG to create awareness among the masses about conservation of Oil and Gas. With the theme "Green and Clean Energy"	16th Jan 2021
Parliamentary Standing Committee on Labour consisting of members of Lok Sabha/ Rajya Sabha visited Chennai to discuss the subject of deployment of Contract / Casual / Sanitation Workers for perennial jobs in CPCL and other PSUs. The chairperson of the committee was Shri Bhartruhari Mahtab, Hon'ble Member of Parliament.	18th Jan 2021
The FCC-GDS Unit has been successfully commissioned.	13th Jan 2021
CPCL new Internet Website Go-Live was launched by Managing Director, CPCL	20th Jan 2021
"Handbook on Role of Co-Ordinators during Onsite Emergency" was released by Managing Director, Shri S. N. Pandey at CPCL Corporate Office	27th Jan 2021

Mr. Sukh Ram Meena, Director, MoP&NG & Government Director on CPCL Board visited CPCL and planted tree sapling at Manali Refinery.	29th Jan 2021
CPCL has won the achievers award in "Biggest Public Sector Investment" category by Business Today and Government of Tamilnadu. The award was presented by the Hon'ble Chief Minister of Tamilnadu, Thiru Edappadi K. Palaniswami.	16th Feb 2021
Shri Achary Thalloju, Hon'ble Member of National Commission for Backward Classes visited CPCL Corporate Office and had meeting with management and OBC Employees' Welfare Association of CPCL.	19th Feb 2021
Memorandum of Settlement under Section 18 (1) and 2(p) of the Industrial Disputes Act, 1947 was signed between the Management and CPEU in a very congenial way	25th Feb 2021
Covid -19 Vaccination Camp 1st Dose was conducted initially at CSI Rainy Hospital for employees aged above 45.	3rd Mar 2021
50th National Safety Day was celebrated at CPCL, Manali Refinery. Thiru S.Balu, Joint Director, Industrial Safety & Health, Govt. of Tamil Nadu was the chief guest for the program and delivered key note address stressing the employees to follow the safety standards and aim for Zero accident.	4th Mar 2021
Shri Sunil Kumar, IRAS, Joint Secretary (Refinery) MoP&NG, visited CPCL Manali Refinery.	5th Mar 2021
International Women's Day was conducted at GRT Grand, Chennai	8th Mar 2021

52nd Raising Day of CISF was observed and Shri Rajeev Ailawadi, D(F) & MD, was the chief Guest.	10th Mar 2021
The Prime Minister Shri Narendra Modi dedicated key projects of Oil and Gas Sector to the nation and laid the foundation stone of Cauvery Basin Refinery at Nagapattinam via video conferencing.	17th Feb 2021
Shri S.Krishnan, Director (Operations), CPCL handed over the Cold Chain Equipments(CCEs) to Dr. C.Sekar, Addl Director, Directorate of Public Health and Preventive Medicine (DPH) at Chennai.	30th Mar 2021
Surprise Safety Audit (SSA) for CPCL Refinery was conducted by OISD	Mar 2021
CPCL has been awarded shield as special prize for E-Hindi CPCL News for the year 2019-20 by Town Language Implementation Committee (PSU), Chennai	
<b>2021-22</b>	
Panel discussion on "Skills Development in Refining Industry and Renewable energy Industry"	9th Apr 2021
R&D building after due facilitation was handed over to Greater Chennai Corporation, (GCC), Tamil Nadu for COVID care center	17th May 2021

World Environment Day (WED) celebrated with the theme for this year- 2021 as "Ecosystem Restoration"	5th Jun 2021
Conducted webinars on "Wellness through yoga" & yoga therapy" by Mr.Anand, Yoga Master, Chennai	26th May 2021
CPCL Refinery Successfully Produced Export Quality High Flash (HSD)	21st Jun 2021
First sale of Mineral Turpentine Oil (MTO)	23rd Jun 2021
CPCL carried out Swachhta Pakhwada activities	8th July 2021
The updated accounts manual was released by Shri. Rajeev Ailawadi, Director (Finance) & MD i/c.	13th July 2021
Tripartite agreement signed between Indian Oil, HPCL and CPCL	13th Aug 2021
CPCL conducted its 55th Annual General Meeting (AGM) virtually through video conference / Other Audio-Visual Means (OAVM)	20th Aug 2021

Shri Arvind Kumar assumes charge as MD, CPCL	27th Aug 2021
Meeting between Chairman and Hon'ble Chief Minister. Govt. of Tamil Nadu regarding 9 MMTPA CBR Project	3rd Sep 2021
CPCL kicks off project activities for new Refinery and Petrochemical complex at Nagapattinam, Tamil Nadu	3rd Sep 2021
MD and D(T) visited 9 MMTPA CBR Project site at Nagapattinam	13th - 14th Sep 2021
CPCL celebrated Hindi day online through zoom	14th Sep 2021
New SRU (BS VI) control room was inaugurated by MD, CPCL	16th Sep 2021
CPCL placed Work Order on SBI Capital Markets for financial advisory services for the proposed 9 MMTPA CBR Project	23rd Sep 2021
Shri M.Venkatesan, Hon'ble Chairman of National Commission for Safai Karamcharis visits CPCL	1st Oct 2021

Shri Rajeev Ailawadi, Director (Finance) had participated in the 10th Oil PSUs Chief Financial Officers (CFO) meet held at Mussoorie hosted by ONGC	7th-9th Oct 2021
Shri Tarun Kapoor, IAS, Secretary, Ministry of Petroleum & Natural gas visited CPCL Manali Refinery	18th Oct 2021
The 'Integrity Pledge was administered and Inauguration of the Vigilance Awareness Week (VAW) at CPCLs Corporate Office, Teynampet, Chennai	26th Oct 2021
To give impetus to the new 9 MMTPA CBR Project-Joint Venture of CPCL & IOCL, the 345th Board Meeting of CPCL was held at Nagapattinam	31st Oct 2021
CPCL, kick starts Behavior Based Safety (BBS) in Refinery at Chennai putting impetus on Imbibing Safety Culture in Manali Refinery	8th Nov 2021
CPCL was awarded by FICCI & Municipal Administration & Water Supply Department, Govt. of Tamil Nadu	24th Nov 2021
9th TOLIC Meeting Special Prize was awarded to CPCL	15th Dec 2021
MD, CPCL conferred with Centre for Excellence In Project Management (CEPM) fellowship award	15th Dec 2021

CPCL Polytechnic college was awarded an ISO 21001:2018 certification	24th Dec 2021
Shri M Selvaraj, Member of Parliament, Nagapattinam visited CPCL Corporate Office and held discussions with MD in presence of Shri S Krishnan, Director (Operations) and Shri H.Shankar, Director (Technical)	10th Jan 2022
Competency Development Programme for grade D&E Officers on the topic "Business Result Leadership" was conducted by IIM Kozhikode in organizational behavior and Human Resources areas	27th Jan 2022
Dr Kalanithi, Member of Parliament, North Chennai paid a Courtesy visit to CPCL, Corporate Office on held Discussions with Managing Director and Director (Finance)	28th Jan 2022
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Dr Kalanithi, Member of Parliament, North Chennai paid a Courtesy visit to CPCL, Corporate Office on held Discussions with Managing Director and Director (Finance)	28th Jan 2022
51st National Safety day was organized at CPCL Manali Refinery on the safety theme 'Nurture Young Minds, Develop Safety Culture' Shri T.N.K.Bapiraju, CGM (T) and Shri P.Kannan, CGM (O) were also present on the occasion	4th Mar 2022
Managing Director, CPCL and Director (Technical), CPCL met the Chief Secretary, Government of Tamil Nadu - Shri V.Irai Anbu, IAS regarding CBR 9 MMTPA Project	4th Mar 2022

Shri. Pankaj Jain, Secretary, MOP&NG met Senior Official from the Oil Industry in Chennai. CPCL requested Secretary, MoP&NG for assistance on land acquisition for the CBR project through the State Government	7th Mar 2022
Communication Meeting with CPEU and CPOA for the 3rd Quarter Physical & Financial Performance of our Company and the Growth Plans of Company.	7th Mar 2022
CPCL Blood Donation Camp was inaugurated By Shri S.Krishnan Director (Operations) for donating to Rajiv Gandhi Govt. General Hospital	8th Mar 2022
Shri Jagbir Singh, Additional Director General (South), CISF South Headquarters visited CISF unit in CPCL Refinery campus. Smt. Anjana Sinha, IPS. IG-CISF and Shri S.N.Singh, DIG - CISF also accompanied during the visit	25th Mar 2022
<b>2022-23</b>	
Fire Service Day was observed – Wreath laying was done at F&S Dept in memory of the brave fire fighters.	14th April 2022
Oil & Gas Conservation Awareness Drive -SAKSHAM 2022 was observed in CPCL with the tagline “Azadi Ka Amrit Mahotsav through green and clean energy as per the directives of Ministry of Petroleum and Natural Gas (MoPNG) to create awareness among the masses about conservation of Oil and Gas.	11 <sup>th</sup> – 30 <sup>th</sup> April 2022

