



Government of India  
Ministry of Environment, Forest and Climate Change  
(Impact Assessment Division)

To,

The GM HS&E

INDIAN OIL CORPORATION LIMITED. PANIPAT REFINERY &  
PETROCHEMICAL COMPLEX

PO: PANIPAT REFINERY DISTT: PANIPAT PIN: 132140, PO: PANIPAT  
REFINERY DISTT: PANIPAT PIN: 132140, Panipat, Haryana-132140

**Subject:** Grant of Environmental Clearance (EC) to the proposed Project Activity  
under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC)  
in respect of project submitted to the Ministry vide proposal number  
IA/HR/IND2/220613/2018 dated 30 Jul 2021. The particulars of the environmental  
clearance granted to the project are as below.

- |   |   |
|---|---|
| 1. EC Identification No.                      | EC21A010HR142882  |
| 2. File No.                                   | J-11011/177/2016- IA II(I)  |
| 3. Project Type                               | Expansion   |
| 4. Category                                   | A   |
| 5. Project/Activity including<br>Schedule No. | 4(a) Petroleum refining industry  |
| 6. Name of Project                            | Panipat Refinery Capacity Expansion<br>from Existing 15 MMTPA to 25 MMTPA<br>within the Existing Refinery Complex |
| 7. Name of Company/Organization               | INDIAN OIL CORPORATION LIMITED.<br>PANIPAT REFINERY &<br>PETROCHEMICAL COMPLEX                                    |
| 8. Location of Project                        | Haryana   |
| 9. TOR Date                                   | 24 Aug 2018   |

The project details along with terms and conditions are appended herewith from page  
no 2 onwards.

Date: 03/12/2021

(e-signed)  
A.K Pateshwary  
Director  
IA - (Industrial Projects - 2 sector)

*Note: A valid environmental clearance shall be one that has EC identification  
number & E-Sign generated from PARIVESH. Please quote identification  
number in all future correspondence.*

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This has reference to your online proposal No. IA/HR/IND2/220613/2018, dated 30<sup>th</sup> July, 2021 for environmental clearance to the above mentioned project.

**2.** The Ministry of Environment, Forest and Climate Change has examined the proposal for environmental clearance to the project for Panipat Refinery Capacity Expansion from Existing 15 MMTPA to 25 MMTPA within the Existing Refinery Complex by M/S. Indian Oil Corporation Limited (IOCL) located at PR 42-128, Baholi Village, Panipat District, Haryana.

**3.** All main products: Propylene, LPG, Naphtha, MS BS-VI, ATF, HSD BS-VI, Bitumen, RPC, Sulphur and LOBS listed at S.No. 4 (a) - "Petroleum Refining Industries" of Schedule of Environmental Impact Assessment (EIA) Notification under Category 'A', and are appraised by Central Level by Expert Appraisal Committee (EAC).

**4.** The ToR has been issued by Ministry vide letter No. IA-J-11011/177/2016-IA II(I); dated 24<sup>th</sup> August, 2018. Public Hearing for the proposed project has been conducted by Haryana State Pollution Control Board on 06.04.2021 and chaired by Deputy Commissioner, Panipat. The main issues raised during the public hearing are related to basic facilities for schools, labour facilities and crops getting damaged by neel gaye due to the green belt area of the PRPC. It was informed that no litigation is pending against the proposal.

**5.** Ministry had issued EC earlier vide letter no. J-11011/177/2016-IA-II(I) dated 26.03.2018 to the existing project in favour of M/s. Indian Oil Corporation Limited, Panipat Refinery.

**6. The details of products and capacity are as under: -**

**Existing & Proposed Products**

<b>S. No.</b>	<b>Products details</b>	<b>Unit</b>	<b>Existing Quantity</b>	<b>Proposed Quantity</b>	<b>Total Quantity</b>
1	Propylene	TMTPA	123	554	677
2	LPG	TMTPA	438	752	1190
3	Naphtha	TMTPA	1435	407	1842
4	MS BS-VI	TMTPA	1965	1483	3448
5	ATF	TMTPA	1751	500	2251
6	HSD BS-VI	TMTPA	6932	5074	12006
7	Bitumen	TMTPA	449	41	490
8	RPC	TMTPA	884	0	884
9	Sulphur	TMTPA	200	187	387
10	LOBS	TMTPA	0	526	526

**Existing & Proposed Capacities**

<b>S. No</b>	<b>Plant / Equipment / Facility</b>	<b>Units</b>	<b>Existing Configuration</b>	<b>Proposed Configuration</b>	<b>Final configuration after expansion</b>
1.	CDU 1	MMTPA	7.5	-	7.5
2.	VDU 1	MMTPA	3.75	-	3.75
3.	Resid Fluidized Catalytic Cracking Unit (RDCCU)	MMTPA	0.85	-	0.85
4.	Propylene Separation Unit (PSU)	MMTPA	0.225	-	0.225
5.	Once Thru Hydrocracker Unit	MMTPA	1.9	-	1.9
6.	Continuous Catalytic Reforming Unit (CCRU)	MMTPA	0.65	-	0.65
7.	Hydrogen Generation Unit (HGU)	TMPA	38	-	38
8.	Visbreaker Unit (VBU)	MMTPA	0.4	-	0.4
9.	Diesel Hydro Desulphurisation Unit (DHDS)	TMPA	0.77	-	0.77
10.	Bitumen Blowing Unit (BBU)	MMTPA	0.5	-	0.5
11.	Sulphur Recovery Units (SRU/SSRU)	TPD	2 *115	-	2 *115
12.	Amine Regeneration Unit	m <sup>3</sup> /hr	400	-	400
13.	Sour Water Strippers I (Refinery)	m <sup>3</sup> /hr	71.8	-	71.8
14.	Sour Water Strippers II (OHCU)	m <sup>3</sup> /hr	16	-	16
15.	SR LPG treatment	MMTPA	0.142	-	0.142
16.	Mercox: 1.FCC Gasoline 2.Cracked LPG(FCC +DCU) 3.ATF/KERO	TPA	190000 200000+10000 1150000	-	190000 200000+10000 1150000
17.	Crude Distillation Unit (CDU-II)	MMTPA	7.5	-	7.5
18.	Vacuum Distillation Unit (VDU-II)	MMTPA	3.75	-	3.75
19.	Hydrocracker Unit	MMTPA	1.8 1.7	-	1.8 1.7