CPCL organized SAKSHAM Cyclothon	17th April 2022
CPCL and Tamilnadu Petroproducts Limited (TPL) have signed an agreement valid for a period of 5 years for sale of LABFS	2nd May 2022
Dr.C.K.Shivanna and Mr.Ravi Kumar Rungta, two new Independent Directors of CPCL, visited Manali Refinery	13th May 2022
Voluntary Blood Donation Camp was conducted at Occupational Health Services at CPCL Refinery	18th May 2022
Shri. Rohit Mathur, Joint Secretary (Admin), Ministry of Petroleum and Natural Gas, visited CPCL	21st May 2022
World Environment Day (WED) was celebrated	5th June 2022
Azadi Ka Amrit Mahotsav (AKAM) was celebrated with Tree Plantation drive	08th Aug 2022

CPCL showcases its contribution to Nation Building in AKAM (Azadi ka Amrit Mahotsav) Exhibition	9th - 12th June 2022
Har Ghar Tiranga campaign for contract women workers of CPCL	04th July 2022
A Trade Union Development Programme for the Office Bearers and Committee Members of the Trade Union was organized at Taj Vivanta Hotel, Chennai.	18th July 2022
Prestigious Golden Peacock Innovative Product Award for developing "Candidate fuel equivalent to JP-7 specifications for the defence sector	22nd July 2022
A medical camp for contract women workers was organized to create awareness about importance of women's health	04th July 2022
CPCL conducted a Strategy Meet at Yercaud near Salem, Tamilnadu to discuss various strategies for achieving growth, sustainable development, and improved profitability with action plans to be future ready.	26th - 27th Aug 2022

44th International Chess Olympiad at Mahabalipuram, Chennai.	Aug 2022
The Parliamentary Committee on Sub-ordinate Legislation, Rajya Sabha under the Chairmanship of Hon'ble Member of Parliament Mr.Akhilesh Prasad Singh, along with Hon'ble Members of Parliament Mr.Tiruchi Siva and Mrs. Vandana Chavan visited CPCL's Manali Refinery	13th Sep 2022
Mr. Arvind Kumar, MD and other officials of CPCL participating in 25th Energy Technology Meet held at Mumbai	15th - 17th Sep 2022
Mr.Arvind Kumar, Managing Director, CPCL, met the Hon'ble Chief Minister of Tamil Nadu Mr.M.K.Stalin at the launch of Green Tamil Nadu Mission	24th Sep 2022
CPCL celebrated Hindi Day at Corporate Office.	28th Sept 2022
Hon'ble Union Minister of State, Ministry of Petroleum & Natural Gas and Ministry of Labour & Employment Mr.Rameswar Teli visited CPCL Manali Refinery	29th Sep 2022
The Mahatma award for CSR excellence recognises and celebrates impact leaders and change-makers across the globe. Mr. Rajeev Ailawadi, the then Director (Finance) and Mr.Gomuraj, DGM(Admin.) receiving the award	01st Oct 2022

Voluntary Blood Donation Camp at CPCL Polytechnic College in coordination with Institute of Child Health	12th Oct 2022
Free Eye camp conducted at Jaigopal Garodia Govt Higher Secondary School, Tiruvottiyur	06th Nov 2022
Second Global Roadshow by CPCL & IOCL for the upcoming 9 MMTPA grass root mega refinery and petrochemicals complex.	11th Nov 2022
Digital control tower inauguration at corporate office for effective project monitoring	20th Nov 2022
Distribution of umbrellas to School students	21st Nov 2022
IOCL organised Idea Mela during December 2022 to bring out new and innovative ideas from the young, energetic, and experienced employees of Refinery.	1st- 20th Dec 2022
CPCL Showcases CSR achievements in technical collaboration at IIT Madras inaugurated by Honourable Union Finance Minister Mrs. Nirmala Sitharaman	18th Dec 2022

Public Relations Society of India (PRSI), Mr.K.Nandakumar, Chief Manager (CC) receiving the award on behalf of CPCL	25th Dec 2022
CPCL Day- Voluntary Blood Donation Camp was conducted	29th Dec 2022
The Parliamentary Standing Committee on Petroleum & Natural Gas visited Chennai	19th- 21st Jan 2023
CPCL organizes Behaviour Based Safety Programme for Cultural transformation:	30th Jan 2023
Retired Employees Welfare Association (REWA) celebrated its "Silver Jubilee year	4th Feb 2023
A Board Meeting was held at The Tah, Bekal, Mangalore on A farewell function was organised for Mr.Rajeev Ailawadi, Director (Finance), who retired on 28.02.2023 in which Chairman, Directors on the Board of CPCL and CPCL officials participated.	25th Feb 2023
Mr.Rohit Kumar Agrawala assumed charge as Director (Finance)	1st Mar 2023

CPCL participated in the MSME Connect 2023 – a Vendor Development Program cum Exhibition of Products organised by MSME Development and Facilitation Office, Chennai	3rd - 4th Mar 2023
National Safety Day function was conducted at Refinery About 900 people participated in the various events.	7th Mar 2023
International Women's Day was celebrated in CPCL Chennai with the theme "Naari Shakthi for a future ready organisation".	8th Mar 2023
Mr.M.Venkatesan, Chairman, National Commission for Safai Karamcharis (In the rank and status of Union Minister of State), visited CPCL's Refinery	18th Mar 2023
CPCL organized "Synergy for Energy" meeting at CPCL's Manali Refinery wherein CPCL & IOCL teams comprising of Marketing, Pipelines, IB, Lubes, Gas and S&D	29th Mar 2023

## ANNEXURE – II

### PROCESS HIGHLIGHTS AND IMPORTANT PROCESS CHANGES IN PLANTS HISTORICAL DATA

#### 2013-14

1. Oxygen Enrichment facility for Sulphur Recovery Unit was implemented in Plant 78 – Train A through in house design and know-how.
2. VOC treating unit with 3 No of Activated carbon filters was constructed and commissioned at ETP II.

#### 2014-15

1. Trial production of MTO was produced at CBR in January 2015.
2. O<sub>2</sub> Enrichment in FCCU was carried out with hooking up to existing additional air blowers. This resulted in stopping of one of the additional air blowers saving electrical energy.
3. LPG bullet 703 was dismantled to accommodate Mounded bullet storage.
4. Water reservoirs 6.6 MGR, 2.5 MGR were dismantled during 2014.

#### 2015-16

1. Oxygen enrichment scheme was implemented in DHDS Block – Drain B enhancing acid gas processing capability by 15% overdesign
2. CPCL implemented Energy Efficiency Improvement Schemes particularly during Refinery III Shutdown, which resulted in an annualised saving of 12012 SRFT.
3. Coastal movement of High Flash HSD started for first time in CBR in October 2016.
4. Methanator was installed and commissioned in Refinery III ISOM Unit in March 2016 to improve performance of ISOM Catalyst.
5. To increase recovery of Cis and Trans Butane's, Kothari return stream was supplied to M/s Cetex from

May 2015.

6. New Stripper was erected and commissioned in OHCU during September 2015.

### 2016-17

7. Changed over to 100% BS-IV HSD & MS supply from Jan'2017 complying with the directive of
8. Government Auto Fuel Policy.
9. Successfully completed OHCU revamp shutdown in Feb'2017 improving its capability of handling coker streams and enhancing its capacity.
10. Plant 4 was trial tested at 65 m<sup>3</sup>/hr (500 TMTPA) of design feed rate (Arab Mix crude). SK feed "S" is
11. 2000 ppmwt and product "S" achieved was 28 ppmwt.
12. New feedstock Lean PBFS supply to M/s Kothari Petrochemicals Ltd commenced in Sep'2016
13. Plant-17 Kero Merox was shut down during February '17. Spent Merox catalyst unloaded from reactor and fresh charge of charcoal & Merox reagent impregnation completed. Unit was taken online post s/d on 11th Mar '17 and proved at 80 m<sup>3</sup>/ hr (Design 70m<sup>3</sup>/hr) at design RSH 200 wppm
14. JP-5 was produced from OHCU for the first time for 5500 KL from 28th May' 2016 onwards. Plant-4 running for this purpose was avoided as ENCON measure.
15. Micro Crystalline Wax (MCW) was produced during Mar '17. Product specification achieved.
16. ISOM fresh feed to unit was increased from 29 m<sup>3</sup>/ hr to 32 m<sup>3</sup>/ hr by reducing the DIH recycle to reactors. X factor of feed was monitored while increasing the feed. Unit operating factor was 99.5%. Unit achieved highest ever Isomerate production 166.5 TMTPA vis-a-vis 140 TMTPA design.