<b>S. No</b>	<b>Plant / Equipment / Facility</b>	<b>Units</b>	<b>Existing Configuration</b>	<b>Proposed Configuration</b>	<b>Final configuration after expansion</b>
20.	Delayed Coker Unit	MMTPA	3.0	-	3.0
21.	Hydrogen Generation Unit (HGU -2&3)	MTPA	2*70	-	2*70
22.	Sulphur Recovery Units SRU (3,4 &5)	TPD	3 *225	-	3 *225
23.	Coker LPG Merox unit	MMTPA	0.1	-	0.1
24.	Straight Run LPG Merox unit	MMTPA	0.142	-	0.142
25.	Diesel Hydrotreating Unit (DHDT)	TMTPA	3.5	-	3.5
26.	Amine Regeneration Unit (ARU-II)	m <sup>3</sup> /hr	410	-	410
27.	Sour Water Stripper (SWS-III)	m <sup>3</sup> /hr	170	-	170
28.	Hydrocracker Sour Water Stripper (SWS-IV)	m <sup>3</sup> /hr	40	-	40
29.	NSU-II	TPA	0.75	-	0.75
30.	Naptha oxygen stripping unit	MTPA	400,000	-	400,000
31.	Naphtha hydrotreating	MTPA	500,000	-	500,000
32.	Continuous catalyst (Platforming + Regeneration)	MTPA	500,000	-	500,000
33.	Shell sulfolane extraction unit	MTPA	152,200	-	152,200
34.	Benzene Toluene fractionation unit	MTPA	379,800	-	379,800
35.	Paraxylene Extraction unit (PAREX)	MTPA	2,025,400	-	2,025,400
36.	Xylene fractionation unit	MTPA	481,700	-	481,700
37.	Trans alkylation Disproportionate(T atoray) unit	MTPA	360,200	-	360,200

S. No	Plant / Equipment / Facility	Units	Existing Configuration	Proposed Configuration	Final configuration after expansion
38.	Isomerisation unit (Isomar)	MTPA	1,656,500	-	1,656,500
39.	<b>PTA UNITS</b>	MTPA	553000	-	553000
40.	PXFEEDUNIT(NSU-I)	MMTPA(BH)	1.3	-	1.3
41.	NHT	TMTPA	410	-	410
42.	PENEX	TMTPA	400	-	400
43.	RSU	TMTPA	470	-	470
44.	FCCGDU	TMTPA	370	-	370
45.	AVU	MMTPA	-	10	10
46.	State Run LPG treatment unit (SR-LPGT)	MMTPA	-	0.152	0.152
47.	VGO Hydrotreater unit	MMTPA	-	3.6	3.6
48.	Diesel hydrotreater unit	MMTPA	-	5.0	5.0
49.	Propylene Recovery unit	MMTPA	-	1.15	1.15
50.	Resid Hydrocracker unit- RHCU	MMTPA	-	2.5	2.5
51.	INDMAX	MMTPA	-	2.5	2.5
52.	NHT/ CCR/ ISOM	MMTPA	-	0.95/0.625/0.205	0.95/0.625/0.205
53.	HGU	MMTPA	-	0.081	0.081
54.	ALKYLATION	MMTPA	-	0.67	0.67
55.	SARU	MTPD	-	185	185
56.	CDW/LOBS	MMTPA	-	0.56	0.56
57.	SRU-I/II/ TGTU	TPD	-	2*465 /930	2*465 /930
58.	SWS-I/II	TPH	-	252+180	252+180
59.	ARU	TPH	-	1256	1256
60.	MUG Compressor	MMTPA	-	0.17	0.17

### Proposed Utilities Capacity

S.No.	Utility	Units	Capacity	Remarks
1	Raw water	m <sup>3</sup> /hr	2400	
2	Cooling water from CT1 and CT2	m <sup>3</sup> /hr	64000	
3	DM water	m <sup>3</sup> /hr	850	
4	Suspect condensate generation	TPH	232.5	This condensate shall be treated in CPU
5	HP steam	TPH	23.5	Case1, All units running at design capacity,

S.No.	Utility	Units	Capacity	Remarks
				except SRU operating to SRU balance
6	MP steam	TPH	231.5	Case1
7	LP steam	TPH	106.3	Case1
8	HP BFW	TPH	122.3	Case1
9	MP BFW	TPH	171	Case1
10	LP BFW	TPH	14.4	Case1
11	Power	KW	222513	Case1
12	Nitrogen	Nm <sup>3</sup> /hr	6500	
13	RLNG	Kg/hr	115116	
14	Plant air	Nm <sup>3</sup> /hr	9450	
15	Instrumentation air	Nm <sup>3</sup> /hr	11895	
16	ETP	m <sup>3</sup> /hr	450	
17	Flare	Kg/hr	2191374	Design

\*Note- Total steam requirement is 549 TPH

**7.** Existing land area is 6319570.99 m<sup>2</sup> (1561.6 Acres). No additional land will be used for proposed expansion. Industry has already developed greenbelt in an area of 34.5 % (539 Acres) and will develop further 5.5% (86 Acres) greenbelt taking the total to 40% (since it is located in Panipat which is coming under CEPI index) i.e. 2529000 m<sup>2</sup> (625 Acres) out of total area of the project (1561.6 Acres). The estimated project cost is Rs. 32946 Crore (30349 for P25+ 2597 Cr for PP). Total capital cost earmarked towards environmental pollution control measures is Rs. 28161.32 Lakhs and the Recurring cost (operation and maintenance) will be about Rs. 2742.74 Lakhs per annum. Total Employment will be 300 persons as direct and 480 persons as indirect after expansion. Industry proposes to allocate Rs.100 Lakhs @ of 5/2.5% towards Corporate Social Responsibility.

**8.** There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, and Wildlife Corridors etc. within 10 km radius from the project site. Water bodies: Munak Drain (adjacent to project site(W), New Delhi Branch (Western Yamuna Canal) ~0.05km(S), Main Drain No 2/Indri Drain ~0.05km(E), New Delhi Parallel Branch (Western Yamuna Canal) ~0.1km(S), Gohana Distributary ~0.1km(S), Nahar Kuna Hansi/Hanal Nadi ~0.19km(N), Madlauda Minor ~0.22km(S), Thirana Minor ~0.23km(S), Khandra Drain ~0.67km(S), Begampur Minor ~0.8km(N), Joshi Drain ~0.82km(W), Untala Minor ~1.78km(S), Phurlak Drain ~2.14km(N), Tributary Drain No 1 ~2.32km(SSW), Gagsina East Drain ~2.62(N), Rer Kalan Minor ~2.67km(WNW), Kabir Branch/Bazida Distributary ~2.7km(E), Munak Minor ~2.76km(N), Hansi Branch(Western Yamuna Canal) ~4.31km(NW), Munak Canal ~4.46km(NNW), Goli Distributary ~4.88km(NNW), Gudah Minor ~5.34km(E), Binjhaul Minor ~5.39km(SE), Pabana/Pawana Drain ~5.47km(WNW), Nohra/Nauhra Drain ~5.68km(SSE), Ganda Nala/Panipat Main Drain ~5.7km(ESE), Joshi Distributary ~5.82km(W), Kurian Minor ~5.86km(NW), Untala Drain ~6.6km(S), Mor Majra Drain ~6.81km(W), Ganda Nala ~7.11km(E), Jind Distributary ~7.13km(W), Khukrana Branch Canal ~7.21km(S), Bhalsi Minor ~7.87km(SSW), Lift Irrigation Channel ~9.7km(N) and Bhadaur Drain ~9.91km(S).

**9.** Ambient air quality monitoring was carried out at 8 locations during March 2019 to May 2019 and average baseline data indicates the ranges of concentrations as: PM<sub>10</sub>(83.59 to 128µg/m<sup>3</sup>), PM<sub>2.5</sub>(42.77 to 64.98µg/m<sup>3</sup>), SO<sub>2</sub> (14.92 to 22.83µg/m<sup>3</sup>) and NO<sub>2</sub> (27.89 to 43.71µg/m<sup>3</sup>). AAQ modeling study for point source emissions indicates that the maximum incremental GLCs after the proposed project would be 2.89µg/m<sup>3</sup>, 30.52µg/m<sup>3</sup> and 22.29µg/m<sup>3</sup> with respect to PM, SO<sub>x</sub>, and NO<sub>x</sub>. The resultant concentrations are within the National Ambient Air Quality Standards (NAAQS).

**10.** Total water requirement is 1,62,864 m<sup>3</sup>/day of which fresh water requirement of 98880 m<sup>3</sup>/day will be met from Western Yamuna Canal.

Effluent of 1392 m<sup>3</sup>/hr quantities will be treated through existing ETP of capacity 1075 m<sup>3</sup>/hr & proposed ETP of capacity 450m<sup>3</sup>/hr. The quantity of 255m<sup>3</sup>/hr of treated effluent discharged to Thirana Drain and remaining reused in the plant.

**Wastewater treatment and Disposal Management as follows:**

Unit	Existing (m <sup>3</sup> /hr)	Proposed (m <sup>3</sup> /hr)	After expansion (m <sup>3</sup> /hr)	Disposal Method	Facility Details
Effluent	1030	362	1392	<b>Existing:</b> 255m <sup>3</sup> /hr of treated effluent discharged to Thirana Drain and remaining reused in the plant  <b>Proposed:</b> ZLD	<b>Existing:</b> Combined ETP-1 of capacity 400m <sup>3</sup> /hr, Combined ETP-2 of capacity 400m <sup>3</sup> /hr and Combined PX/PTA ETP of capacity 275m <sup>3</sup> /hr <b>Proposed:</b> ETP of capacity 450m <sup>3</sup> /hr. Sewage will be combined into the proposed ETP for treatment
Sewage	235	9	244		

**11.** Power requirement after expansion will be 397513 kVA including existing 175000 kVA where the existing is being met from Existing Gas Turbine while the proposed power of 222513 kVA will be met from Uttar Haryana Bijili Vitran Nigam

Limites's. No DG set available in IOCL Panipat Refinery. Existing unit has 2nos of Boiler of 160TPH & 230TPH capacity of each, additionally 3no. of Boiler of 160TPH(2nos) & 230TPH(1no) capacity is being used as standby and all are Low sulphur liquid fuel+Gas fired Boiler. Additionally, 3nos of Boiler of 300MTPH capacity of each is proposed from which 1no will be used as standby and all proposed are Gas+Low sulphur liquid fuel fired boiler will be installed.