17. Lean PBFS C4 return stream from M/s KPL supply to M/s Cetex commenced from Dec'16 as additional feed augmentation.
18. ENCON schemes (15 nos.) were implemented, amounting to savings of 14100 SRFT.
19. CDU-I&II stabilizer off gas was routed to FCCU to recover LPG components resulting in energy saving of 2300 SRFT per annum.
20. Scheme for supplying FO to M/s IAL was implemented, supply commenced on 15.11.16.
21. To comply with only Euro-IV MS & HSD production, the following schemes were completed and commissioned.
  - a. TPL return SK to DHDT for processing commissioned on 04.02.17.
  - b. PCK connectivity to CTMPL from Tk-411 and Tk-422 completed.
22. As H2 Make up gas compressor 11K2 was dismantled to provide space for FCCU-GDS project, process scheme for alternate Hydrogen makeup to Plant-4 was executed, utilizing the H2 line going to Wax unit from DHDT compressor discharge.
23. Process scheme for Hot VGO supply from Ref III to Plant - 13, bypassing cooler 201 E-45 A/B was executed. Plant - 13 was able to process 40 m<sup>3</sup>/ hr CDU III VGO.
24. Alkylate received from IOCL blended with MS blending components for the first time and this supported meeting MS demand during FCCU shutdown.

### 2017-18

1. New Nigerian Crude, OKONO was processed in CDU-II during Jul '17. Crude Test run was carried out from July 12-13, 2017
2. Delayed Coker Unit was successfully commissioned during Nov'17.
3. FCCU achieved the highest ever annual throughput of 1.08 MMTPA (previous best 1.07 MMTPA in 2014-15)
4. ENCON schemes (10 nos.) were implemented, amounting to savings of 11000 SRFT

5. CT-1 CW header to LEB (Plant -71/72/73) was commissioned to enable smooth running of the LEB and DHDS units till CT-3 overhauling is completed. Cooling water flow and velocity were found adequate for the CDU I, LEB and SDU
6. Two batches of Micro-Crystalline Wax were made during the year (April '17 & Mar'18)
7. Plant 76 PSA PGTR was done in presence of M/s UOP during Jan '18. Average unit production was
8. 12200 Nm<sup>3</sup>/hr. Recovery obtained from the PSA for maximum production was 89.5%. PSA was operated in 5 bed mode with Kf factor 1100
9. Plant 77 DHDS Unit was started after revamp during Mar'18.
10. One Batch of Polymer Grade Hexane (Tank 416) was made during June / July 2017
11. Average PSA-II feed rate was 130 % due to high off-gas make from CCR unit
12. OHCU achieved highest ever throughput 2.163 MMTPA (earlier highest 2.004 MMTPA in 2013-14).
13. OHCU PGTR was conducted during June 2017 for Case-II (VGO in HCGO train)
14. JP-5 production from OHCU was done during Oct'17.
15. In Pt 210 SRU, Train A C-101 catalyst support screen were changed to mesh No. 10, SS-316 material, as per Shell Global recommendations.
16. In DHDT, Feed processed was 2.32 MMTPA against design capacity of 1.8 MMTPA.
17. TPL SK return streams were segregated as Tk 413 Low sulphur (LS) and Tk 412 High sulphur (HS) at TPL side. Tk-412 HS stream is being supplied to DHDT for processing and Tk-413 LS stream is blended with HSD header batch wise.
18. TPL return HS SK supply to Plant-4 was commissioned on 1/2/2018 as part of 'Zero SK' inventory concept.
19. Tk-114 & Tk-110 sludge processing is completed.
20. New MFM provided in FO to TPL line was commissioned and taken online.
21. Process scheme to utilize 1E21 for crude preheat (Crude Vs Light Neutral) was commissioned in

22. Jan'18. Overall crude preheats improvement of 3-4°C observed in CDU-I.
23. In FCCU, Alternate wash water to old Gascon HP circuit from new Gascon wash water pumps. Job was completed and taken online in Nov'17.
24. In OHCU, modification of the new train feed pump warm-up line was carried out by changeover of filtered VGO from UCO in order to avoid UCO reprocessing in new train in November 2017.

### 2018-19

1. CPCL has achieved a throughput of 10.695 MMTPA in 2018-19 as compared to 10.789 MMTPA during 2017-18
2. Distillate yield was highest ever at 74.4% as against previous best of 73.2% in 2017-18
3. The Energy Intensity Index (EII) recorded the lowest at 100.4 against the previous lowest of 100.7 during the year 2017-18
4. The operational availability during the year was 96.6% against the MOU target of 97%
5. CPCL had the highest ever OHCU throughput of 2214 TMT as against the previous best of 2164 TMT in 2017-18
6. Diesel production was highest at 4841 TMT in 2018-19 as against the previous best of 4599 TMT in 2017-18.
7. Hexane production was highest at 14.9 TMT as against the previous best of 12 TMT in 2012-13.
8. CPCL has processed three new crude oil grades – Basra heavy from Iraq, Nemba from Angola and Champion export from Brunei.
9. The first ever berthing of a VLCC at any Indian port was successfully carried out in Chennai Port on August 2018

### 2019-20

1. CPCL has achieved a throughput of 10.161 MMTPA in 2019-20 as compared to 10. 695 MMTPA during 2018-19

2. Distillate yield was highest ever at 77.6% as against previous best of 74.4% in 2018-19
3. The Energy Intensity Index (EII) recorded the lowest at 100.0 against the previous lowest of 100.4 during the year 2018-19
4. The operational availability during the year was 97.6% against the MOU target of 97%
5. CPCL had the highest ever OHCU throughput of 2307 TMT as against the previous best of 2214 TMT in 2018-19
6. Hexane production was highest at 19.7 TMT as against the previous best of 14.9 TMT in 2018-19.
7. Refinery's internal Fuel and Loss was at 10.0 wt% as compared to 10.3 wt% in the previous years.
10. The specific energy consumption was the lowest at 81.4 against the previous low of 83.7 in the year 2018-19.
11. Refinery's ATF production was the highest ever at 1016 TMT as against the previous best of 794.6 during 2017-18.

### 2020-21

1. CPCL has achieved a throughput of 8.243 MMTPA in 2020-21 as compared to 10.161 MMTPA during 2019-20
3. Distillate yield was 76.4% as against the MOU target of 77.6%
4. MBN and EII of 86.5 and 104.5 were achieved in 2020-21 against 81.4 and 100.0 in 2019-20 d) RLNG consumption maximized to 260.4 TMT as against 164 TMT in 2019-20
5. CPCL had the OHCU throughput of 1882.6 TMT as against the previous best of 2307 TMT in 2019-20
6. Hexane production was highest at 22.5 TMT as against the previous best of 19.9 TMT in 2019-20.
7. Achieved the highest ever monthly LOBS production of 23.8 TMT in Jan'21.

8. Refinery's internal Fuel and Loss was at 10.6 wt% as compared to 10.3 wt% in the previous years.
9. Highest monthly Bitumen dispatch of 75.5 TMT was achieved in Mar 2021. j) Successfully produced Missile Fuel equivalent to JP-7 in February 2021.
10. Implementation of ENCON schemes with an annualized saving of 41009 SRFT.