## 12. Details of process emissions generation and its management:

### Existing Process Emission

S.no	Process Stack	Exit Gas Volume (Nm <sup>3</sup> /Hr) @ 25C	Emission(g/s)			
			PM (g/sec)	SO <sub>2</sub> (g/sec)	NO <sub>x</sub> (g/sec)	CO (g/sec)
<b>A</b>	<b>Panipat refining unit</b>					
1	RFCC Heater	10702.17	0.0380	0.1479	0.4250	0.0851
2	RFCC Boiler	77661.33	0.2431	1.1861	3.0435	0.7904
3	AVU- 1	335341.24	1.2370	4.8774	9.8125	1.9198
<b>B</b>	<b>MCR</b>					
4	OHCU- Recycle gas Heater	23609.14	0.1097	0.3090	0.8758	0.1427
5	OHCU LP Section	78410.6	0.3004	1.3114	2.9498	0.5985
6	DHDS- Furnace	24562.62	0.0721	0.3572	0.8727	0.2031
7	CCRU stack- FF101, FF 102 FF 204	73167.78	0.2833	1.2237	2.5233	0.5120
8	CCRU Stack- FF 201, FF 202 FF 203	36088.83	0.1536	0.7611	1.2068	0.2640
9	CCRU Stack- FF 205	21186.13	0.0816	0.3543	0.8081	0.1685
10	VBU	21385.69	0.0766	0.4044	0.6146	0.1837
11	HGU	101595.74	0.5576	1.7731	4.0875	0.8401
<b>C</b>	<b>PR Expansion Unit</b>					
12	HCU Unit	42215.04	0.1867	0.5833	1.1249	0.2148
13	AVU- 2	341972.09	1.4230	5.9684	11.0780	2.7196
<b>D</b>	<b>Hydrogen Generation Unit</b>					
14	HGU-PDS	38499.52	0.1766	0.5039	1.2673	0.2694
15	HGU-76	140182.48	0.5775	1.9369	5.0540	1.2484
16	HGU-77	155111.13	0.7316	2.2560	5.1867	1.0362
<b>E</b>	<b>Diesel Hydrotreater Unit</b>					
17	DHDT-72 Heater 01	44393.26	0.1599	0.6780	1.5773	0.4095
18	DHDT-72 Heater 02	45833.96	0.1892	0.8666	1.7721	0.4956
<b>F</b>	<b>Paraxylene Aromatic Section</b>					
19	CCR-Heater	47019.04	0.1614	0.6839	1.2775	0.2842



S.no	Process Stack	Exit Gas Volume (Nm <sup>3</sup> /Hr) @ 25C	Emission(g/s)			
			PM (g/sec)	SO <sub>2</sub> (g/sec)	NO <sub>x</sub> (g/sec)	CO (g/sec)
20	NHT Heater	12715.52	0.0377	0.2127	0.3521	0.0809
21	Xylene Charge Heater	52943.5	0.1610	0.6546	1.5215	0.3200
22	Isomer Charge Heater	18592.5	0.0525	0.2839	0.6412	0.0710
23	Tatoray charge Heater	18392.82	0.0580	0.2407	0.6150	0.1287
<b>G</b>	<b>Thermal Power Station</b>					
24	HRSO 01	146887.37	0.6218	2.0295	6.3700	0.6541
25	HRSO 02	148251.99	0.5819	1.9405	6.6619	0.6132
26	HRSO 03	159843.57	0.5093	2.6734	7.0993	0.7628
27	HRSO 04	151283.04	0.5429	2.2003	6.8771	0.6736
28	HRSO 05	158248.86	0.5495	1.9566	6.7801	0.5033
29	VHP Boiler 01	130260.73	0.5142	1.9894	5.1728	0.6629
30	VHP Boiler 02	134520.21	0.6681	2.3478	5.4824	0.6420
31	Utility Boiler 02	163531.04	0.7359	3.0921	6.5794	0.7282
<b>H</b>	<b>Pur. Teraphthalic AC-Aromatic section</b>					
32	Fired combustion preHeater	72693.78	0.3354	0.9515	2.7727	0.2312
33	Hot oil heater	73286.64	0.2463	0.7994	2.2975	0.4662
34	thermal Oxidizer	16642.03	0.0733	0.1573	0.5739	0.0794
<b>I</b>	<b>Delayed Coker Unit</b>					
35	DCU	13826.97	0.0679	0.2413	0.3974	0.1012
<b>J</b>	<b>MS Quality Unit</b>					
36	HDS (303 Heater 201) (MSQ)	63025.7	0.2495	0.7792	1.6795	0.4410
37	NHT (301 H101)	-	-	-	-	-
38	Old SRU-22/44	126752.64	-	-	-	-
39	CPP VHP-3	149983.92	-	-	-	-
40	SRU-26	126752.54	-	-	-	-
41	New SRU -57	151935.71	-	-	-	-
42	UB-1	146307.28	-	-	-	-
43	BBU Heater	-	-	-	-	-
44	BBU incinerator	-	-	-	-	-
45	NSRU	-	-	-	-	-
<b>K</b>	<b>BS-VI</b>					
46	Prime G	-	-	-	-	-
47	DHDT	-	-	-	-	-

S.no	Process Stack	Exit Gas Volume (Nm <sup>3</sup> /Hr) @ 25C	Emission(g/s)			
			PM (g/sec)	SO <sub>2</sub> (g/sec)	NO <sub>x</sub> (g/sec)	CO (g/sec)
48	HGU	180000	-	-	-	-
<b>Total (g/s)</b>			<b>12.7641</b>	<b>48.7328</b>	<b>117.4312</b>	<b>19.5453</b>
<b>Total (Kg/hr)</b>			<b>45.95076</b>	<b>175.4381</b>	<b>422.7523</b>	<b>70.36308</b>

Note: Item no.37 to 48 are idle.So the emissions are not mentioned.

### Proposed Process Emission

S. No	Stack details	Stack Coordinates		Stack Details					Emission per stack (g/s)			
		N	E	Height (m)	Temp (°C)	Dia (m)	Exit Velocity (m/s)	Flue gas Flow Rate (Nm <sup>3</sup> /hr)	PM	SO <sub>2</sub>	NO <sub>x</sub>	CO
1.	AVU (CDU/VDU)	29°29'6.07"N	76°52'11.49"E	90	165	5.3	4.76	257400	0.751	50.8	13.829	8.297
2.	VGO- HDT	29°28'52.97"N	76°52'12.69"E	65	154	3.55	3.61	89750	0.125	0.306	4.778	1.972
3.	Diesel Hydrotreater Unit	29°29'0.89"N	76°52'10.39"E	48	165	2.1	5.12	41430	0.058	0.142	2.208	0.908
4.	MS Block_Charge Heater	29°28'55.06"N	76°52'25.87"E	70	161	2.8	6	92520	0.129	0.319	4.931	2.031
5.	NHT Charge Heater	29°28'55.44"N	76°52'19.27"E	55	204	1.55	5.98	25380	0.035	0.086	1.353	0.556
6.	Naphtha Stripper reboiler Heater	29°28'57.22"N	76°52'19.86"E	50	264	1.35	6	17260	0.024	0.058	0.919	0.378
7.	CDWU_HCR Reactor Feed Heater	29°28'52.39"N	76°52'48.73"E	40	370	0.85	6	5700	0.008	0.019	0.297	0.131
8.	CDWU_DW Reactor feed Heater	29°28'49.21"N	76°52'48.75"E	40	385	0.73	6	4150	0.006	0.014	0.217	0.094
9.	CDWU_Vaccum Column Feed Furnace	29°28'51.32"N	76°52'51.05"E	50	220	1.35	6	18300	0.025	0.064	0.975	0.403
10.	Resid Hydrocracking Unit (RHCU)	29°28'52.57"N	76°52'35.96"E	70	182	2.25	5.67	53160	0.074	0.183	2.833	1.167
11.	Resid Hydrocracking Unit (RHCU)_Vaccum Heater	29°28'47.64"N	76°52'33.42"E	65	206	0.964	5.28	8630	0.012	0.031	0.469	0.206
12.	Indmax FCC_Fresh Feed Furnace	29°29'0.65"N	76°51'45.77"E	60	155	1.8	6	38500	0.053	0.133	2.050	0.844
13.	Indmax FCC_Flue Gas cooler	29°28'58.47"N	76°51'50.63"E	60	200	3.5	12	260750	3.622	3.711	6.084	7.189
14.	Sulpur recovery unit (SRU)	29°29'8.51"N	76°51'45.77"E	65	290	2.6	21.38	216570	0.037	17.889	5.464	4.925
15.	Spent Acid Recovery unit (SARU)_APH System & Stack	29°29'7.13"N	76°51'49.23"E	60	200	0.8	3.5	3850	0.005	0.047	0.233	0.094
16.	Spent Acid Recovery unit	29°29'5.73"N	76°51'52.10"E	60	80	1	8	18790	0.159	2.000	0.778	0.467

	(SARU)_Decomposition furnace burner											
17.	Hydrogen Generation Unit	29°29'13"N	76°52'25.54"E	60	188	3.4	7.64	15511.13	0.732	2.256	5.186	1.036
18.	CPP Stack	29°28'56.27"N	76°52'2.03"E	90	160	3.25	17.5	871660	11.555	101.795	78.190	22.303
<b>Total (g/s)</b>									<b>17.41</b>	<b>179.853</b>	<b>130.794</b>	<b>53.001</b>
<b>Total (Kg/hr)</b>									<b>62.676</b>	<b>647.4708</b>	<b>470.8584</b>	<b>190.8036</b>

### 13. Details of Solid waste/Hazardous waste generation and its management:

#### Solid Waste (Operation Phase):

#### Municipal solid waste:

S. No	Waste	Quantity (kg/day)			Collection method	Treatment / disposal method
		Existing	Proposed	After expansion		
1	Organic waste	271.89	81	352.89	Bins	Composting and used as manure for Green Belt
2	Inorganic waste	181.26	54	235.26	Bins	Disposed through authorised vendors

#### Existing & Proposed Hazardous Waste Management:

S. No.	Plant	Waste category	Quantity (MTPA)		Source of Waste generation	Mode of Disposal/Facility
			Existing	Proposed		
1	DHDT	Spent Catalyst	134	175	DHDT	Disposed to SPCB authorised Recycler
2	CCR Regeneration Section	Spent Catalyst Fines	0.85	1.58	Catalyst Fines from Spent Catalyst Fines Collection Pot	Disposed to SPCB authorised Recycler
3	CCR Platforming Process Unit	Spent Catalyst	7.25	4.173	Spent catalyst from Reactors	Disposed to SPCB authorised Recycler
4	CCR Platforming Process Unit	Spent Adsorbent	0.6	31.2	Net GAS Chloride Treaters Adsorbents	To TSDF/ Disposed to SPCB authorised Recycler