### 2021-22

1. CPCL has achieved a throughput of 9.040 MMTPA in 2021-22 as compared to 8.243 MMTPA during 2020-21.
2. Distillate yield was 74.9% as against the MoU target of 76.4%.
3. MBN and EII of 82.6 and 96.2 were achieved in 2021-22 against 86.5 and 104.5 in 2020-21.
4. Refinery's internal Fuel and Loss was at 9.7 wt % as compared to 10.6 wt % in the previous years.
5. First ever export of finished High Speed Diesel (HSD) - (Flash point of 55 Deg. C) of 33
6. TMT and 36.2 TMT was supplied to Bangladesh Petroleum Corporation through IOC Business development group during June'21 and July'21 respectively.
7. New product Mineral Turpentine Oil (MTO) - (Grade FBP – 240 deg. C) sales commenced on 23.06.2021.
8. BS-VI HSD production of 3935 TMT against Previous best of 3736 TMT in 2020-21).
9. Achieved highest ever BS-VI HSD dispatch of 471 TMT in Mar'22 (Previous best of 454 TMT in Jan'19).
10. Achieved highest ever MS production of 104 TMT in Mar'22. (Previous best of 101 TMT in Jan'22).
11. Achieved highest ever MS dispatch of 108 TMT in Dec'21 (Previous best of 107 TMT in Nov'17).

12. Highest ever Hexane production of 2.77 TMT was achieved in July'21 and Mar'22 (Previous best 2.67 TMT in Feb'21). Hexane production was improved to 7.2 m3/hr by maximizing high potential feed stocks like CCR LN and ISOM DIH recycle.
13. Highest ever Type II Wax production (940 MT) was achieved in Oct'21 against previous best of 680 MT in March'16.

### 2022-23

1. CPCL has achieved a throughput of 11.316 MMTPA in 2022-23 against the name plate capacity of 10.5 MMTPA as compared to 9.040 MMTPA during 2021-22 and previous best is 10.289 MMTPA in 2017-18.
2. Achieved highest ever OHCU throughput of 2370 TMT in 2022-23 against previous best of 2307 TMT in 2019-20
3. Achieved highest ever DCU throughput of 1955 TMT in 2022-23 against previous best of 1405 TMT in 2019
4. Distillate yield achieved the MoU target of 76% for 2022-23.
5. MBN and EII of 74.2 and 89.2 were achieved in 2022-23 against 82.6 and 96.2 in 2021-22
6. Refinery's internal Fuel & Loss was at 9.06 wt% against target of 9.19 wt%, lowest ever achieved after DCU commissioning.
7. Achieved highest ever BS-VI HSD Production of 5041 TMT in 2022-23 against previous best of 4677 TMT in 2018-19.
8. Achieved highest ever Reformate Production of 443.9 TMT in 2022-23 against previous best of 345.4 TMT in 2019-20.
9. Achieved highest ever Isomerate Production of 237 TMT in 2022-23 against previous best of 188.4 TMT in 2020-21.
10. Achieved highest ever BS-VI MS Production of 1142 TMT in 2022-23 against previous best of 1107 TMT in 2016-17.

11. Achieved highest ever ATF Production of 1039 TMT in 2022-23 against previous best of 1016 TMT in 2019-20.
12. Achieved highest ever Naphtha production of 976 TMT in 2022-23 against previous best of 815 TMT in 2019-20
13. Achieved highest ever Hexane production of 28.4 TMT was achieved in 2022-23 against previous best of 26.7 TMT in 2021-22
14. Achieved highest ever Pet Coke Production of 539 TMT in 2022-23 against previous best of 414 TMT in 2019-20.
15. Achieved highest ever Sulphur Production of 129 TMT in 2022-23 against previous best of 99 TMT in 2019-20.
16. Achieved highest ever FCCU T'put of 96.6 TMT in Jan'23 surpassing previous best of 95.8 TMT in Mar'22.
17. HSD Export parcel of 40 TMT to M/s. Ceypetco, Sri Lanka was successfully completed in May'22.
18. HSD Tanks independent suction for CTMPL & CBPL commissioned in May'22.
19. Product pipeline CTMPL achieved highest ever T'put of 3.0 MMT surpassing previous best 2.96 MMT during 2018-19.
20. Product pipeline CBPL achieved highest ever T'put of 2.38 MMT surpassing previous best 2.13 MMT during 2019-20.
21. First time CPCL has exported Naphtha co loading with Paradip during Jun'22. Also CPCL has exported higher parcel size of Naphtha (55 TMT parcel) directly from Chennai port with dual berthing operation for first time during Jul'22, which has improved the export realization.
22. LOBS despatch was 241 TMT which is highest ever in the last ten years.
23. OHCU T'put of 227 TMT was achieved in May'22 which is highest ever monthly T'put surpassing previous best of 222 TMT (Mar'22).

24. DCU T'put of 198 TMT was achieved in May'22 which is highest ever monthly T'put surpassing previous best of 183 TMT (Mar'22).
25. Tripartite term sheets between IOCL-CPCL-HPCL and IOCL-CPCL-BPCL were signed on 19.09.22 in Chennai for the supply of products to HPCL and BPCL through IOCL. The term sheet enables continuous supply of petroleum products from CPCL to HPCL and BPCL.
26. 39.7 MT of JP-7 (Missile fuel) was successfully produced and supplied to DRDO during Oct'22.
27. New product LSHS (Premium) was successfully produced, and product was dispatched during Feb'23.
28. MTO dispatch of 5.8 TMT achieved in Jan'23 which is highest ever monthly dispatch surpassing previous best of 4.8TMT (Sep'22).

## ANNEXURE – III

### CSR Activities

Year	S. No . .	CSR Project (or) Activity Identified	Sector in which the Project / Activity is covered	Projects or Program (1) Local area or other (2) Specify the State and Districts where projects or Programs were	Amount outlay (Budget) Project or Program wise (Rs. In crore)	Amount spent on the project or Programs sub- heads: (1) Direct Expenditure on Projects or Program (2) overheads	Cumulative Expenditure up to the reporting period (Rs. In crore)	Amount Direct or through implementing agency
2014-15	1	Contribution to CPCL Educational Trust for running and maintaining the Polytechnic College	Education	undertaken in Local Area, Tamilnadu State, Thiruvallur District	0.21	0.21	0.21	Direct
2014-15	2	15KW on Grid Solar Photo Voltaic system at CPCL Polytechnic College, Manali	Environment Protection	Local Area, Tamilnadu State, Thiruvallur District	0.12	0.12	0.12	Direct

2014-15	3	Merit Scholarship to school students, Manali	Education	Local Area, Tamilnadu State, Thiruvallur District	0.11	0.11	0.11	Direct
2014-15	4	Community Health Centre, Manali	Health	Local Area, Tamilnadu State, Thiruvallur District	0.1	0.1	0.1	Agency
2014-15	5	Community Health Centre, Muttam (CBR)	Health	Local Area, Tamilnadu State, Nagapattinam District	0.1	0.1	0.1	Agency
2014-15	6	Merit Scholarship to CPCL Polytechnic students, Manali	Education	Local Area, Tamilnadu State, Thiruvallur District	0.1	0.1	0.1	Direct
2014-15	7	Construction of Community Hall at Vadakudi Village at CBR, Nagapattinam	Cultural	Local Area, Tamilnadu State, Nagapattinam District	0.1	0.1	0.1	Direct
2015-16	1	Construction of Toilets at Govt. Higher Secondary School, Naravarikuppam	Sanitation	Local Area, Tamilnadu State, Thiruvallur District	0.11	0.84	0.84	Direct

2015-16	2	Contribution to CPCL Educational Trust for running and maintaining the Polytechnic College	Education	Local Area, Tamilnadu State, Thiruvallur District	0.21	0.21	0.21	Direct
2015-16	3	Distribution of Flood Relief Materials in Manali Area		Local Area, Tamilnadu State, Thiruvallur District	0.2	0.2	0.2	Direct
2015-16	4	Community Health Centre, Manali	Health	Local Area, Tamilnadu State, Thiruvallur District	0.12	0.12	0.12	Agency
2015-16	5	Community Health Centre, Muttam (CBR)	Health	Local Area, Tamilnadu State, Nagapattinam District	0.11	0.11	0.11	Agency
2015-16	6	Merit Scholarship to CPCL Polytechnic students, Manali	Education	Local Area, Tamilnadu State, Thiruvallur District	0.11	0.11	0.11	Direct
2016-17	1	Community Health Centre, Manali	Health	Local Area, Tamilnadu State,	0.12	0.12	0.12	Agency

				Thiruvallur District				
2016-17	2	Community Health Centre, Muttam (CBR)	Health	Local Area, Tamilnadu State, Nagapattinam District	0.12	0.12	0.12	Agency
2016-17	3	Merit Scholarship to CPCL Polytechnic students, Manali	Education	Local Area, Tamilnadu State, Thiruvallur District	0.15	0.15	0.15	Direct
2016-17	4	Contribution to CPCL Educational Trust for running and maintaining the Polytechnic College	Education	Local Area, Tamilnadu State, Thiruvallur District	0.21	0.21	0.21	Direct
2016-17	5	Swachh Bharath Activities (Manali and CBR)	Swachh Bharat	Local Area, Tamilnadu State, Thiruvallur District & Nagapattinam District	0.68	0.68	0.68	Direct
2016-17	6	Distribution of Basic Items to Public	Natural Calamity	Local Area, Tamilnadu State, Thiruvallur District	0.23	0.23	0.23	Direct

2017-18	1	Providing Computers for Govt. Schools/ Colleges(CBR)	Education	Local Area/Nagapattinam, Tamilnadu	0.1	0.99	0.99	Direct
2017-18	2	Swachh Indhan (LPG Connection) to BPL families	Swachh Bharat	Local Area/Nagapattinam, Tamilnadu	0.92	0.92	0.92	Agency
2017-18	3	Construction of Vivekananda Park near Vivekananda House	Art and Heritage	Local Area/Chennai, Tamilnadu	0.8	0.8	0.8	Agency
2017-18	4	Donation to Swachh Bharat Kosh & Clean Ganga Fund	Swachh Bharat	Others / PAN India	0.6	0.62	0.62	Direct
2017-18	5	Maintenance of School Toilets / School / School premises, Chennai	Swachh Bharat	Local Area/Chennai, Tamilnadu	0.57	0.57	0.57	Agency
2017-18	6	Construction of Model Toilets (part of Vivekananda Park proposal) / Swachh Heritage place	Swachh Bharat	Local Area/Chennai, Tamilnadu	0.5	0.5	0.5	Agency
2017-18	7	Running of 4 Community	Health care	Local Area, Tamilnadu State,	0.47	0.47	0.47	Agency

		Health Care Centers		Thiruvallur District & Nagapattinam District				
2017-18	8	Swachh Bharath Campaign & Awareness program	Swachh Bharat	Local Area/Chennai & Nagapattinam, Tamilnadu	0.42	0.42	0.42	Direct
2017-18	9	Construction of Library cum waiting Lobby at Sri Sarada Niketan College for Women	Social Welfare	Others /Karur, Tamilnadu	0.4	0.4	0.4	Agency
2017-18	10	Chennai Corporation (Thiruvottiyur) IHHL Scheme	Swachh Bharat	Local Area/Chennai, Tamilnadu	0.35	0.35	0.35	Direct
2018-19	1	Adoption of Villages through IIT Madras Gopurajpuram (including Vellalapakkam) and Panangudi Village	Swachh Bharat	Local Area/Nagapattinam, Tamilnadu	3.9	3.8	3.8	Agency
2018-19	2	Cancer Screening and Treatment of Women in Manali	Health	Local Area/Chennai	1.5	1.5	1.5	Agency

		& Tiruvottiyur, Near CPCL Manali Refinery through Cancer Institute, Chennai for 5 years		nai, Tamilnadu				
2018-19	3	Swachh Bharat Campaign & Awareness Program.	Swachh Bharat	Local Area/Chen nai & Nagapattin am, Tamilnadu	1.41	1.41	1.41	Agency
2018-19	4	Support for repair & renovation of Schools & toilets in Nagapattinam Dist.	Education	Local Area/Naga pattinam, Tamilnadu	1.23	1.23	1.23	Agency
2018-19	5	Assistive devices for Differently abled through ALIMCO at Chennai and Nagapattinam	DifferentlyAble d	Local Area/Chen nai & Nagapattin am, Tamilnadu	0.98	0.97	0.97	Agency
2018-19	6	Contribution to CPCL Education Trust which runs the CPCL Polytechnic College	Education	Local Area/Chen nai, Tamilnadu	0.7	0.7	0.7	Direct
2018-19	7	Construction of Toilets at	Swachh Bharat	Local Area/Chen	0.62	0.62	0.62	Agency

		Government Stanley Medical Hospital		nai, Tamilnadu				
2018-19	8	Running of 4 Community Health Care Centers	Health	Local Area/Chen nai & Nagapattin am, Tamilnadu	0.6	0.61	0.61	Agency
2018-19	9	School toilet Construction in Ramanathapuram through SSA	Education	Others / Ramanatha puram, Tamilnadu	0.5	0.5	0.5	Agency
2018-19	10	Support to Oncology Block at Govt Multi Super Specialty Hospital, Chennai	Health	Local Area/Chen nai, Tamilnadu	0.39	0.39	0.39	Agency
2019-20	1	Running of 4 Community Health Centres	Health care	Local Area/Chen nai & Nagapattin am / Tamilnadu	0.81	0.81	0.81	Agency
2019-20	2	Cancer Screening and Treatment of Women in Manali and Thiruvottiyur, near CPCL Manali Refinery through	Health care	Local Area/Chen nai / Tamilnadu	0.25	0.25	0.25	Agency

		Cancer Institute, Chennai for 5 years						
2019-20	3	Mobile Medical Unit through Helpage India in Ramanathapuram District	Health care	Others / Ramanatha puram / T.N.	0.21	0.21	0.21	Agency
2019-20	4	Mobile Medical Unit through Helpage India in Nagapattinam District	Health care	Local Area/Naga pattinam / Tamilnadu	0.21	0.21	0.21	Agency
2019-20	5	Support to Oncology Block at Govt Multi Super Speciality Hospital, Chennai	Health care	Local Area/Chen nai / Tamilnadu	0.3	0.3	30	Agency
2019-20	6	Contribution to CPCL Educational Trust which runs the CPCL Polytechnic College	Education	Local Area/Chen nai / Tamilnadu	0.5	0.5	0.5	Direct
2020-21	1	Health center at Muttam	Health care	Local area/Chen nai/ Tamil Nadu	14	13.13	13.13	Implementing Agency

2020-21	2	Mobile Medical Unit at Ramanathapuram	Health care	Local area/Ramanathapuram/ Tamil Nadu	24	23.78	23.78	Implementing Agency
2020-21	3	Mobile Medical Unit at Nagapattinam	Health care	Local area/Nagapattinam/Tamil Nadu	25	24.72	24.72	Implementing Agency
2020-21	4	Swachh Bharat Campaign & Awareness programme	Swachh Bharat	Local area/Chennai/ Tamil Nadu	5	5.22	5.22	Direct/ Implementing Agency
2020-21	5	Skill Development- Contributuion towards stipend paid to Apprentice trainees	Skill Development	Local area/Chennai/ Tamil Nadu	90	126.68	126.68	Direct
2020-21	6	Armed Force Flag Day	Livelihood Projects	Others/ PAN India	1	1	1	Direct
2020-21	7	CSR Projects impact assessment study	Others	Local area& Others Chennai-Ramanathapuram-Nagapattinam-	2.2	1.98	1.98	Implementing Agency

				Virudhunagar/ Tamil Nadu				
2022-23	1	Health center at Muttam , Nagapattinam	Health care	Local area/Naga pattinam / Tamil Nadu	12.54	12.54	12.54	Direct
2022-23	2	Mobile Medical Unit at Ramanathapuram	Health care	Others/Ramanathapuram / Tamil Nadu	24.97	24.97	24.97	Helpage India
2022-23	3	Mobile Medical Unit at Nagapattinam	Health care	Local area/Naga pattinam / Tamil Nadu	25.14	25.14	25.14	Helpage India
2022-23	4	Provision of Nutritious Meal to Special Children studying in NIEPMD	Health care	Others/Kanchepuram / Tamil Nadu	0.5	0.5	0.5	National Institute for Persons with Multiple Disabilities (NIEPMD)
2022-23	5	Setting up of PSA oxygen plant at Kerala and Karnataka states	Health care	Others/ Aluva & Pathanamt hitta - Yadgiri & Chikkama galuru /	492.23	500.19	500.19	Direct

				Kerala & Karnataka				
2022-23	6	Directions COVID 19 of relief material to North Chennai people	Health care	Local area/Chennai / Tamil Nadu	3.23	3.23	3.23	Direct
2022-23	7	Supply of Cold Chain Equipment for transportation and distribution of COVID -19 vaccination to State Health Department	Health care	Local area & Others/ Chennai & Other Districts / Tamil Nadu	0	150	150	Direct
2022-23	8	Skill Development -Contribution towards stipend paid to apprentices engaged.	Skill Development	Local area/Chennai / Tamil Nadu	198.75	198.75	198.75	Direct
2022-23	9	Swachh Bharat Campaign& Awareness programme	Swachh Bharat	Local area/Chennai & Nagapattinam / Tamil Nadu	2.36	2.36	2.36	Direct
2022-23	10	Provision of Fountain under Namkku Nammae thittam thru GCC at MMDA Park,	Swachh Bharat	Local area/Chennai / Tamil Nadu	4.25	4.25	4.25	Greater Chennai Corporation