S. No.	Plant	Waste category	Quantity (MTPA)		Source of Waste generation	Mode of Disposal/Facility
			Existing	Proposed		
5	CCR Platforming Process Unit	Spent Adsorbent	4.25	1.8	Fuel gas Chloride Adsorbent	To TSDF/ Disposed to SPCB authorised Recycler
6	CCR Platforming Process Unit	Spent adsorbent	0.05	1.26	LPG Chloride Treatment Adsorbent	To TSDF/ Disposed to SPCB authorised Recycler
7	CCR Platforming Process Unit	Spent Adsorbent	10.2	33.26	Debutanizer feed Chloride Treater	To TSDF/ Disposed to SPCB authorised Recycler
8	INDMAX FCC	Spent Catalyst	50	839.5	Indmax equilibrium catalyst (E-cat) is withdrawn from Indmax FCC unit.	To TSDF/ Disposed to SPCB authorised Recycler
9	Propylene Recovery unit	Spent adsorbent	10	20	Adsorbents from Propylene Driers	To TSDF/ Disposed to SPCB authorised Recycler
10	Propylene Recovery unit	Spent adsorbent	20	11	Adsorbent from Arsine Guard Bed	To TSDF/ Disposed to SPCB authorised Recycler
11	HCU/RHCU Reaction Section	Spent Catalyst	136.5	5.256	Spent catalyst withdrawn from the reactors	To TSDF/ Disposed to SPCB authorised Recycler
12	UOP Naphtha Hydrotreating Process Unit	Spent Catalyst	1.4	4.5	Spent Catalyst from Reactor	To TSDF/ Disposed to SPCB authorised Recycler
13	PENEX	Spent Catalyst	1.4	2.96	Spent Catalyst From Reactor A	Disposed to SPCB authorised Recycler
14	PENEX	Spent Catalyst	10.25	1.48	Spent Catalyst From Reactor B	Disposed to SPCB authorised

S. No.	Plant	Waste category	Quantity (MTPA)		Source of Waste generation	Mode of Disposal/Facility
			Existing	Proposed		
						Recycler
15	PENEX	Spent Catalyst	5.125	0.987	Spent Catalyst From Reactor C	Disposed to SPCB authorised Recycler
16	PENEX	Spent Catalyst	4	0.312	Spent Catalyst from Methanator Reactor	Disposed to SPCB authorised Recycler
17	PENEX	Spent Adsorbent	4	0.45	Makeup Gas Chloride Treater	To TSDF/ Disposed to SPCB authorised Recycler
18	PENEX	Spent Molecular Sieve	7	3.25	Makeup Gas Driers	To TSDF/ Disposed to SPCB authorised Recycler
19	PENEX	Spent Molecular Sieve	1.19	0.595	Penex Feed Driers	To TSDF/ Disposed to SPCB authorised Recycler
20	VGOHDT	REACTOR SPENT CATALYST	NA	500	VGO REACTOR/ DIESEL OPOLISHING REACTOR	To TSDF/ Disposed to SPCB authorised Recycler
21	CDWU	Spent Catalyst	NA	3.762	HCR Reactor	Disposed to SPCB authorised Recycler
22	CDWU	Spent Catalyst	NA	3.864	DW Reactor	Disposed to SPCB authorised Recycler
23	CDWU	Spent Catalyst	NA	3.621	HDF Reactor	Disposed to SPCB authorised Recycler
24	SR LPG Treater	Spent Catalyst	NA	3.250	Spent Catalyst from Reactor	To TSDF/ Disposed to SPCB authorised Recycler
25	SR LPG Treater	Spent Grading Bed Catalyst	NA	0.15	Spent Grading Bed Catalyst from Reactor	To TSDF/ Disposed to SPCB

S. No.	Plant	Waste category	Quantity (MTPA)		Source of Waste generation	Mode of Disposal/Facility
			Existing	Proposed		
						authorised Recycler
26	HGU (Note-1)	Spent Catalyst	4.5	1.583	Spent Catalyst from Hydrogenation Reactor	To TSDF/ Disposed to SPCB authorised Recycler
27	HGU (Note-1)	Spent Catalyst	63	21	Spent Catalyst from Predesulfurization Reactor A/B (Dechlorination)	To TSDF/ Disposed to SPCB authorised Recycler
28	HGU (Note-1)	Spent Catalyst	18.12	505.2	Spent Catalyst from Predesulfurization Reactor A/B (Removal of Sulfur compound)	To TSDF/ Disposed to SPCB authorised Recycler
29	HGU (Note-1)	Spent Catalyst	19	6.387	Spent Catalyst from Desulfurization Reactor (Removal of Sulfur compound)	To TSDF/ Disposed to SPCB authorised Recycler
30	HGU (Note-1)	Spent Catalyst	8	2.667	Spent Catalyst from Desulfurization Reactor (Deep Desulfurization)	To TSDF/ Disposed to SPCB authorised Recycler
31	HGU (Note-1)	Spent Catalyst	25	9.4	Spent Catalyst from Prereformer A/B	To TSDF/ Disposed to SPCB authorised Recycler
32	HGU (Note-1)	Spent Catalyst	8	5.883	Spent Catalyst from Reformer	To TSDF/ Disposed to SPCB authorised Recycler
33	HGU (Note-1)	Spent Catalyst	30	10.107	Spent Catalyst from High Temp Shift Reactor	To TSDF/ Disposed to SPCB authorised Recycler
34	HGU (Note-1)	Spent Catalyst	24	16.883	Spent Catalyst from Low Temp Shift Reactor	To TSDF/ Disposed to SPCB