		Mathur & Truck Parking Yard Madhavaram						
2022-23	11	Provision of raincoat to Mamallapuram Police	Swachh Bharat	Others / Chengalpa ttu / Tamil Nadu	0.74	0.74	0.74	Direct
2023-24	1	Operation and maintenance of Community Health Centre (CHC) at Manali through Wockhardt Foundation.	Health Care	Local, Chennai, Tamilnadu	20	24.25	24.25	Implementing Agency
2023-24	2	Mobile Medical Unit through Helpage India in Ramanathapuram.	Health Care	Others, Ramanatha puram, Tamilnadu	29	25	25	Implementing Agency
2023-24	3	Mobile Medical Unit through Helpage India in Manali, Chennai to provide General health care services	Health Care	Local, Chennai, Tamilnadu	32	27.8	27.8	Implementing Agency
2023-24	4	One year Comprehensive Maintenance contract for 6 Nos. of PSA Oxygen	Health Care	Others, Pathanamt hitta, Aluva- Kerala and	47	23.2	23.2	Implementing Agency

		plant supplied to 2 nos.of Govrt .Hospital each in Kerala & Karnataka		Yadguir, Chickmaga luru- Karnataka				
2023-24	5	Swachh Bharat Campaign & Awareness programme. Celebration of Swachhta Drive and Swachhatha Pakhwada as per Directives of Ministry. Activities undertaken include tree plantation, toilets construction, toilet maintenance, painting in public places, Dustbins installation, Competitions, Walkathons,etc .	Swachh Bharat	Local, Chennai, Tamilnadu	25	11.42	11.42	Implementing Agency
2023-24	6	Contribution to Tamil Nadu Government for 44th Chess Olympiade	Sports	Local, Chennai, Tamilnadu	200	200	200	Implementing Agency

2023-24	7	Contribution towards stipend payable to apprentices under the skill development programme	Education & Skill Development	Local, Chennai, Tamilnadu	160	177.79	177.79	Direct
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## ANNEXURE – IV

### MAJOR R&D ACTIVITIES-HISTORICAL DATA

#### 2013-14 AND 2014-15

- CPCL R&D entered into a MoU with Aban Infrastructure Pvt. Ltd., for a research program on “Algae to Biofuels”. The Algae species grown in Marine water and Fresh water were converted to Biocrude using Hydrothermal Liquefaction process. Assays of bio crude from Algae grown in Fresh water and Saline water source in blend with Narimanam crude were carried out.
- CPCL R&D has initiated a Research Fellowship at National Centre for Catalysis Research, IIT Madras for Development of catalyst for Isomerisation process. The research project involves development of high active Zeolite based catalyst with improved tolerance for sulfur and water in the feed.
- Pilot plant studies were carried out on the use of co-solvents for NMP extraction of Lube distillates for production of Lube Oil Base Stocks.
- The feasibility of production of Food/Polymer Grade Hexane using Hydro processing route in the existing Pre-desulphuriser unit was studied in the pilot plant at our R&D.
- As a part of our objective to support refinery operations, studies on (i) Improving BH HVGO feed quality to wax plant and (ii) blending of UCO with lube raffinate for improving LOBS production were carried out.
- A new micro reactor for Hydro cracking was commissioned, for carrying out evaluation of catalyst and feedstock for Once through Hydrocracker unit at CPCL.
- Two papers were presented in Refinery Technology Meet 2013 and Petrotech 2014.

R&D has carried out blending studies to develop new products namely Rubber Process Oils using different refinery streams such as extracts, foots oil etc. for meeting the product quality requirements. Further work is in progress for the production of EF grade Rubber Process Oils.

Studies were also conducted for growth of algae in effluent water stream of CPCL in collaboration with Aban Infrastructure Pvt.Ltd. The research program involves growing different strains of Algae in effluent water stream from CPCL and identifying the best strain for growth of algae. The effluent water provides the nutrients for the growth of Algae and the alga cleans the wastewater stream. The algae grown in effluent water was harvested and converted to biocrudes by hydrothermal liquefaction process.

The feasibility of using DHDS unit for Hydro treating of VGO for reduction of sulfur and mild hydro cracking activity was studied in R&D Pilot Plant using Commercial catalysts. The reduction of sulfur in VGO will enable processing the hydro treated VGO along with UCO in FCC unit and also help in meeting the Gasoline Sulfur Requirements. This study will help in augmenting, additional feedstock for FCC unit, when OHCU conversion is increased in the revamp proposal.

A Pilot Plant study on Hydro treating of a variety of oils such as Palm Oil, Rice Bran Oil, Sunflower oil, Jatropha Oil and used cooking oil for production of Green Diesel and the engine performance of the Green Diesel obtained from various oils and its blends were studied in detail

### 2015-16

**Rubber Process Oils:** Formulation of Rubber Process Oils and also Environment Friendly (EF) grade Rubber Process Oil (RPO) meeting the stringent specifications on Poly Aromatic Hydrocarbon compounds and DMSO extraction as per IP 346 test method were carried out. The Rubber Process Oil formulations use the refinery streams and will have a significant value addition. The formulations of Aromatic, Paraffinic, Naphthenic Process oils equivalent to the commercial grades available in India and also EF Grade RPO's, meeting the stringent REACH specifications of Europe, which are currently imported in India, were carried out

Detailed assay on new crudes namely Akpo and Arab Extra Light were carried out before processing the above crudes in the refinery.

**Microcrystalline Wax (MCW):** A study on production of Microcrystalline was carried out in Laboratory using Bright Neutral slack wax and blend of Bright Neutral and Heavy Neutral slack wax. The study indicated feasibility of production of MCW at CPCL meeting the specifications of MCW.

**Dearomatised Kerosene:** Studies were carried out to establish feasibility of producing Dearomatised Fluids using Hydrocracker Kerosene as feedstock in our Pilot Plant. The studies were carried out using commercial catalyst for production of Drilling Fluids, cutting oils and special solvents meeting environmental standards

### 2016-17

Project on "Development of Low aromatic and Ultra Low Sulphur Jet Fuel for Air Breathing Engine Applications (JP-7):

Development of eco-friendly and low-cost synthetic process for the production of Jet fuel (JP-10) exo-tetrahydrodicyclopentadiene

Development of Naphtha Isomerization Catalyst (Lab scale)

Algae to bio crude – CHT project

Lube potential study on vacuum distillates from various crude sources

Pour point depressant study on Lube oil base stocks.

2017-18

### **Renewable crude and liquid hydrocarbon fuels from Algae – CHT Funded project**

Scale up study in 1, 10, 20 m<sup>2</sup> ponds to access the biomass productivity was completed at the technology partner M/s Aban Infrastructure Limited – Biotech Division's site.

Bio-lab was set up at CPCL R&D for micro algae culture growth. Construction of Raceway ponds

(200, 20 & 2 m<sup>2</sup>) was completed at CPCL algae site. 4000 m<sup>2</sup> pond construction is underway.

Cell growth and Gene transfer study is in progress at International Centre for Genetic Engineering and Biotechnology (ICGEB) for Algal strain modification.

### **Development of eco-friendly and low-cost synthetic process for exo-tetrahydrodicyclopentadiene (JP-10) with IITM - DRDO Funded Project- Phase II**

Dicyclopentadiene (DCPD) was used as the feed stock. The feed was hydrogenated to obtain endo-tetrahydrodicyclopentadiene. The endo product was further isomerized to obtain exo-tetrahydrodicyclopentadiene (JP-10). Pilot plant studies are in progress with IITM developed Catalyst.

### **Recovery of valuable hydrocarbons from crude sludge – Jointly with IITM Chennai**

The project focuses on the recovery of valuable hydrocarbons from de-oiled crude sludge from crude tank bottom by microwave assisted pyrolysis in the presence of microwave absorbing materials (Susceptors). Characterization of crude sludge sample was completed.

### **Tender evaluation of FCC catalysts, additives**

Evaluation of FCC catalysts, ZSM-5 additives & CO promoters for the recent tender was completed.

## **Lab scale study for the production of environment friendly Low PAH RPO**

Low PAH (Poly Aromatic Hydrocarbons) RPO (Rubber Process Oil) formulation was done by blending refinery streams BN Extract and Foots Oil at different ratios to meet the stringent environment friendly norms.

## **Development of JP-7 Jet Fuel from Refinery Streams for Air Breathing Engine**

### **Applications - DRDO funded Project**

The process was developed for the production of JP-7. Hydrocracker kerosene was fractionated for the required boiling range cut followed by hydrogenation to produce JP-7.50 litres of JP-7 was produced and delivered to DRDO.

## **Feasibility study on the production of Premium Grade Lube Oil Base Stock from UCO**

Dewaxing studies were carried out using 100% UCO and UCO+LN distillate blends in various ratios to produce premium grade Lube Oil Base Stock (LOBS).

### **2018-19**

## **Renewable crude and liquid hydrocarbon fuels from Algae – CHT Funded project**

Entire infrastructure for the project on “Renewable crude and liquid hydrocarbon fuel from Algae”

has been established. Cultivation of algae is in progress.

## **Study on Sulphur reduction in Kerosene**

Sulphur reduction in Kerosene by Adsorptive Desulphurization technique was studied and the Sulphur reduction in kerosene was from 2570 ppm to 74 ppm using in-house prepared Ni-HY zeolite Catalyst.

## **Development of eco-friendly and low-cost synthetic process for exo-tetrahydronaphthalene (JP-10)**

Conversion of dicyclopentadiene (DCPD) to JP-10 using commercial Ni-based hydrogenation catalyst & in-house prepared isomerization catalyst (10% Ni - H $\beta$  Zeolite) was studied.

Maximum

68 wt% of JP-10 yield was obtained.

## **Recovery of valuable hydrocarbons from crude sludge – Jointly with IITM Chennai**

Project on Recovery of Hydrocarbon from crude sludge by Microwave (MW) assisted pyrolysis was done with IITM. Two sludge samples were taken for the study and the oil yield after MW assisted pyrolysis were 81.5 wt % and 42.7 wt % respectively.

### 2019-20

#### **Pilot plant study on the production of Group -II base oil**

Suitable Catalysts for the study have been received and the feedstock preparation completed. Catalytic de-waxing and hydro-finishing studies of the above feedstock will be initiated to produce Group II LOBS.

#### **Project on “Renewable crude and liquid hydrocarbon fuel from Algae”**

Algae productivity study in 4000 m raceway pond is being carried out to obtain one-year date starting from Sep .2019.

#### **HTL study on the conversion of algae biomass to Bio-crude**

Hydrothermal Liquefaction (HTL) Study is being conducted with bio-mass obtained from 4000 m<sup>3</sup> pond to obtain one-year bio-crude yield data starting from Sep.2019.

#### **Study to determine the wax potential of various crudes processed in the refinery**

Wax potential study on Narimanam, Nemba, Mumbai High, Ravva & Mangala crudes completed.

#### **Crude Assay Evaluation of crudes processed in the refinery**

The Crude Assays for the following 8 crudes completed:

1. Nemba, 2. Hungo, 3. Basrah Heavy, 4. Narimanam, 5. Mumbai High,
6. Mangala, 7. Murban & 8. Amenam

#### **Tender Evaluation of FCC Catalysts, Additives & CO promoters**

Based on the evaluation, FCC catalysts & additives selection process completed.

### 2020-21

#### **Pilot plant study on the production of Group-II LOBS from UCO**

Catalytic dewaxing and hydrofinishing studies were carried out to produce Group-II LOBS from UCO. The study results were utilized to firming-up the proposal for project realization at plant level.

### **Study on the production of Group-I LOBS from UCO**

Lab scale study had been conducted to explore the production of Group-I LOBS from UCO. Solvent dewaxing study was carried out for lube distillates, fractionated from UCO using TBP / Pot Still Apparatus and the dewaxed oil were characterized for LOBS properties.

### **Production of Special Solvents from OHCU Streams**

Different OHCU Kerosene samples were studied for meeting the two grades of Mineral Turpentine Oil (MTO) specifications. Pipeline Compatible Kerosene (PCK) sample was directly meeting the MTO grade with the boiling range specification of IBP 125°C / FBP 240°C. The PCK sample was meeting the MTO grade with the boiling range specification of IBP 145°C / FBP

205°C, after fractionated to the required cut range in TBP Apparatus. Based on this study, commercial scale MTO production had been initiated at plant level.

### **Production of Jet Propellant from OHCU Streams**

R&D had carried out a research study on Production of Jet Propellant as per the requirement of DRDO and supplied 50 litres of fuel to DRDO in 2016-17. Based on the performance of the fuel supplied and to meet the requirement of DRDO, commercial scale production had been initiated at plant level.

### **Project on “Renewable crude and liquid hydrocarbon fuel from Algae”**

Algae productivity study had been completed in Aug. 2020 for obtaining one-year data starting from Sep. 2019. The average algae biomass productivity of 16 g/m<sup>2</sup>/day was accomplished. Project was completed and project report was submitted to Centre of High Technology (CHT).

### **HTL study on the conversion of algae biomass to bio-crude**

Hydrothermal Liquefaction (HTL) process was optimized to produce bio-crude from algae bio-mass. The study was completed in Aug. 2020 for obtaining one-year data starting from Sep. 2019 and average bio-crude yield obtained was 24.5 wt.%.

### **Dewaxing Study to determine the lube potential of crudes.**

Lab scale dewaxing study for Basrah Medium crude was carried out.

**Crude Assay Evaluation of crudes processed in the refinery** The Crude Assays for the following 5 crudes completed: Plutonio, Das, Saxy Batuque, Bonny Light and Basrah Medium.

### **In-house Hand Sanitizer Preparation**

Isopropyl alcohol-based hand sanitizer had been prepared in-house as per the guidelines of World Health Organization (WHO) for use at refinery premises.

### **Study on evaluation of optimum dosage rate of dewaxing aid.**

Lab scale study with Dewaxing Aid (DWA) tender sample at different dosage rates of 400 ppm,

500 ppm & 600 ppm using BN raffinate had been completed and better performance of DWA was obtained with 500 ppm dosage.

### **Study on reduction of aromatic content in OHCU Kerosene to < 1.0 Vol.%**

Pilot plant study to reduce the aromatic content to < 1.0 Vol.% by hydrogenation process using OHCU Kerosene having approx. 5.0 Vol.% aromatic content had been completed to meet the Rocket Propellant (RP-1) requirement.

### **Study on hydro treatment of Deasphalting Oil (DAO) for bypassing Plant 73 (NMP Extraction unit)**

Pilot plant study on hydrotreating of Deasphalting Oil (DAO) under plant 13 conditions for bypassing plant 73 (NMP Extraction unit) had been completed. The aromatic content in hydrotreated DAO was matching with BN Raffinate from Plant 73.

Subsequently, lab scale dewaxing had been completed with hydrotreated DAO. The dewaxed oil was matching with Kinematic Viscosity, Viscosity Index and Pour Point requirements of BNHVI.

### **Study on production of LNHVI LOBS from UCO by dewaxing**

Lab scale dewaxing studies had been completed for checking the possibility of processing of UCO in Plant-9 to produce LNHVI LOBS. UCO used for this study was collected during processing of High Sulphur VGO mix in OHCU.

### **Dewaxing studies on lube distillates obtained from CDU-I test runs with processing of various crude blends**

Lab scale dewaxing studies had been completed on lube distillates collected from CDU-1 while processing the crude mix of

- 40% Arab Mix, 34% Basrah Medium and 26% Basrah Light
- 70% Arab Mix and 30% Basrah Medium
- 60% Arab Mix and 40% Basrah Medium

### **Tender Evaluation of FCC Catalysts, Additives & CO promoters**

Technical Evaluation of four numbers of tender samples of FCCU catalysts, tender sample of FCCU ZSM-5 additive and tender sample of FCCU CO promoter had been completed. Based on the evaluation, FCC catalysts & additives selection process completed.

### **Procurement of FCC Catalyst Steam Deactivation unit**

Installation & Commissioning had been completed for New FCC Catalyst Steam Deactivation unit

### **Crude Assay Evaluation of crudes processed in the refinery**

The Crude Assays for the following 5 crudes completed:

- Bonga Crude
- Arab Mix Crude
- Sapinhua Crude
- Nkossa Crude
- Basrah Medium Crude

## **PUBLICATIONS AND PRESENTATIONS**

### **2010-11**

- Influence of Asphaltenes on the Rheological Properties of Blended Paving Asphalts, Petroleum Science and Technology, 2010.

### **2012-13**

Relationship between Gaestel Index and Rheology of Blended Bitumen, International Journal of Pavement Research and Technology, 2012.