S. No.	Plant	Waste category	Quantity (MTPA)		Source of Waste generation	Mode of Disposal/Facility
			Existing	Proposed		
						authorised Recycler
35	HGU (Note-1)	Catalyst Support Material (Ceramic balls)	16	5.6	Spent Support Material from Reactors,Prereformer, Reformer & Shift Reactors	To TSDF/ Disposed to SPCB authorised Recycler
36	HGU (Note-1)	Catalyst Support Material (Aluminium balls)	28	9.79	Spent Support Material from Reactors,Prereformer, Reformer & Shift Reactors	To TSDF/ Disposed to SPCB authorised Recycler
37	HGU /PSA (Note-1)	Spent Adsorbent	250	51.938	Spent Adsorbent from PSA	To TSDF/ Disposed to SPCB authorised Recycler
38	SRU	Spent Catalyst	36.8	53.5	Claus reactors	To TSDF/ Disposed to SPCB authorised Recycler
39	TGTU	Spent Catalyst	15	11.34	Reactor	To TSDF/ Disposed to SPCB authorised Recycler
40	SRU/TGTU	Catalyst Support Material (Ceramic/alumina balls)	8	11.4	Claus and TGTU reactors	To TSDF/ Disposed to SPCB authorised Recycler

*Note-1: All data for HGU are preliminary for proposed case. Data given has been prorated from BS VI Panipat HGU data. Data shall be confirmed after getting data from the selected*

**14.** Details of Certified compliance report submitted by RO, MoEF&CC officials done on 10-05-2021 and the compliance of EC recommendations was certified. Status of compliance is Partially Complied. ATR has been submitted to RO, MoEF&CC on 07.05.2021 depicting compliance.

**15.** During deliberations EAC sought the following information/commitments from PP:

- i. In the new proposed facility, RLNG & FG (Fuel Gas) will be fired in furnaces & boilers in normal operations and liquid fuel (S < 0.5%) will be fired in case of emergency/ non availability of RLNG. Additional SOX

- emission from these new proposed facilities shall be 647 Kg/hr.
- ii. IOCL shall comply with the policy of Government on Green H<sub>2</sub>.
  - iii. Two Sulphur Recovery Units (having capacity 465 TPD for each unit) shall be installed in the proposed expansion project.
  - iv. Joint committee formed by Hon'ble NGT visited PRPC on 06.01.2021 for verification of compliance of NGT recommendations. Joint committee submitted the compliance report with respect to the NGT recommendations on 15.02.2021. Based on the compliance report given by the joint committee, OA 738/2018 has been disposed off by Hon'ble NGT on 22.03.2021.
  - v. The project shall conform to ZLD

PP has agreed to the above conditions and submitted the desired information as sought above; EAC found it to be in order and recommended the proposal for grant of EC. However, ZLD was not covered in the undertaking.

**16.** The proposal was considered by the EAC in its 42<sup>nd</sup> meeting held on 20-22<sup>nd</sup> October, 2021 in the Ministry, wherein the project proponent and their consultant M/s. Hubert Enviro Care System (P) Ltd., presented the EIA/EMP report as per the ToR. The Committee found the EIA/EMP report complying with the ToR and recommended the project for grant of environmental clearance.

**17.** The EAC, constituted under the provision of the EIA Notification, 2006 and comprising of Experts Members/domain experts in various fields, have examined the proposal submitted by the Project Proponent in desired form along with EIA/EMP report prepared and submitted by the Consultant accredited by the QCI/NABET on behalf of the Project Proponent. The EAC noted that the Project Proponent has given undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP report. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.

**18.** The Committee noted that the EIA/EMP report is in compliance of the ToR issued for the project, reflecting the present environmental concerns and the projected scenario for all the environmental components. The Committee has found the baseline data is within NAAQ standards. The Committee has deliberated the action plan proposed by the project proponent to arrest the incremental GLC due to the project. The Committee has found the additional information submitted by the project proponent to be satisfactory and addressing the issues raised by the Committee. The Committee has also deliberated on the CER plan and found to be addressing the issues in the study area. The EAC has deliberated the proposal and has made due diligence in the process as notified under the provisions of the EIA Notification, 2006, as amended from time to time and accordingly made the recommendations to the proposal. The Experts Members of the EAC have found the proposal in order and have **recommended** for grant of Environmental Clearance.



**19.** The environmental clearance granted to the project/activity is strictly under the provisions of the EIA Notification 2006 and its amendments. It does not tantamount/construe to approvals/consent/ permissions etc. required to be obtained or standards/conditions to be followed under any other Acts/ Rules/ Subordinate legislations, etc., as may be applicable to the project. The project proponent shall obtain necessary permission as mandated under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981, as applicable from time to time, from the State Pollution Control Board, prior to construction & operation of the project.