Assessment of Performance Grade Properties of Blended Paving Bitumen, Fuel, 2012.

Statistical Analysis of Bitumen Routine Test Properties on Blended and Air Blown Bitumen, Construction and Building Materials, 2012.

### 2013-14

Upgradation of Residual Fuel Oil by removal of sulfur compounds using non HDS route such as oxidation/solvent extraction, XVIII Refinery Technology Meet, Kochi, 2013.

### 2014-15

Hydrothermal conversion of algal biomass into biocrude as biofuel precursor - Presented in Petrotech 2014 (12th Jan.)

Production and Distillation of algal Biocrudes into renewable fuel products – Presented in International Seminar on “Sustainable Industrial Algae Production and related Business Opportunities” – 27 March 2014, New Delhi.

Biocrude Production from Micro Algae and Characterisation of TBP Distillates of algal Biocrude blend with Petrocrude – Presented in International Refining and Petrochemicals Conference June 23-25, 2014 Verona Italy.

Hydrotreating of Vegetable Oil for production of Green Diesel – A pilot plant study – Poster Presentation in 19th Refinery Technology Meet, November 12-14, 2014, Chennai.

Performance and emission analysis of hydro treated waste cooking oil as green diesel in 4S diesel engine – paper submitted to Fuel Journal.

Suitability of Hydro treated Jatropha Carcus oil in Diesel Engines. – Paper submitted to Renewable Energy Journal.

SBA-15 supported Pt-SO<sub>4</sub>/ZrO<sub>2</sub> for the isomerization of light paraffins, Poster presentation made in Cat Sympo 2015 held during January 7-9 at CSMCRI, Bhavanagar.

### PATENT:

Process and methods for the conversion of algae, other carbonaceous feed stocks and mixtures of algae with carbonaceous feed stocks to crude oil and fuel products - Patent Filed (Patent Application No.3064/CHE/2014)

## 2015-16

**Algae to Bio Crude (Jointly with ABAN) - International Patent Filed:** (1) Method of processing algae, carbonaceous feedstocks, and their mixtures to biocrude and its conversion into biofuel products (WO2015198347)

**Low Sulfur Fuel Oil (Jointly with IIP) - Indian Patents Filed: (3):**

A process for the production of Low sulfur fuel oil from heavy end residues of Petroleum Hydrocarbons - 143NF15-2902NF2015.

A process for the production of Low Sulfur Fuel Oil from the heavy ends of Thermally cracked residues - 142NF15-2903DEL2015

A process for the production of Low sulfur fuel oil from heavy end residues of Petroleum Hydrocarbon through oxidation - 145NF15 - 2901DEL2015

## 2016-17

### PATENTS FILED

A process for the production of low Poly Aromatic Hydrocarbon Rubber Process Oil from fractionated Bright Neutral Extract –Patent Application No. 201641020691 dt.16.06.2016.

### PUBLICATION / PRESENTATION

Micro crystalline wax production-A value addition proposition to enhance margins of a LOBS refinery- Presented in Refinery Technology Meet - September 2016

Isomerization of alkanes over sulphated zirconia supported on SBA-15 –Poster Presentation in Asia Pacific Congress on Catalysts -January 2017

## 2017-18

### PATENTS FILED

1. A Catalyst Composite using Mesoporous material supported ionic liquids for isomerisation of alkanes and process related thereto. Application No. R20184002532 filed on 25-01-2018.
2. An Improved Process for Production of Low Polyaromatic Hydrocarbon Rubber Process Oil from

Hydrotreated Deasphalting Oil. Application No. R20184005223 filed on 19-02-2018.

## PUBLICATION / PRESENTATION

1. Paper was presented on "Preparation of Low Aromatic and Ultra-Low Sulphur Jet Fuel for Air- Breathing Engine Applications" in International High Energy Materials Conference & Exhibits, HEMRL, Pune – November 2017.
2. Presentation on "Renewable crude and liquid hydrocarbon fuels from Algae" was given in the National Seminar on Clean Healthy Environment by Sustainable Technologies (CHEST'18) in the Department of Chemical Engineering, A.C. Tech, Anna University – March 2018.

### 2018-19

## PUBLICATION / PRESENTATION

Poster presentation was made on recovery of valuable hydrocarbons from petroleum crude sluge via microwave pyrolysis and catalytic upgradation in 23rd refining & petrochemicals technology meet (RPTM), January 2019, Mumbai.

### 2019-20

## PUBLICATION / PRESENTATION

Presented on "Cultivation of Marine Microalgae in Raceway Pond for Bio-Crude Production: A Case Study from CPCL R&D" was made at 24th RPTM held during – January 2020.

### 2020-21

## PATENTS FILED

SN	Patent No.	Date of Filing	Patentee	Date of Grant	Invention Title
1	347709	19-02-18	Research & Development Division, Chennai Petroleum Corporation Limited	25-09-20	An improved process for production of low polyaromatic hydrocarbon Rubber
2	348655	25-01-18	Research & Development Division, Chennai Petroleum Corporation Limited	06-10-20	A catalyst composite using mesoporous material supported ionic

3	351541	16-09-15	1.Council of Scientific & Industrial Research 2.Chennai Petroleum Corporation Limited	13-11-20	A process for the production of low sulphur fuel oil
4	353757	16-09-15	1.Council of Scientific & Industrial Research 2.Chennai Petroleum Corporation Limited	16-12-20	A process for the production of low sulphur fuel oil

### 2021-22

➤ **Study on evaluation of optimum dosage rate of dewaxing aid.**

Lab scale study with Dewaxing Aid (DWA) tender sample at different dosage rates of 400 ppm, 500 ppm & 600 ppm using BN raffinate had been completed and better performance of DWA was obtained with 500 ppm dosage.

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- 70% Arab Mix and 30% Basrah Medium
- 60% Arab Mix and 40% Basrah Medium

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Technical Evaluation of four numbers of tender samples of FCCU catalysts, tender sample of FCCU ZSM-5 additive and tender sample of FCCU CO promoter had been completed. Based on the evaluation, FCC catalysts & additives selection process completed.

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The Crude Assays for the following 5 crudes completed:

- Bonga Crude
- Arab Mix Crude
- Sapinhua Crude
- Nkossa Crude
- Basrah Medium Crude

2022-23

**Study on lube potential of various crude mix:**

**Murban Crude distillates:**

- To evaluate the lube potential, dewaxing studies were carried out at R&D for LN, IN, 500N & HN distillates obtained from CDU-I test run while processing 60% Murban crude.

### **Arab Mix & Basrah Medium crude mix distillates:**

- To evaluate the lube potential, extraction studies in pilot plant followed by lab scale dewaxing studies were carried out at R&D with the distillates obtained from CDU-I test run while processing i) 60% ARB & 40% BAM ii) 70% ARB & 30% BAM crude mix.

### **Study on HCGO as additional feedstock in FCCU:**

To check the suitability, HCGO was hydrotreated at R&D under the conditions of vacuum distillates desulphurization plant. Sulphur content was reduced from 3.50 wt. % to 0.74 wt. %. Based on the sulphur content in hydrotreated HCGO, the percentage of HCGO processing along with UCO in FCCU can be arrived considering FCC GDS unit feed sulphur content < 300 wtppm.

### **Study on suitability of FCCU GDS unit for Heavy Naphtha treating:**

- Heavy Naphtha was desulphurised under FCC Gasoline desulphurization (FCC GDS) unit conditions at R&D. Sulphur content was reduced from 745 ppm to 12 ppm.
- The study confirmed that Heavy Naphtha can be processed in FCC GDS to meet the required sulphur specification, thereby reducing Heavy Naphtha treating cost in DHDT/DHDS units.

### **4. Study on production of Paint Grade MTO from DHDT Syn. Naphtha:**

To study the feasibility of producing Paint Grade MTO, DHDT Syn. Naphtha was fractionated to obtain the required boiling range (150-200°C) at R&D. The product is meeting the Paint Grade MTO specification. It is a value-added Product.

### **5. Crude Assay Evaluation of various crude processed in the refinery**

Crude assay data generation was carried out for the following crude samples.

- Nembra
- Kole
- Murban
- CPC Blend
- Tupi
- Urals

### **Creation of additional facility**

Procurement of Micro Activity Test (MAT) unit and Flame Photometer has been initiated and purchase orders have been placed.

### **Patent Filing**

A patent application has been filed on “Process for Making Low Aromatic and Ultra-Low Sulphur Jet Fuel for Air Breathing Engine Applications.”