**20.** Based on the proposal submitted by the project proponent and recommendations of the EAC (Industry-2), Ministry of Environment, Forest and Climate Change hereby accords environmental clearance to the project for **Panipat Refinery Capacity Expansion from Existing 15 MMTPA to 25 MMTPA within the Existing Refinery Complex by M/S. Indian Oil Corporation Limited (IOCL) located at PR 42-128, Baholi Village, Panipat District, Haryana**, under the provisions of the EIA Notification, 2006, and the amendments therein, subject to compliance of the terms and conditions as under:-

**A. Specific Condition:**

- (i). The project shall conform to ZLD.
- (ii). The company shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, and risk mitigation measures relating to the project shall be implemented.
- (iii). The National Emission Standards for Petroleum Oil Refinery issued by the Ministry vide G.S.R. 186(E) dated 18<sup>th</sup> March, 2008 and G.S.R.595(E) dated 21<sup>st</sup> August, 2009 as amended from time to time, shall be followed.
- (iv). Volatile organic compounds (VOCs)/Fugitive emissions shall be controlled at 99.997% with effective chillers/modern technology. For emission control and management, use of FG/NG in heater as fuel, adequate stack height, use of Low NOX burners in heater & boiler, continuous stack monitoring, Sulphur recovery plant, etc. shall be installed/ensured.
- (v). Total water requirement is 1,62,864 m<sup>3</sup>/day of which fresh water requirement of 98880 m<sup>3</sup>/day will be met from Western Yamuna Canal. Necessary permission in this regard shall be obtained from the concerned regulatory authority.
- (vi). Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond.
- (vii). Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc. Flame arresters shall be provided on tank farm, and solvent transfer to be done through pumps.

- (viii). Process organic residue and spent carbon, if any, shall be sent to cement industries. ETP sludge, process inorganic & evaporation salt shall be disposed off to the TSDF.
- (ix). Fly ash should be stored separately as per CPCB guidelines so that it should not adversely affect the air quality, becoming air borne by wind or water regime during rainy season by flowing along with the storm water. Direct exposure of workers to fly ash & dust should be avoided. The ash from boiler shall be sold to brick manufacturers/cement industry.
- (x). The company shall undertake waste minimization measures as below: -
  - a. Metering and control of quantities of active ingredients to minimize waste.
  - b. Reuse of by-products from the process as raw materials or as raw material substitutes in other processes.
  - c. Use of automated filling to minimize spillage.
  - d. Use of Close Feed system into batch reactors.
  - e. Venting equipment through vapour recovery system.
  - f. Use of high pressure hoses for equipment clearing to reduce wastewater generation.
- (xi). The green belt of 5-10 m width shall be developed in the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. The project proponent shall ensure 33% greenbelt area vis-à-vis the project area through afforestation in the degraded area. The Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.
- (xii). As per the Ministry's OM dated 30.09.2020 superseding the OM dated 01.05.2018 regarding the Corporate Environmental Responsibility, and as per the action plan proposed by the project proponent to address the socio-economic and environmental issues in the study area, the project proponent, as committed, shall provide education funds in technical training centers/ support in nearby village's schools, support in health care facilities, drinking water supply and funds for miscellaneous activities like solar street lights, battery, solar panel etc., in the nearby villages. The action plan shall to be completed within time as proposed.
- (xiii). For the DG sets, emission limits and the stack height shall be in conformity with the extant regulations and the CPCB guidelines. Acoustic enclosure shall be provided to DG set for controlling the noise pollution.
- (xiv). The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Firefighting system shall be as per the norms.
- (xv). Continuous online (24x7) monitoring system for stack emissions shall be installed for measurement of flue gas discharge and the pollutants concentration, and the data to be transmitted to the CPCB and SPCB server. For online continuous monitoring of effluent, the unit shall install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the premises. In case of the treated

effluent to be utilized for irrigation/gardening, real time monitoring system shall be installed at the ETP outlet.

- (xvi). Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
- (xvii). Process safety and risk assessment studies shall be further carried out using advanced models, and the mitigating measures shall be undertaken/implemented accordingly.
- (xviii). The PP should improve the efficiency of ETP Plant and the water discharge should be as per prescribed CPCB Norms. They should also install 24x7 hours monitoring system (of the discharge) and the same should be connected to the server of SCPB/CPCB.

## **B. General Condition:**

- (i) No further expansion or modifications in the plant, other than mentioned in the EIA Notification, 2006 and its amendments, shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change/SEIAA, as applicable. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry/SEIAA, as applicable, to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.
- (ii) The energy source for lighting purpose shall be preferably LED based, or advanced having preference in energy conservation and environment betterment.
- (iii) The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under the Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).
- (iv) The company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. CER activities shall be undertaken by involving local villages and administration and shall be implemented. The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.
- (v) The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/pollution control measures shall not be diverted for any other purpose.

- (vi) A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zilla Parishad/Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.
- (vii) The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company.
- (viii) The environmental statement for each financial year ending 31<sup>st</sup> March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail.
- (ix) The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry and at <https://parivesh.nic.in/>. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.
- (x) The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.
- (xi) This Environmental clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, if any, as may be applicable to this project.

**21.** The Ministry reserves the right to stipulate additional conditions, if found necessary at subsequent stages and the project proponent shall implement all the said conditions in a time bound manner. The Ministry may revoke or suspend the environmental clearance, if implementation of any of the above conditions is not found satisfactory.

**22.** Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

**23.** Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

**24.** The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 read with subsequent amendments therein.

**25.** This issues with the approval of the competent authority.

**(Ashok Kr. Pateshwary)**  
**Director**

**Copy to: -**

1. The Principal Secretary, Department of Environment, Government of Haryana, SCO 1-2-3, Sector 17 (D), 2<sup>nd</sup> Floor, Chandigarh, Haryana
2. The Regional Officer, Ministry of Env., Forest and Climate Change, Integrated Regional Office, Bays No.24-25, Sector 31-A, Dakshin Marg, Chandigarh - 160030
3. The Member Secretary, Central Pollution Control Board Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi - 32
4. The Member Secretary, Haryana State Pollution Control Board, C-11, Sector-6, Panchkula, Haryana - 134109.
5. Monitoring Cell, MoEF&CC, Indira Paryavaran Bhawan, Jor Bagh Road, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi
6. District Collector, Panipat (Haryana)
7. Guard File /Monitoring File /Parivesh Portal / Record File

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